```
                null_values          CDATA            #IMPLIED
                zero_values          CDATA            #IMPLIED
                dates_values         CDATA            #IMPLIED
                percentages          CDATA            #IMPLIED >

<!ELEMENT data_x (#PCDATA) >
<!ATTLIST data_x
                x_title              CDATA            #REQUIRED
                format               CDATA            #REQUIRED
                x_notes              CDATA            #IMPLIED
                x_desc                   CDATA                 #IMPLIED
                x_prec               CDATA            #REQUIRED
                x_unit               CDATA            #REQUIRED
                x_mag                CDATA            #REQUIRED
                x_mod                    CDATA                 #REQUIRED
                x_measure            CDATA            #REQUIRED
                x_scale              CDATA            #REQUIRED
                x_adjustment         CDATA            #REQUIRED
                x_links                  CDATA                 #REQUIRED >

<!ELEMENT li_class_set (li_class+)>

<!ELEMENT li_class (#PCDATA)>
<!ATTLIST li_class
                class_name           CDATA            #REQUIRED
                parent_class         CDATA            #REQUIRED
                form                 CDATA            #FIXED 'simple'
                href                 CDATA            #IMPLIED
                description          CDATA            #IMPLIED >

<!-- LINE_ITEM  -->

<!-- Information about the Line Item -->

<!ELEMENT line_item (data_x?, data_y, linkset?, note_set?) >
<!ATTLIST line_item
                li_ID                CDATA            #REQUIRED
                li_legend            CDATA            #REQUIRED
                li_title             CDATA            #REQUIRED
                li_cat               CDATA            #IMPLIED
                y_axis_title         CDATA            #REQUIRED
                level                CDATA            #REQUIRED
                format               CDATA            #REQUIRED
                relation             CDATA            #REQUIRED
```

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```
        li_notes              CDATA              #REQUIRED
        li_desc               CDATA                #REQUIRED
        li_prec               CDATA              .  #REQUIRED
        li_unit          CDATA              #REQUIRED
        li_mag                CDATA                #REQUIRED
        li_mod                CDATA                #REQUIRED
        li_measure       CDATA              #REQUIRED
        li_scale         CDATA              #REQUIRED
        li_adjustment    CDATA              #REQUIRED
        li_aggregation   CDATA              #IMPLIED >

<!ELEMENT data_y (#PCDATA)>

<!ELEMENT analysis (linkset?)>

<!ELEMENT note_set (note+)>

<!ELEMENT note (#PCDATA)>
<!ATTLIST note
        note_type         CDATA              #IMPLIED >
```

APPENDIX B: Sample RDML Document

```
<rdmldoc>
  <rdmldoc_header
        rdmldoc_ID = "rdml_thomson_cs1"
        doc_title = "Computer Services Companies"
        timestamp = "1999-01-19T23:00:00"
        version = "1.0.0"
        expiration = "2000-01-19T23:00:00"
        freq_of_update = "Annual"
        num_line_items = "0"
        num_datapoints = "0"
        x_indexes =  "-9, -8, -7"
        first_li_withdata = "3" >

<data_source>
  <contact_info
        role = "Data Source"
        name = "Russell T. Davis"
        company = "RDML, Inc."
        address = "2 Wisconsin Circle, Suite 700"
        city = "Chevy Chase"
        state = "MD"
        zip = "20815"
        country = "USA"
        email = "rt_davis@sprynet.com"
        xlink:form = "simple"
        href = "http://www.rdml.com"
        comments = "" >
</contact_info>
</data_source>
<formatting_source>
<contact_info
        role = "Formatting Source"
        name = "Russell T. Davis"
        company = "RDML, Inc."
        address = "2 Wisconsin Circle, Suite 700"
        city = "Chevy Chase"
        state = "MD"
        zip = "20815"
        country = "USA"
        email = "rt_davis@sprynet.com"
        xlink:form = "simple"
        href = "http://www.rdml.com"
        comments = "" >
```

```
      </contact_info>
</formatting_source>
<rdmldoc_source>
 <contact_info
        role = "RDMLDoc Source"
        name = "Russell T. Davis"
        company = "RDML, Inc."
        address = "2 Wisconsin Circle, Suite 700"
        city = "Chevy Chase"
        state = "MD"
        zip = "20815"
        country = "USA"
        email = "rt_davis@sprynet.com"
        xlink:form = "simple"
        href = "http://www.rdml.com"
        comments = "" >
  </contact_info>
</rdmldoc_source>
<license_terms
        copyright_cite = "Copyright 1998, RDML, Inc.  All Rights Reserved"
        holder = "RDML, Inc."
        license_type = "Payment Per Download"
        warranty = "No warranty is expressed or implied.  Use this data at your own risk."
        disclaimer = "This data is provided 'as-is'.  The provider assumes no
responsibility for its use or misuse."
        terms = "$1 per RDMLDoc download"
        date = "1999.0123000000.00"
        email = "license@rdml.com"
        href = "http://www.rdml.com"        state = "MD"        country = "USA" >

  <contact_info
        role = "RDMLDoc Source"
        name = "Russell T. Davis"
        company = "RDML, Inc."
        address = "2 Wisconsin Circle, Suite 700"
        city = "Chevy Chase"
        state = "MD"
        zip = "20815"
        country = "USA"
        email = "rt_davis@sprynet.com"
        xlink:form = "simple"
        href = "http://www.rdml.com"
        comments = "" >
  </contact_info>
</license_terms>
```

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```
</rdmldoc_header>
<line_item_set
        line_item_set_type = "Category"
        time_period = ""
        character_set = ""
        missing_values = ""
        null_values = ""
        zero_values = ""
        dates_values = ""
        percentages = "" >

<data_x
        x_title = "Company"
        format = ""
        x_notes = ""
        x_desc = ""
        x_prec = ""
        x_unit = ""
        x_mag = ""
        x_mod = ""
        x_measure = ""
        x_scale = ""
        x_adjustment = ""
        x_links = "" >
AUD, BSYS, CEN, CSC, CVG, DST, EDS, FISV, GLC, PAYX, TSG, SDS  </data_x>
  <li_class_set>
  <li_class
        class_name = ""
        parent_class = ""
        xlink:form = "simple"
        href = ""
        description = "" >       </li_class>
  </li_class set>
  <linkset>
  <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >       </link>
```

```
</linkset>

<line_item
      li_ID = "1"
      li_legend = "Computer Services Companies"
      li_title = ""
      li_cat = ""
      y_axis_title = ""
      level = "1"
      format = ""
      relation = "Parent"
      li_notes = ""
      li_desc = ""
      li_prec = ""
      li_unit = ""
      li_mag = ""
      li_mod = ""
      li_measure = ""
      li_scale = ""
      li_adjustment = "">
   <data_y>

. . . . . . . . . . . .

   </data_y>
   <linkset>
   <link
      xlink:form = "simple"
      href = "http://www.rdml.com"
      behavior = ""
      content-role = ""
      content-title = ""
      role = "Original Data Sources"
      title = "RDML Formatted Source Table"
      show = "new"
      actuate = "user" >      </link>
      </linkset>

</line_item>
<line_item
      li_ID = "2"
      li_legend = "Stock Performance"
      li_title = "Stock Overview"
      li_cat = ""
      y_axis_title = ""
      level = "2"
```

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```
            format = ""
            relation = "Parent"
            li_notes = ""
            li_desc = ""
            li_prec = ""
            li_unit = ""
            li_mag = ""
            li_mod = ""
            li_measure = ""
            li_scale = ""
            li_adjustment = "">
    <data_y>

' ' ' ' ' ' ' ' ' ' ' ' '

    </data_y>
    <linkset>
    <link
            xlink:form = "simple"
            href = "http://www.rdml.com"
            behavior = ""
            content-role = ""
            content-title = ""
            role = "Original Data Sources"
            title = "RDML Formatted Source Table"
            show = "new"
            actuate = "user" >       </link>

    </linkset>

</line_item>
<line_item
            li_ID = "3"
            li_legend = "Stock Price (12/31/98)"
            li_title = "Stock Overview"
            li_cat = ""
            y_axis_title = "$ per share (12/31/98)"
            level = "3"
            format = "#, ##0.00; (#, ##0.00)"
            relation = "ChildStyle"
            li_notes = ""
            li_desc = ""
            li_prec = "2"
            li_unit = "$"
            li_mag = "0"
            li_mod = "per"
```

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```
            li_measure = "share"
            li_scale = ""
            li_adjustment = "">
        <data_y>
40.1, 51.63, 69.81, 64.44, 22.13, 67.06, 50.19, 51.44, 43.5, 51.44, 44.5, 39.69,
        </data_y>
        <linkset>
         <link
            xlink:form = "simple"
            href = "http://www.rdml.com"
            behavior = ""
            content-role = ""
            content-title = ""
            role = "Original Data Sources"
            title = "RDML Formatted Source Table"
            show = "new"
            actuate = "user" >        </link>

        </linkset>

    </line_item>
    <line_item
            li_ID = "4"
            li_legend = "Shares Outstanding"
            li_title = "Stock Overview"
            li_cat = ""
            y_axis_title = "Shares outstanding"
            level = "3"
            format = "#, ##0; (#, ##0)"
            relation = "ChildStyle"
            li_notes = ""
            li_desc = ""
            li_prec = "0"
            li_unit = "shares"
            li_mag = "6"
            li_mod = ""
            li_measure = ""
            li_scale = ""
            li_adjustment = "">
        <data_y>
627, 27, 74, 162, 145, 64, 494, 85, 105, 166, 131, 107,
        </data_y>
        <linkset>
         <link
            xlink:form = "simple"
```

```
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>

</linkset>

    </line_item>
    <line_item
        li_ID = "5"
        li_legend = "%  Institutional Holdings"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "% of outstanding shares"
        level = "3"
        format = "0.00%; (0.00%)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li_unit = "%"
        li_mag = "0"
        li_mod = "of"
        li_measure = "outstanding shares"
        li_scale = ""
        li_adjustment = "">
    <data_y>
0.65, 0.8, 0.75, 0.64, 0, 0.44, 0.49, 0.67, 0.25, 0.53, 0.13, 0.71,
    </data_y>
    <linkset>
    <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>
```

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```
</linkset>

</line_item>
<line_item
        li_ID = "6"
        li_legend = "Market Capitalization"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "$ in Millions"
        level = "3"
        format = "#, ##0; (#, ##0)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "0"
        li_unit = "$"
        li_mag = "6"
        li_mod = "in"
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>
25142.7, 1394.01, 5165.94, 10439.28, 3208.85, 4291.84, 24793.86, 4372.4, 4567.5,
8539.04, 5829.5, 4246.83,
    </data_y>
    <linkset>
    <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>

    </linkset>

</line_item>
<line_item
        li_ID = "7"
        li_legend = "Reported EPS"
        li_title = "Stock Overview"
        li_cat = ""
```

```
        y_axis_title = "Earnings per share"
        level = "3"
        format = "#, ##0.00; (#,##0.00)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li unit = "$"
        li_mag = "0"
        li_mod = "per"
        li_measure = "share"
        li_scale = ""
        li_adjustment = "">
    <data_y>
1.13, 2.05, 1.9, 2.1, 0.71, 1.48, 1.7, 1.35, 1.86, 0.82, 1.72, 1.17,
    </data_y>
    <linkset>
    <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>

    </linkset>

</line_item>
    <line_item
        li_ID = "8"
        li_legend = "Earnings"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title  = "$ in Millions"
        level = "3"
        format = "#, ##0; (#,##0)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "0"
        li_unit = "$"
        li_mag = "6"
```

```
            li_mod = "in"
            li_ measure = ""
            li_scale = ""
            li_adjustment = "">
    <data_y>
708.51, 55.35, 140.6, 340.2, 102.95, 94.72, 839.8, 114.75, 195.3,  136.12,
225.32,  125.19,
    </data_y>
    <linkset>
     <link
         xlink:form = "simple"
         href = "http://www.rdml.com"
         behavior = ""
         content-role = ""
         content-title =
         role = "Original Data Sources"
         title = "RDML Formatted Source Table"
         show = "new"
         actuate = "user" >     </link>

    </linkset>

</line_item>
<line_item
         li_ID = "9"
         li_legend = "Cash Flow per share"
         li_title = "Stock Overview"
         li_cat = ""
         y_axis_title = "$ per share"
         level = "3"
         format = "#, ##0; (#,##0)"
         relation = "ChildStyle"
         li_notes = ""
         li_desc = ""
         li_prec = "2"
         li_unit = "$"
         li_mag = "0"
         li_mod = "per"
         li_measure = "share"
         li_scale = ""
         li_adjustment = "">
<data_y>
1.41, 2.13, 3.71, 4.95, 1.39, 3.18, 4, 1.98, 3.44, 0.96, 3.2, 2.5,
    </data_y>
    <linkset>
```

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```
<link
    xlink:form = "simple"
    href = "http://www.rdml.com"
    behavior = ""
    content-role = ""
    content-title = ""
    role = "Original Data Sources"
    title = "RDML Formatted Source Table"
    show = "new"
    actuate = "user" >      </link>

  </linkset>

</line_item>

<line_item
        li_ID = "10"
        li_legend = "Cash Flow"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "$ in Millions"
        level = "3"
        format = "#, ##0; (#, ##0)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "0"
        li_unit = "$"
        li_mag = "6"
        li_mod = "in"
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>
884.07, 57.51, 274.54, 801.9, 201.55, 203.52, 1976, 168.3, 361.2, 159.36, 419.2,
267.5,
    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
```

```
            title = "RDML Formatted Source Table"
            show = "new"
            actuate = "user" >      </link>

</linkset>

</line_item>
<line_item
        li_ID = "11"
        li_legend = "Price/Earnings Ratio (PE)"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "P/E Ratio"
        level = "3"
        format = "#, ##0; (#,##0)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li_unit = "P/E Ratio"
        li_mag = "0"
        li_mod = ""
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>
35.4867256637168,   25.1853658536585,   36.7421052631579,   30.6857142857143,
31.169014084507,    45.3108108108108,   29.5235294117647,   38.1037037037037,
23.3870967741935,  62.7317073170732,  25.8720930232558,  33.9230769230769,
    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>

    </linkset>
```

```
</line_item>
<line_item
        li_ID = "12"
        li_legend = "Estimated 5-year growth"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "% growth"
        level = "3"
        format = "0.00%; (0.00%)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li_unit = "%"
        li_mag = "0"
        lit_mod = ""
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>
0.15, 0.18, 0.2, 0.22, 0.23, 0.22, 0.15, 0.2, 0.15, 0.3, 0.13, 0.2,
    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>

</linkset>
```

```
</line_item>
<line_item
        li_ID = "13"
        li_legend = "Return on Equity"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "Earnings as % of Book Value"
        level = "3"
        format = "0.00%; (0.00%)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li_unit = "%"
        li_mag = "0"
        li_mod = ""
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>

'  '  '  '  '  '  '  '  '  '

    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>

    </linkset>
   </line_item>
  </line_item_set>
</rdmldoc>
```

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APPENDIX C: UnitList XML document

```xml
<?xml version="1.0" encoding="utf-8" ?>
<unitlist>
<unit name="inch">
    <conversion
        conv_target = "centimeter"
        conv_factor = "2.5400050"
        conv_constant = ""
        conv_log = ""
        conv_source = "FGM"
        conv_href = "">
    </conversion>
    <type>Length</type>
    <subtype>Linear</subtype>
    <plural>inches</plural>
    <alias>in</alias>
    <desc>Approximately the width of a man's thumb.</desc>
    <icon href="inch.gif"></icon>
</unit>

<unit name="foot">
    <conversion
        conv_target = "meter"
        conv_factor = "0.30480060"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>length</type>
    <subtype>Linear</subtype>
    <plural>feet</plural>
    <alias>ft</alias>
    <desc>Originally, the average length of a human foot</desc>
    <icon href="foot.gif"></icon>
</unit>

<unit name="yard">
    <conversion
        conv_target = "meter"
        conv_factor = "1.082"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
```

```
            conv_href = "">
        </conversion>
        <type>length</type>
        <subtype>Linear</subtype>
        <plural>yards</plural>
        <alias></alias>
        <desc>Three feet</desc>
        <icon href="yard.gif"></icon>
</unit>

<unit name="meter">
        <conversion
            conv_target = "meter"
            conv_factor = "1.0"
            conv_constant = ""
            conv_log = ""
            conv_source = "ISO"
            conv_href = "">
        </conversion>
        <type>length</type>
        <subtype>Linear</subtype>
        <plural>meters</plural>
        <alias>m,mtr</alias>
        <desc>One thousandth of a kilometer</desc>
        <icon href="meter.gif"></icon>
</unit>

<unit name="mile">
        <conversion
            conv_target = "kilometer"
            conv_factor = "1.6093472"
            conv_constant = ""
            conv_log = ""
            conv_source = "FGM"
            conv_href = "">
        </conversion>
        <type>length</type>
        <subtype>Linear</subtype>
        <plural>miles</plural>
        <alias></alias>
        <desc>English surveying unit, set to be equal to 8 furlongs.</desc>
        <icon href="mile.gif"></icon>
</unit>

<unit name="dollar">
```

```
    <conversion
        conv_target = "pound"
        conv_factor = "1.312"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>currency</type>
    <plural>pounds</plural>
    <alias>sterling</alias>
    <desc>British pound sterling.  </desc>
    <icon href="pound.gif"></icon>
</unit>

<unit name="Deutschmark">
    <conversion
        conv_target = "dollar"
        conv_factor = "1.732"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>currency</type>
    <plural>Duetschmarks</plural>
    <alias>Marks</alias>
    <desc>German Deutschmarks</desc>
    <icon href="marks.gif"></icon>
</unit>

<unit name="Francs">
    <conversion
        conv_target = "dollar"
        conv_factor = "0.812"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>currency</type>
    <plural>francs</plural>
    <alias>ff</alias>
    <desc>French francs</desc>
    <icon href="francs.gif"></icon>
```

```xml
</unit>

<unit name="acres">
    <conversion
        conv_target = "square meter"
        conv_factor = "5125"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>area</type>
    <plural>acres</plural>
    <alias>acr</alias>
    <desc>In medieval times, the amount of land one man could plow in one day.</desc>
    <icon href="acre.gif"></icon>
</unit>

<unit name="square foot">
    <conversion
        conv_target = "square meter"
        conv_factor = "0.15"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>area</type>
    <plural>square feet</plural>
    <alias>sq ft</alias>
    <desc>An area one foot by one foot.</desc>
    <icon href="sqfoot.gif"></icon>
</unit>

</unitlist>
```

APPENDIX D: RMML Document Type Definition ("DTD")

```
<?xml encoding="UTF-8"?>

<!-- The root element: a whole macro is a "macrodoc".
A macrodoc consists of three elements:
     a macro_header, a macro_code, and a macro_references element.
-->
<!ELEMENT macrodoc (macro_header, macro_code, macro_references)>

<!-- MACRO_HEADER -->
<!-- Information about the macro.
-->


<!ELEMENT macro_header (macro_source, license_terms, linkset?, documentation)>
<!ATTLIST macro_header
     macrodoc_ID      CDATA            #REQUIRED
     macro_title      CDATA            #REQUIRED
     macro_type       CDATA            #REQUIRED
     result_type          CDATA            #REQUIRED
     rdmldoc_type     CDATA            #REQUIRED
     timestamp        CDATA            #IMPLIED
     version          CDATA            #IMPLIED
     expiration       CDATA            #IMPLIED
     freq_of_update   CDATA            #IMPLIED >

<!ELEMENT macro_source (contact_info+)>

<!ELEMENT license_terms (contact_info, linkset?)>
<!ATTLIST license_terms
     copyright_cite   CDATA            #REQUIRED
     holder           CDATA            #IMPLIED
     license_type     CDATA            #IMPLIED
     warranty         CDATA            #IMPLIED
     disclaimer       CDATA            #IMPLIED
     terms            CDATA            #IMPLIED
     date             CDATA            #IMPLIED
     email            CDATA            #IMPLIED
     state            CDATA            #IMPLIED
     country          CDATA            #IMPLIED >

<!ELEMENT contact_info (#PCDATA)>
<!ATTLIST contact_info
     role             CDATA            #IMPLIED
     name             CDATA            #IMPLIED
```

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```
        company       · CDATA                #IMPLIED
        address         CDATA                #IMPLIED
        city                    CDATA                    #IMPLIED
        state           CDATA                #IMPLIED
        zip             CDATA                #IMPLIED
        country         CDATA                #IMPLIED
        email           CDATA                #IMPLIED
        xlink:form              CDATA                    #IMPLIED
        href            CDATA                #IMPLIED
        comments        CDATA                #IMPLIED >

<!ELEMENT linkset (link*)>
<!ATTLIST linkset
        xlink_form      CDATA                #FIXED 'extended'
        href            CDATA                #IMPLIED >

<!ELEMENT link (#PCDATA) >
<!ATTLIST link
        xlink_form.     CDATA                #FIXED 'simple'
        href            CDATA                #REQUIRED
        behavior        CDATA                #IMPLIED
        content-role    CDATA                #IMPLIED
        content-title   CDATA                #IMPLIED
        role            CDATA                #IMPLIED
        title           CDATA                #IMPLIED
        show            CDATA                #FIXED 'new'
        actuate         CDATA                #FIXED 'user' >

<!ELEMENT documentation (macro_description, help_page*)>

<!ELEMENT macro_description (#PCDATA)>

<!ELEMENT help_page (#PCDATA)>

<!ELEMENT macro_code (code, instructions, gui, variable_set?, qualifiers, error_handling,
testing)>

<!ELEMENT code (#PCDATA)>

<!ELEMENT instructions (#PCDATA)>

<!ELEMENT gui (comp_rpanel? | comp_ipanel? | comp_list? | comp_vector?)>

<!ELEMENT comp_rpanel (comp_rbutton*)>
<!ATTLIST comp_rpanel
```

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```
    variable_name    CDATA                #REQUIRED
    intro_label          CDATA                    #IMPLIED
    visible          CDATA                #IMPLIED
    legend           CDATA                #IMPLIED .
    legend_type      CDATA                #IMPLIED >

<!ELEMENT comp_rbutton (#PCDATA)>
<!ATTLIST comp_rbutton
    label            CDATA                #REQUIRED
    value            CDATA                #REQUIRED
    isDefault        CDATA                #REQUIRED
    icon             CDATA                #IMPLIED
    desc             CDATA                #IMPLIED
    legend           CDATA                #IMPLIED
    legend_type      CDATA                #IMPLIED >

<!ELEMENT comp_ipanel (comp_ifield*)>

<!ELEMENT comp_ifield (#PCDATA)>
<!ATTLIST comp_ifield
    variable_name    CDATA                #REQUIRED
    variable_label   CDATA                #REQUIRED
    intro_label          CDATA                    #REQUIRED
    default_value    CDATA                #REQUIRED
    desc             CDATA                #IMPLIED .
    legend           CDATA                #IMPLIED
    legend_type      CDATA                #IMPLIED >


<!ELEMENT comp_list (comp_listitem*)>
<!ATTLIST comp_list
    variable_name    CDATA                #REQUIRED
    intro_label          CDATA                    #REQUIRED
    default_item     CDATA                #REQUIRED
    legend           CDATA                #IMPLIED
    legend_type      CDATA                #IMPLIED >

<!ELEMENT comp_listitem (#PCDATA)>
<!ATTLIST comp_listitem
    label            CDATA                #REQUIRED
    value            CDATA                #REQUIRED
    icon             CDATA                #IMPLIED
    desc             CDATA                #IMPLIED
    legend           CDATA                #IMPLIED
    legend_type      CDATA                #IMPLIED >
```

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```
<!ELEMENT comp_vector (line_item)>
<!ATTLIST comp_vector
    variable_name   CDATA           #REQUIRED
    intro_label         CDATA               #REQUIRED
    default_item    CDATA           #REQUIRED
    desc            CDATA           #IMPLIED
    legend          CDATA           #IMPLIED
    legend_type     CDATA           #IMPLIED >

<!ELEMENT variable_set (variable*)>

<!ELEMENT variable (#PCDATA | line_item)*>
<!ATTLIST variable
    variable_name   CDATA           #REQUIRED
    variable_type   CDATA           #REQUIRED
    value           CDATA           #REQUIRED
    href            CDATA           #IMPLIED
    subref          CDATA           #IMPLIED >

<!ELEMENT qualifiers (#PCDATA)>

<!ELEMENT error_handling (#PCDATA)>

<!ELEMENT testing (#PCDATA)>

<!ELEMENT macro_references (macrodocs?, datadocs?)>

<!ELEMENT macrodocs (#PCDATA)>

<!ELEMENT datadocs (#PCDATA)>

<!ELEMENT line_item (data_x?, data_y, linkset?, note_set?) >
<!ATTLIST line_item
    li_ID           CDATA           #REQUIRED
    li_legend       CDATA           #REQUIRED
    li_title        CDATA           #REQUIRED
    li_cat          CDATA           #IMPLIED
    y_axis_title    CDATA           #REQUIRED
    level           CDATA           #REQUIRED
    format          CDATA           #REQUIRED
    relation        CDATA           #REQUIRED
    li_notes        CDATA           #REQUIRED
    li_desc         CDATA           #REQUIRED
    li_prec         CDATA           #REQUIRED
    li_unit         CDATA           #REQUIRED
```

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```
        li_mag          CDATA              #REQUIRED
        li_mod          CDATA              #REQUIRED
        li_measure          CDATA              #REQUIRED
        li_scale        CDATA              #REQUIRED
        li_adjustment   CDATA              #REQUIRED
        li_aggregation  CDATA              #IMPLIED >

<!ELEMENT data_y (#PCDATA)>

<!ELEMENT note_set (note+)>

<!ELEMENT note (#PCDATA)>
<!ATTLIST note
        note_type       CDATA              #IMPLIED >

<!ELEMENT data_x (#PCDATA) >
<!ATTLIST data_x
        x_title         CDATA              #REQUIRED
        format          CDATA              #REQUIRED
        x_notes         CDATA              #IMPLIED
        x_desc          CDATA              #IMPLIED
        x_prec          CDATA              #REQUIRED
        x_unit          CDATA              #REQUIRED
        x_mag           CDATA              #REQUIRED
        x_mod           CDATA              #REQUIRED
        x_measure           CDATA              #REQUIRED
        x_scale         CDATA              #REQUIRED
        x_adjustment    CDATA              #REQUIRED
        x_links         CDATA              #REQUIRED >
```

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APPENDIX E: Sample RMML document

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE macrodoc PUBLIC "-//.." "RMML1.dtd" >

<macrodoc>
 <macro_header
      macrodoc_ID = "rmml_sort"
      macro_title = "Sort"
      macro_type = "TSL"
      result_type = "replace_each"
      rdmldoc_type = "TS"
      timestamp = "1999-01-19T23:00:00"
      version = "1.0.0"
      expiration = "2000-01-19T23:00:00"
      freq_of_update = "Annual" >

   <macro_source>
    <contact_info
      role = "Macro Source"
      name = "Russell T. Davis"
      company = "RDML, Inc."
      address = "2 Wisconsin Circle, Suite 700"
      city = "Chevy Chase"
      state = "MD"
      zip = "20815"
      country = "USA"
      email = "rt_davis@sprynet.com"
      href = "http://www.rdml.com"
      comments = "" >
    </contact_info>
   </macro_source>

   <license_terms
      copyright_cite = "Copyright 1998, RDML, Inc. All Rights Reserved"
      holder = "RDML, Inc."
      license_type = "Payment Per Download"
      warranty = "No warranty is expressed or implied.  Use this data at your own risk."
      disclaimer = "This data is provided 'as-is'.  The provider assumes no responsibility for its use
or misuse."
      terms = "$1 per RMMLDoc download"
      date = "1999.0123000000.00"
      email = "license@rdml.com"
      state = "MD"
      country = "USA" >
```

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```
<contact_info
   role = "Licensee"
   name = "Russell T. Davis"
   company = "RDML, Inc."
   address = "2 Wisconsin Circle, Suite 700"
   city = "Chevy Chase"
   state = "MD"
   zip = "20815"
   country = "USA"
   email = "rt_davis@sprynet.com"
   href = "http://www.rdml.com"
   comments = "" >
 </contact_info>
 </license_terms>

<linkset
   xlink_form = "extended"
   href = "http://www.rdml.com" >
 <link
   xlink_form = "simple"
   href = "http://www.rdml.com"
   behavior = ""
   content-role = ""
   content-title = ""
   role = ""
   title = ""
   show = "new"
   actuate = "user" >
 </link>
</linkset>

<documentation>
 <macro_description>
Adds a line showing the minimum or maximum, according to the parameters
 </macro_description>
 <help_page>
   No Help Page is currently available
 </help_page>
</documentation>

</macro_header>

<macro_code>

 <code>
```

```
    IF(ichoice=0, SORT(A,0), IF(ichoice=1, SORT(A,1), A))
  </code>

  <instructions>
  </instructions>

  <gui>
    <comp_rpanel
        variable_name = "ichoice"
        intro_label = "Select a parameter:" >

      <comp_rbutton
        label = "Ascending"
        value = "0"
        isDefault = "true"
        icon = "" >
      </comp_rbutton>

      <comp_rbutton
        label = "Descending"
        value = "1"
        isDefault = "false"
        icon = "" >
      </comp_rbutton>

    </comp_rpanel>
  </gui>

  <qualifiers>
  </qualifiers>
  <error_handling>
  </error_handling>
  <testing>
  </testing>
</macro_code>

<macro_references>
  <macrodocs>
  </macrodocs>
  <datadocs>
  </datadocs>
</macro_references>

</macrodoc>
```

Appendix F: MS Excel Visual Basic routine for adding "attribute value columns" to a data table

```vb
Private Sub UserForm_Initialize()

  cmdOK.SetFocus
  txtChartTitle.Text = ""
  txtYAxisTitle.Text = ""
  cboFormat.AddItem ("#,##0;(#,##0)")
  cboFormat.AddItem ("#,##0.00;(#,##0.00)")
  cboFormat.AddItem ("0.00%;(0.00%)")
  cboFormat.ListIndex = 0
  txtFootnote.Text = "Source: "


  Dim NodeX As Node
  Set NodeR = treeUnit.Nodes.Add(, , "r", "Select One: (Default is blank)")
  'Currency
  Set NodeA = treeUnit.Nodes.Add("r", tvwChild, "c", "Currency")
  Set Nodes = treeUnit.Nodes.Add("c", tvwChild, "dus", "$ US")
  Set NodeX = treeUnit.Nodes.Add("c", tvwChild, "puk", "Pounds UK")
  Set NodeX = treeUnit.Nodes.Add("c", tvwChild, "yjp", "Yen Japanese")

  'Length
  Set NodeX = treeUnit.Nodes.Add("r", tvwChild, "l", "Length")
  Set NodeX = treeUnit.Nodes.Add("l", tvwChild, "Feet", "Feet")
  Set NodeX = treeUnit.Nodes.Add("l", tvwChild, "Meters", "Meters")

  'Area
  Set NodeX = treeUnit.Nodes.Add("r", tvwChild, "a", "Area")
  Set NodeX = treeUnit.Nodes.Add("a", tvwChild, "SqFeet", "Square Feet")
  Set NodeX = treeUnit.Nodes.Add("a", tvwChild, "SqMeters", "Square Meters")

  'tree formatting
  NodeA.EnsureVisible

  'Magnitude ComboBox
  cboMagnitude.AddItem ("As-Is")
  cboMagnitude.AddItem ("Thousands")
  cboMagnitude.AddItem ("Millions")
  cboMagnitude.AddItem ("Billions")
  cboMagnitude.ListIndex = 0

End Sub

Private Sub cmdCancel_Click()
```

```
   End
End Sub

Private Sub cmdOK_Click()

  rcount = Selection.Rows.Count

  'li_ID
  Selection.EntireColumn.Insert
  ActiveCell.Select
  ActiveCell.FormulaR1C1 = "li_ID"
  ActiveCell.Offset(1, 0).Range("A1").Select
  ActiveCell.FormulaR1C1 = "1"
  ActiveCell.Offset(1, 0).Range("A1").Select
  ActiveCell.FormulaR1C1 = "=R[-1]C+1"
  ActiveCell.Select
  Selection.Copy
  r = "A1:A" & (rcount - 3)
  ActiveCell.Offset(1, 0).Range(r).Select
  ActiveSheet.Paste
  Application.CutCopyMode = False

  'li_legend
  ActiveCell.Offset(-3, 1).Range("A1").Select
  ActiveCell.FormulaR1C1 = "li_legend"

  'li_title
  ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
  Selection.Insert Shift:=xlToRight
  ActiveCell.Select
  ActiveCell.FormulaR1C1 = "li_title"
  ActiveCell.Offset(1, 0).Range("A1").Select
  ActiveCell.FormulaR1C1 = txtChartTitle.Text
  ActiveCell.Select
  Selection.Copy
  r = "A1:A" & (rcount - 2)
  ActiveCell.Offset(1, 0).Range(r).Select
  ActiveSheet.Paste
  Application.CutCopyMode = False

  'li_cat
  ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
  Selection.Insert Shift:=xlToRight
  ActiveCell.Select
  ActiveCell.FormulaR1C1 = "li_cat"
```

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```
'y_axis_title
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "y_axis_title"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = txtYAxisTitle.Text
ActiveCell.Select
Selection.Copy
r.= "A1:A" & (rcount - 2)
Selection.ColumnWidth = 8
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'level
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "level"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = "1"
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
Selection.ColumnWidth = 8
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'format
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "format"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = cboFormat.value
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False
```

```
'relation
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "relation"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = "Parent"
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'li_notes
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_notes"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = txtFootnote.Text
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
Selection.ColumnWidth = 8
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'li_desc
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_desc"


'li_prec
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_prec"


'li_unit
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
```

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```
ActiveCell.FormulaR1C1 = "li_unit"
ActiveCell.Offset(1, 0).Range("A1").Select
u = ""
On Error Resume Next
u = treeUnit.SelectedItem.Text
ActiveCell.FormulaR1C1 = u
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'li_mag
'first calculate the value to put in
If (StrComp(cboMagnitude.value, "As-Is") = 0) Then
    m = 0
End If
If (StrComp(cboMagnitude.value, "Thousands") = 0) Then
    m = 3
End If
If (StrComp(cboMagnitude.value, "Millions") = 0) Then
    m = 6
End If
If (StrComp(cboMagnitude.value, "Billions") = 0) Then
    m = 9
End If


ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_mag"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = m
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'li_mod
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
```

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```
ActiveCell.FormulaR1C1 = "li_mod"

'li_measure
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_measure"

'li_scale
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_scale"

'li_adjustment
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_adjustment"

'li_aggregation
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_aggregation"

End
End Sub
```

Appendix G: MS Excel Visual Basic routine creating a tagged document from a spreadsheet data table

```vb
Private Sub Frame1_Click()

End Sub

Private Sub UserForm_Initialize()

  cmdOK.SetFocus
  RefEdit_data.value = "Sheet1!$A$1:$AB$51"
  txtDefaultFile.Text = "D:\default1.rdm"
  txtOutputDir.Text = "D:\"
  txtOutputFile.Text = "out.rdm"
  cboLineItemType.AddItem ("TimeSeries")
  cboLineItemType.AddItem ("Category")
  cboLineItemType.AddItem ("XYPlot")
  cboLineItemType.ListIndex = 0
  cbNonFileDefaults.value = False

End Sub

Private Sub cmdCancel_Click()
  End
End Sub

Private Sub cmdOK_Click()
  Dim buff As String
  buff = createIntro
  buff = buff & createHeader
  buff = buff & createLISet
  buff = buff & createLineItems
  buff = buff & "</line_item_set>" & Chr(10)
  buff = buff & createEnding
  replaceAttribute buff, "rdmldoc_header", "rdmldoc_ID", txtOutputFile.value
  replaceAttribute buff, "rdmldoc_header", "doc_title", txtDocTitle.value
  replaceAttribute buff, "line_item_set", "line_item_set_type", cboLineItemType.SelText
  replaceAttribute buff, "data_x", "x_title", txtXAxisTitle.value
  fillXData buff
  CreateFile (buff)
  End
End Sub

Private Sub cmdBrowseDefault_Click()
```

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```
CommonDialog1.ShowOpen
txtDefaultFile.Text = CommonDialog1.Filename

End Sub

Private Sub cmdBrowseOutputDir_Click()
  CommonDialog1.ShowOpen
  txtOutputFile.Text = CommonDialog1.Filename

End Sub

Private Sub UserForm_Click()

End Sub

Private Sub getConfiguration()

End Sub

Private Function createHeader()

  'buff will be the buffer that collects the string
  Dim buff As String

  'If user wants the program to create a default
  If cbNonFileDefaults.value = True Then
    buff = buff & defHeader
  End If

  'Or get the default header values from a file
  buff = createDefHeader

  'return
  createHeader = buff

End Function

Private Function createDefHeader()

  'Declarations
  Dim h As String
  Dim wholefile As String

  'open the default file
  Dim Def_file As String
```

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```
    Def_file = txtDefaultFile.Text
    Open Def_file For Input As #2
    wholefile = Input$(LOF(2), 2)
    Close #2

    'put the rdmldoc_header into a string
    h = getElementByTagName(wholefile, "rdmldoc_header")
    createDefHeader = h

End Function

Private Function createLISet()

    'Declarations
    Dim h As String
    Dim wholefile As String

    'open the default file
    Dim Def_file As String
    Def_file = txtDefaultFile.Text
    Open Def_file For Input As #2
    wholefile = Input$(LOF(2), 2)
    Close #2

    'put the the line item set overall tags into a string
    h = getOpeningElementTag(wholefile, "line_item_set")
    h = h & getElementByTagName(wholefile, "data_x")
    h = h & getElementByTagName(wholefile, "li_class_set")
    h = h & getElementByTagName(wholefile, "linkset")
    createLISet = h

End Function

Public Function getElementByTagName(str As String, el As String)

    startPos = InStr(1, str, "<" & el, 1)
    endPos = InStr(1, str, "</" & el, 1)
    element = Mid(str, startPos, endPos - startPos + Len(el) + 4)
    getElementByTagName = element

End Function

Public Function getOpeningElementTag(str As String, el As String)

    startPos = InStr(1, str, "<" & el, 1)
```

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```
        endPos = InStr(startPos, str, ">", 1)
        element = Mid(str, startPos, endPos - startPos + 5)
        getOpeningElementTag = element

End Function


Private Sub CreateFile(buff)

    Dim Outfile As String
    Outfile = txtOutputDir.Text & txtOutputFile.Text

    Open Outfile For Output As #1
    Print #1, buff
    Close #1

End Sub

Private Function createIntro()

    buff = ""

    'Header Information
    buff = buff & "<?xml version=" & Chr(34) & "1.0" & Chr(34)
    buff = buff & " encoding=" & Chr(34) & "UTF-8" & Chr(34)
    buff = buff & " standalone=" & Chr(34) & "no" & Chr(34)
    buff = buff & "?>" & Chr(10)

    'DTD Declaration
    buff = buff & "<!DOCTYPE rdmldoc PUBLIC "
    buff = buff & Chr(34) & "-//.." & Chr(34) & " "
    buff = buff & Chr(34) & "RDML1.dtd" & Chr(34)
    buff = buff & " > " & Chr(10)

    'begin rdmldoc tag
    buff = buff & "<rdmldoc>" & Chr(10)

    'return
    createIntro = buff

End Function

Private Function createEnding()

    buff = ""
```

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```
    buff = buff & "</rdmldoc>" & Chr(10)

    'return
    createEnding = buff

End Function

Private Function defHeader()

    buff = ""

    'return
    defHeader = buff

End Function

Private Function createLineItems()

    Dim data As Range
    t = RefEdit_data.value
    createLineItems = fillLineItems(Range(t), cboLineItemType.value)

End Function


'-----------------------------------------------------------------
'  Procedure:    Fill_line_item()
'
'  Purpose:      Prepare the line_item element
'               This element contains information about the line_item
'
'  From DTD:
'<!ELEMENT line_item (data_x?, data_y, li_class_set?, analysis?,
'link_set?, note_set?) >
'<!ATTLIST line_item
'   li_ID           CDATA       #REQUIRED
'   li_legend       CDATA       #REQUIRED
'   li_title        CDATA       #REQUIRED
'   li_table        CDATA       #IMPLIED
'   y_axis_title            CDATA     #REQUIRED
'   level           CDATA       #REQUIRED
'   format          CDATA       #REQUIRED
'   relation        CDATA       #REQUIRED
'   li_notes        CDATA       #REQUIRED
'   li_desc         CDATA       #REQUIRED
```

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```
'   li_prec           CDATA    #REQUIRED
'   li_unit           CDATA    #REQUIRED
'   li_mag            CDATA    #REQUIRED
'   li_mod            CDATA    #REQUIRED
'   li_measure        CDATA    #REQUIRED
'   li_scale          CDATA    #REQUIRED
'   li_adjustment     CDATA    #REQUIRED >
'------------------------------------------------------------
Public Function fillLineItems(data As Range, litype As String)

'Declarations
Dim J, K As Integer
Dim Max As Integer

'If this is an XYPlot, use the other routine
If litype = "XYPlot" Then
    'Fill_line_item_xy
Else

'Initializations
K = 1
buff = ""
NumLI = data.Rows.Count

'Cycle through all the line items
For N = 2 To NumLI

'Insert opening tag
buff = buff & "  <line_item" & Chr(10)

'Insert the Attributes
addAttribute buff, "li_ID", data.Cells(N, 1), 6, 0
addAttribute buff, "li_legend", data.Cells(N, 2), 6, 0
addAttribute buff, "li_title", data.Cells(N, 3), 6, 0
addAttribute buff, "li_cat", data.Cells(N, 4), 6, 0
addAttribute buff, "y_axis_title", data.Cells(N, 5), 6, 0
addAttribute buff, "level", data.Cells(N, 6), 6, 0
addAttribute buff, "format", data.Cells(N, 7), 6, 0
addAttribute buff, "relation", data.Cells(N, 8), 6, 0
addAttribute buff, "li_notes", data.Cells(N, 9), 6, 0
addAttribute buff, "li_desc", data.Cells(N, 10), 6, 0
addAttribute buff, "li_prec", data.Cells(N, 11), 6, 0
addAttribute buff, "li_unit", data.Cells(N, 12), 6, 0
addAttribute buff, "li_mag", data.Cells(N, 13), 6, 0
addAttribute buff, "li_mod", data.Cells(N, 14), 6, 0
```

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```
addAttribute buff, "li_measure", data.Cells(N, 15), 6, 0
addAttribute buff, "li_scale", data.Cells(N, 16), 6, 0
addAttribute buff, "li_adjustment", data.Cells(N, 17), 6, 1

'Fill the body of the tag with a comma-delimited string of the y-data numbers
buff = buff & "   <data_y>" & Chr(10)
MaxLI = NumLI - 2
MaxDP = data.Columns.Count - 17
For K = 1 To MaxDP
   buff = buff & data.Cells(N, 18 + K) & ", "
   If (K Mod 10) = 0 Then
      buff = buff & Chr(10)
   End If
Next K
buff = buff & Chr(10) & "   </data_y>" & Chr(10)

'Insert ELEMENT: analysis
'Insert ELEMENT: li_class_set
'Insert ELEMENT: 'linkset'
'Call FillTag("linkset")
'Insert ELEMENT: note_set

'Insert closing tag for that line item
buff = buff & Chr(10) & "   </line_item>" & Chr(10)

'Every 10 line items, flush the buffer
'If N Mod 5 = 0 Then
'   Call SaveToFile(buff)
'End If

Next N

'Closes the test for XYPlot at beginning of routine
End If

fillLineItems = buff

End Function
'----------------------------------------------------------------
'  Procedure:    addAttribute(name, value)
'
'  Purpose:      Adds an attribute line to "buff"
'
'----------------------------------------------------------------
Public Sub addAttribute(buff, name, value, indent, last)
```

```vba
' Build the indentation
Dim strIndent As String
strIndent = ""
For J = 1 To indent
    strIndent = strIndent & " "
Next J

' Build the string
buff = buff & strIndent & name & " = " & Chr(34) & value & Chr(34)

'Add an ending '>' tag if "last" is 1; else simple add a carriage return
If last = 1 Then
    buff = buff & " >" & Chr(10)
Else
    buff = buff & Chr(10)
End If

End Sub


Private Sub replaceAttribute(f As String, el As String, att As String, val As String)

    f = Replace(f, att & " = " & Chr(34) & Chr(34), att & " = " & Chr(34) & val & Chr(34))

End Sub

Private Sub fillXData(f As String)

    'build the string of X values
    'Dim data As Range
    Dim v As String
    t = RefEdit_data.value
    v = Chr(10) & Range(t).Cells(1, 19)
    For J = 20 To Range(t).Columns.Count
        v = v & ", " & Range(t).Cells(1, J)
    Next J
    v = v & Chr(10)

    'replace the current x data element text
    f = Replace(f, "></data_x>", ">" & v & "  </data_x>")

End Sub
```

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SPECIFICATION WITH MARKINGS TO SHOW CHANGES MADE

UNITED STATES PATENT APPLICATION

OF

RUSSELL T. DAVIS

FOR

REUSABLE DATA MARKUP LANGUAGE

RELATED APPLICATIONS

This application is a divisional of Application No. 09/573,778, filed May 18, 2000, which is incorporated in its entirety herein by reference. This patent application also claims priority to Provisional U.S. Patent Application No. 60/135,525, filed on May 21, 1999, and Provisional U.S. Patent Application No. 60/183,152, filed on February 17, 2000, which are incorporated herein by reference.

The following identified U.S. patent applications are also relied upon and are incorporated by reference in this application.

U.S. Patent Application No. [[_____]] 09/573,780, entitled "Reusable Macro Markup Language," bearing attorney docket no. 07643.0004, and filed on the same date herewith.

U.S. Patent Application No. [[_____]] 09/573,419 (now U.S. Patent No. 7,249,328), entitled "Tree View for Reusable Data Markup Language," bearing attorney docket no. 07643.0005, and filed on the same date herewith.

U.S. Patent Application No. [[_____]] 09/573,413 (now U.S. Patent No. 6,920,608), entitled "Chart View for Reusable Data Markup Language," bearing attorney docket no. 07643.0006, and filed on the same date herewith.

BACKGROUND

Field of the Invention

The present invention relates generally to data processing systems and, more particularly, to a computer markup language for use in a data browser and manipulator.

Related Art

Currently on the Internet, transmissions and communications are commonly conducted using a communication protocol called the HyperText Transfer Protocol ("HTTP") which can be used to pass files and documents formatted in the HyperText Markup Language ("HTML"). A markup language is a way of embedding markup "tags," special sequences of characters, that describe the structure as well as the behavior of a document and instruct a web browser or other program on how to display the document. Typically, documents or web pages formatted in HTML are simply ASCII text files that mix ordinary text with these markup tags.

HTML has a relatively limited structure that defines a fixed set of tags with specific purposes. Further, HTML typically only works with text and images and typically only instructs a browser on how to display a document: the browser may read and display characters but does not "understand" the data content. To the extent that HTML browsers present numbers in their display, they still are not interpreted as numbers -- just text. Hence, HTML documents are not interpreted as "data" but rather as formatting instructions for displaying images. Users cannot "surf" through numerical data, to see graphs, apply transformations, combine numbers from different web pages, or load numbers into a spreadsheet in a manageable form. The numbers cannot be directly read by an analytical program without human intervention to cut-and-paste the text, determine the data type, etc. Consequently, conventional analytical programs allow for ad hoc review and manipulation of

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abstract numbers (*e.g.*, a spreadsheet program or database program), but do not directly read their data from online sources. Such programs may perform statistical analysis, structural analysis and simple transformations on data once it has been entered and interpreted.

Given HTML's limited capabilities, and SGML's unwieldy complexity, a markup language called Extensible Markup Language ("XML") was developed to help overcome some of these limitations. XML is a free-form markup language with unspecified tags, which allows developers to develop their own tags and, in effect, create their own markup languages geared toward specialized tasks. In XML, the tags must be organized according to certain rules, but their meaning is flexible. Unlike HTML, XML describes structure and meaning, but not formatting. As such, different professions may develop their own specialized markup languages. For example, if a developer were to create a markup language that describes books in XML, the developer could create specifically meaningful tags for "title," "author," and "publisher," something not possible in HTML. Although XML's free-form structure permits the development of markup languages, such individualized markup languages are not compatible with each other because the use of the tags is not standardized in that different users use the tags for different purposes.

In today's business world, problems that typically accompany data manipulation often increase expense and difficulty. One such problem is that often data and the documentation that describes the data are not both in electronic form. This conventional approach to database and spreadsheet information often dictates that expensive database administrators are required to make transformations anytime data is being transferred from one system to another, expensive analysis of printed documentation is required in connection with any programming tasks, and the output rarely contains any indication of the original sources, structures, and manipulations that created that output. In PC-based systems, creating documentation for data is conventionally left up to the user: typically

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there is no machine-driven effort to collect the documentation from the user, format it, and save it with the data, thereby eliminating the ease of reuse of the data.

Another obstacle impeding efficiency in conventional databases and spreadsheets is that calculations occur at too low of a conceptual level. Calculations in typical numerical analysis programs operate on a single "cell" in a spreadsheet or a single "record" in a database. Analytic operations on single values at a time can be slow and prove costly when many different cells or record values are involved.

The lack of a standard markup language facilitating the browsing of numbers leaves no way to read, automatically manipulate and display differing types of numerical data read from multiple online sources on a single chart. Human intervention is required to recognize differing types of numerical data and conform the data so that it may be combined and displayed coherently on charts, graphs and reports. Conventionally, formatting of graphical charts displaying numerical data requires manual manipulation when series of different types of data are combined. Furthermore, no visual cue is given regarding the relationship between different numerical data sets.

The computer industry is further hindered by the fact that data and analytic routines are not standardized. While the computer industry has developed standards for file formats and function-level interfaces, it has not developed a general data format or content-analysis standards. This results in expensive translation of data between systems, industries, companies and users using different protocols.

Analysis routines in conventional spreadsheets typically take the form of "spreadsheet macros." Macros are essentially short programs which perform well-defined, generally limited, tasks. Millions of spreadsheet users have used spreadsheet macros to automate mechanical tasks involved in manipulating the numbers in their spreadsheets. But the great investment in spreadsheet

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macros has generally been underutilized because such macros are "write once, use once" types of software; they are rarely reused by others.

There are at least eight reasons that current programming languages and spreadsheet macros are not reusable or portable. One such problem is that spreadsheet data references usually are based on physical locations. Suppose a macro writer puts an interest rate assumption in cell "C4," and another person has a spreadsheet with the interest rate assumption in cell "BR47," a macro that expressly references the absolute cell location C4 will not be usable in the second spreadsheet.

Another related problem is that numbers in spreadsheets have no measurement or semantic designators describing their meaning. One spreadsheet may work with dollars in millions, while another works with dollars in thousands. The same macro cannot be used on both spreadsheets without human intervention to sort out all the inconsistencies and to modify one of the spreadsheets to match the other. As another example, a macro may be written to divide stock price by earnings to get a P/E ratio, but numbers in a spreadsheet have no meaning besides words in the cell to the left or above the numbers. Absent a standard location and vocabulary, those indicators are useless.

An additional problem with conventional spreadsheet macros is the lack of documentation. Because macros are typically only usable by their creators on the single spreadsheet they wrote them for, they tend to be totally undocumented: no common-language description, no help files, no data standards as to permissible values, source contact list, license information, etc.

Furthermore, there is no mass distribution mechanism for macros. Spreadsheet macros are not web-friendly: they are generally limited to one spreadsheet brand and one platform, do not support hyperlinks, and cannot be searched by search engines. Also, they are not supported by directory or classification system, and have no ready market.

Even further, users typically do not include unit testing, validity testing, error handling, and other end-user protections on the macros that they write. The result is that users may be wary of the output of macros that they might try to add to their spreadsheets.

Conventional spreadsheet macros have difficulty making graphical interfaces to the data. End users of a foreign macro do not want to have to understand every cell and location constraint, every limitation on valid values that can be input and so forth. The lack of related graphical components further fuels this problem.

Finally, conventional spreadsheet macros are either too small to be worth a marketing effort, or too difficult to use to find a large audience. This results in a lack of a business incentive to make them. It is therefore desirable to overcome the aforementioned problems and other related problems.

SUMMARY

Methods and systems in accordance with the present invention provide a markup language, referred to as Reusable Data Markup Language ("RDML"), that permits the browsing and manipulation of numbers and provide a related data viewer that acts as a combination Web browser and spreadsheet/analytic application that may automatically read numbers from multiple online sources and manipulate them without human intervention. Using the markup language, users may browse online sources using numerical-based queries, and the data viewer may automatically combine and manipulate multiple documents on a single display.

In accordance with an implementation consistent with the present invention, a method in a data processing system is provided that receives a first markup document and a second markup document, both the first markup document and the second markup document containing numerical values and tags reflecting characteristics of the numerical values. The method automatically

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combines the first markup document and the second markup document into a single data set and displays the single data set.

In accordance with another implementation, a method in a data processing system is provided that receives a document containing numerical values, and receives indications of characteristics of the numerical values, the characteristics including a unit and a magnitude. Further, it adds the received indications into the document as tags associated with the numerical values to create a markup document.

In accordance with yet another implementation, a method in a data processing system is provided that receives a markup document having a set of numerical values and tags indicating characteristics of the numerical values and determines a transformation for the set of numerical values to reflect new characteristics. The method then accesses a plurality of the tags of the set of numerical values, the plurality of the tags indicating magnitude, scale, modifier, units, measure, adjustment and aggregation. Furthermore, the method determines conversion factors for the magnitude, scale, modifier, units, measure, adjustment and aggregation tags to accomplish the transformation to the new characteristics and multiplies the set of numerical values by the determined conversion factors to transform the set of numerical values to reflect the new characteristics.

Methods and systems in accordance with the present invention provide a chart view that automatically manipulates and graphically displays numerical data. The manipulation and display is based on attributes associated with the numerical data describing characteristics of the numerical data. The chart view facilitates the simultaneous display of different series of numerical values of different types on a single chart and automatically displays appropriate descriptive textual components (*e.g.*, axis labels, axis titles, chart titles, number precision, legends, footnotes, axis

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scales, etc.) The chart view allows single click transformations of series of numerical values and provides automatic formatting of descriptive textual components in response.

In accordance with an implementation of the present invention, a method in a data processing system having a display showing a chart is provided that receives a series of numerical values with tags indicating characteristics of the numerical values and displays the numerical values on the chart. Further, the method automatically determines a title for the numerical values based at least one of the tags and displays the determined title on the chart.

In accordance with another implementation of the present invention, a method in a data processing system having a display showing a chart is provided that receives a first series of numerical values having tags indicating characteristics of the numerical values and displays the first series of numerical values on the chart, the first series of numerical values corresponding to a first axis on the chart. The method further receives a second series to be added to the chart, the second series of numerical values having tags indicating characteristics of the second series of numerical values and automatically generates a second axis on the chart. Finally, the method displays the second series of numerical values on the chart corresponding to the second axis while the first series is displayed on the chart.

In accordance with yet another implementation of the present invention, a method in a data processing system having a display showing a chart is provided that receives an instruction to display a series of numerical values on the chart on the display, the numerical values having tags indicating characteristics of the numerical values, and displays the series of numerical values on the chart in response to the received instruction. The method then automatically formats the chart based on at least one of the tags in response to the received instruction.

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In accordance with another implementation of the present invention, a data processing system is provided comprising a memory storing a charting application configured to manipulate and display numerical data, the memory having a selected series of numerical values having a tag indicating text information associated with the numerical values. The data processing system further comprises a display showing a chart having a legend that displays the text information associated with the selected series of numerical values. The legend word-wraps and scrolls the text information associated with the series of numerical data when the text information does not fit on the legend on the chart. The system further comprises a processor for running the charting application.

Methods and systems in accordance with the present invention provide a tree view that automatically manipulates and graphically displays numerical data. The tree view facilitates the simultaneous display of different series of numerical values of different types on a single display and automatically displays descriptive textual components. The tree view allows single click transformations of series of numerical values and provides automatic formatting of descriptive textual components in response. It further visually displays the relationship between series of numerical data for a user while supplying the user with hyperlinks associated with a given series of numerical data.

In accordance with an implementation of the present invention, a method in a data processing system is provided that receives a first and a second series of numerical values, and determines the relationship between the first and second series of numerical values. The method then displays an icon depicting the relationship between the first and second series of numerical values based on the determined relationship.

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In accordance with another implementation of the present invention, a method in a data processing system is provided that receives a series of numerical values and a link associated with the series of numerical values, the link having a list of associated hyperlinks. The method displays the series of numerical values and the associated link, and receives an instruction to activate the link. Further, the method displays the list of hyperlinks associated with the link in response to the received instruction.

In accordance with yet another implementation of the present invention, a method in a data processing system having a display showing a chart is provided that receives a series of numerical values having associated metadata documentation. The method further receives an instruction to select the series of numbers and displays the series of numerical values on the chart while displaying the metadata documentation associated with the series of numerical values.

In accordance with another implementation of the present invention, a data processing system is provided that comprises a memory having a program for manipulating numerical values, and storing a first series of numerical values and a second series of numerical values. The data processing system further comprises a display that displays the first and second series of numerical values and a relationship icon depicting the relationship between the first series of numerical values and the second series of numerical values. Finally, the data processing system further comprises a processor for running the program.

Methods and systems in accordance with the present invention provide a markup language, referred to as Reusable Macro Markup Language ("RMML"), for producing and utilizing macros which are reusable numerical analysis routines which can be written quickly, cheaply, and in a form usable by a broad range of data documents in RDML, the platform upon which the macros are run.

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RMML allows reusable spreadsheet type macros to be posted as web documents, to be searched by search engines, to be combined into more complex programs, and to be reused with many data documents. RMML brings to spreadsheet manipulation routines the economic and productivity benefits of (1) standardization, (2) interchangeable parts, (3) specialization and assembly-line techniques in creation, and (4) economies of scale in creation and deployment. In addition, RMML brings to spreadsheet macros and numerical programming, some of the benefits of the World Wide Web: (1) widespread accessibility on demand, (2) ability to search for documents (in this case, search for capabilities and behavior of routines instead of text or data), and (3) the ability to hyperlink documents (including the ability of macros to call each other remotely).

In accordance with an implementation of the present invention, a data processing system method is provided that receives a macro defined to perform an operation on a series of numerical values and receives a series of numerical values having tags indicating characteristics of the numerical values. The method then performs an operation defined by the macro on the series of numerical values using the indicated characteristics.

In accordance with another implementation of the present invention, a data processing system method is provided that receives a macro defining an operation on a set of numerical values and receives a vector or matrix of numerical values. The method then performs an operation defined by the macro using the vector or matrix as a variable in the operation.

In accordance with yet another implementation of the present invention, a data processing system is provided that includes a memory containing a numerical analysis program having a macro defined to perform an operation on a series of numerical values, and a series of numerical values having tags indicating characteristics of the numerical values. It further comprises a processor for running the program such that the program performs an operation defined by the macro on the series

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of numerical values using the indicated characteristics, and a display for displaying results of the operation.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 depicts a high level diagram of a Reusable Data Markup Language (RDML) data viewer, its inputs and outputs in accordance with methods and systems consistent with the present invention;

Figure 2 depicts a data processing system suitable for use with methods and systems consistent with the present invention;

Figure 3 depicts a diagram of the interrelation of various RDML software and hardware components shown in Figure 2;

Figure 4 depicts the use of an RDML formatter shown on Figures 2 and 3 to add markup tags to data;

Figure 5 depicts a screen shot of a database/document tab and management screen of the RDML formatter depicted in Figures 2 and 3;

Figure 6 depicts a flowchart of the steps performed when accessing the RDML document server depicted in Figures 2 and 3;

Figure 7A depicts internal architecture of the RDML data viewer depicted in Figures 2 and 3;

Figure 7B depicts a legend of the meaning of the symbols depicted in Figure 7A;

Figure 8 depicts a flowchart of the steps performed by the RDML data viewer in a method for downloading, processing and displaying an RDML document in accordance with methods and systems consistent with the present invention;

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Figure 9 illustrates elements of an RDML Document Type Definition in accordance with methods and systems consistent with the present invention;

Figure 10 depicts a flowchart of steps used to automatically manipulate an RDML document for display using line item attributes in accordance with methods and systems consistent with the present invention;

Figure 11 depicts a flowchart of the steps performed by the x-value transformer depicted in Figure 7A to store a new document in the primary data store;

Figures ~~12A-D~~ 12A-C depict X-Y plots and tree views in accordance with methods and systems consistent with the present invention;

Figure 13 depicts a primary data store of the RDML data viewer as shown in Figure 7A;

Figures 14A-F depict a chart view and tree view of the RDML data viewer as depicted in Figure 7A in accordance with methods and systems consistent with the present invention;

Figures 15A-C depict flowcharts of the steps performed by a graphical user interface, chart manager and chart data object for adding a line item to a chart view upon selection of the line item in a tree view in accordance with methods and systems consistent with the present invention;

Figure 16 depicts a spreadsheet view and a chart view of the data viewer in accordance with methods and systems consistent with the present invention; and

Figure 17 depicts a footnote view of the data viewer and a chart view in accordance with methods and systems consistent with the present invention;

Figure 18 illustrates elements of a Reusable Macro Markup Language (RMML) Document Type Definition in accordance with the present invention;

Figures 19A-C depict RMML document handling, an RMML graphical interface, and an RMML macro interpreter, respectively, in accordance with the present invention;

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Figures 20A-D illustrate screen shots of RMML macro panels in accordance with the present invention.

Figure 21 shows a flowchart illustrating steps used in a method for tagging information from spreadsheets in accordance with the present invention; and

Figures 22A-D depict exemplary screen shots of the tagging of spreadsheet information tagging to create a document in accordance with the present invention.

DETAILED DESCRIPTION

Because of the length of the detailed description, the following table of contents is provided.

I.   RDML Overview

Methods and systems consistent with the present invention provide a markup language, referred to as Reusable Data Markup Language ("RDML"), and a data viewer referred to as the RDML data viewer that is used to retrieve, manipulate and view documents in the RDML format. Generally, RDML permits the browsing and manipulation of numbers, and allows the viewer to act as a combination Web browser and spreadsheet/analytic application that may automatically read numbers from multiple online sources, understand their meaning, and manipulate them without human intervention. The RDML data viewer may use the Internet to obtain requested sets of numbers like HTML does for text. Using RDML, it is possible to form a search on the Internet that is a true query of numbers. One such request is the creation of a list of quarterly revenues from 1996 to 1997 pertaining to companies with sales growth greater than 10 percent and no taxable income. After receiving any requested sets of numerical data, the data viewer may automatically transform and combine them even if they are in different formats (*i.e.*, one in thousands of U.S. dollars and another in hundreds of French francs) on a single graphical display without requiring the user to make manual adjustments. The user may then make single-click adjustments to the display (*e.g.*, adjust for inflation, currencies, time periods, number precision, etc.) to see different aspects of the

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received information. RDML generally facilitates numerical browsing by associating numbers with attributes describing the meaning of the numbers.

Although the preferred embodiment of RDML is a markup language that is a fully compliant implementation of XML version 1.0, other implementations are possible. XML is described in detail in "XML Bible," Elliotte Rusty Harold, IDG Books Worldwide, 1999, which is incorporated herein by reference. The RDML data viewer is a data browser, data manipulator, data viewer (in the form of charts, spreadsheets, etc.) and general user interface for data documents. It greatly extends the capabilities provided by current spreadsheet and database management programs. In addition to extended capabilities, it lowers costs to businesses by permitting efficient reuse of data, functions, and report formats.

The RDML data viewer works with RDML-formatted data documents, which are files that may be stored locally, over a network, including the Internet, or in any combination of sources. The structure of the RDML data files allows the RDML data viewer to act as a combination browser and analytic program, such as a spreadsheet, which can automatically read, interpret and manipulate numbers in its integrated analytic program. The RDML data viewer also provides a "macro" development and management scheme which allows users to create custom routines for the manipulation, transformation and display of RDML-formatted data. Macros and related aspects are described in greater detail below.

Figure 1 depicts a high-level diagram of an RDML data viewer 100, its inputs and its outputs in accordance with methods and systems consistent with the present invention. Generally, data viewer 100 may be software that resides in the memory of a computer and accepts several types of input 102, 104 and 106, one of which is the RDML data document 102. The RDML data document 102 may be an ASCII text document formatted with RDML tags which are compliant with XML

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version 1.0. In one implementation consistent with the present invention, the tags of an RDML data

document 102 are advantageously structured to include documentation of the data and arrange data

in "line items," a collection of data values that is similar to a "record" or "row" in a relational

database (discussed below). In RDML, the line item is generally the basic unit of calculation, as

opposed to a single data value or cell as is typical with most conventional databases or spreadsheets.

RDML documents 102 contain sets of line items, such sets being analogous to "tables" in relational

databases, and documentation ("metadata") regarding the "line item sets." The RDML data

document 102 is read by the RDML data viewer 100 which stores the data internally, making it

available to a number of "views" 108, which present the data in different ways (charts, tables, etc.)

to a user (not shown). The views 108 are also referred to as programs or applications, as they can

be standalone software programs that receive their data from the RDML data viewer 100.

Analysis routines can be developed for data and placed in their own documents referred to

as Reusable Macro Markup Language ("RMML") Macro Documents 104 which are another input

to the data viewer 100 and are optional. These routines are reusable; they can be applied to virtually

any data document meeting the requirements set forth in the RMML document 104. For example,

an RMML document 104 may contain routines for converting RDML data to different currencies,

and any data denominated in currency can use the RMML currency conversion macro. The preferred

embodiment of RMML is also a fully compliant implementation of XML version 1.0, although other

embodiments are possible.

Similarly, Reusable Data Style Language ("RDSL") style sheets 106, another optional input

to the data viewer 100, can be applied to data documents to create specially-formatted output reports.

A RDSL is a fully compliant implementation of Extensible Style Language ("XSL") which is

described in detail in "XML Bible," Elliotte Rusty Harold, IDG Books Worldwide, 1999. These

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RDSL documents 106 are XSL-compliant style sheets which essentially act as report writers for RDML data documents 102. A typical use would be for data documents containing corporate financial statements. A single RDML data document 102 may contain a set of financial statements, but several different style sheets could be applied: one to show the data in annual columns, one to show it in a quarterly breakdown, one to show it in European format, and so forth. The RDML data viewer 100 automatically combines data documents 102 and style documents 106 to create reports.

RDML dramatically reduces the expense, time, and complexity of data manipulation by addressing the aforementioned problems of documentation of data, non-standardization of analytic routines, and low conceptual-level calculations of data. RDML addresses the problem of the separation of data and its documentation by encapsulating data and its documentation together in machine-readable form that can be used interactively. This differs from the approach of conventional relational databases in which data is kept in the computer and the documentation typically kept in a three-ring binder or other printed document. The separation of data and its documentation often ensures the need for high-priced database programmers every time the data must be accessed, used or transferred. Documentation in RDML also differs from that of spreadsheets, which tend to be personal in that the documentation is in the head and personal notes of the creator. In one implementation consistent with the present invention, RDML encapsulates machine-readable documentation with the data. The data and its documentation (metadata) are used together by the data viewer 100 to interpret what the numbers mean, how they are to be used, and how they are to be displayed. The small up-front investment in refining the raw data pays off in the lessened need for human labor to access and reuse the data in the future. RDML incorporates several important types of metadata: sources, contacts, license requirements, expirations and update information, data types, data classes, handling instructions (*e.g.*, what to do with nulls, missing

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values, etc.), units and measurements, and other information needed to produce the various presentations.

Use of RDML addresses the problem of non-standardization by defining standards for both data characteristics and analytic routine interfaces. Standardization leads to component reuse, automation of production, and more rapid development of product enhancements. While the computer industry has developed standards for file formats and function-level interfaces, it has not developed general data format or content-analysis standards. For example, once data is input to an application (whether spreadsheet, database or other), the user may want to manipulate the data and see basic statistics for the different line items (sums, averages, % changes, variances, and so forth), adjustments for standard changes (adjustments for inflation, conformance to industry indexes, % of stock market averages, etc.), or standard ratios (debt/equity, price/earnings, etc.) Because there is neither a standard general data format, nor a standard analytic routine interface, users currently create each of these manipulation routines from primitive coding. In spreadsheets, they must input formulas and conversion factors number by number, and in databases, they must write SQL queries or other programming routines to manipulate the data.

RDML provides both the data standard and the function interface for manipulation routines. This means that a routine can be written to apply to any line item that meets the conditions it imposes, and these routines are reusable. Currently, conventional spreadsheet macros (one analogue to RDML macros 104) are typically only used in the spreadsheet for which they were designed. The macros cannot typically be used in another spreadsheet where the numbers may be in different cells or in different units. RDML macros 104 are not dependent on cell position, or human intervention to conform data: they can be directly used by others for other data sets. If a user writes a routine

which, for instance, calculates and graphs a moving average of a time series, it can be used by any time series in any RDML document 102.

While solving documentation and standardization problems, use of RDML also addresses the problem of calculations occurring at too low a conceptual level by creating data "objects" at the line item and document levels, whereas conventional spreadsheets operate only at the cell (single number) level. For instance, calculations that may be common to a set of data, *i.e.*, a line item, may operate more efficiently because they can be applied once, as opposed to being applied individually to many different single numbers or cells. Furthermore, analytic routines (macros) can be combined, applied successively, or used by inheritance to create new routines. The line item orientation dramatically reduces the number of formulas that need to be written (one per line instead of one per number). It also increases the readability of program code, because the user can review the logic at a higher level of abstraction.

In addition to solving these problems, RDML reduces costs, time, and complexity for operations on the side of the data consumer, the data publisher and the program developer. To utilize and manipulate data, typically, a user retrieving data over the Internet views a text version of the data, prints the data (in HTML, ASCII or PDF format), and then types the numbers into a spreadsheet or database program. The RDML data viewer 100 automates this process by making the data immediately available to other programs as interpretable data: the user does not need to retype it. Upon locating numerical sets of data from multiple online sources, the data viewer 100 automatically normalizes, collates, transforms, and formats the data.

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Some conventional systems make data available for download as data in either a common spreadsheet format (such as Lotus or Excel), or in a comma-delimited or other common text format. This at least saves the user the necessity of retyping certain numbers, but creates a new problem of manipulating the data to get it into a more usable form (*e.g.*, normalized, standardized).

As such, RDML (and its related data viewer) "normalizes" data for added efficiency. Normalizing data is primarily a matter of conforming key fields, including matching dissimilar fields, resolving conflicts in categories, resolving the handling of duplicates, etc. In order to be useful, data should be conformed to a format that can be read by an application (such as a graphing routine, or calculation routine). For example, the application may expect data aggregated by year, whereas the incoming data may be aggregated by month. The user must manipulate the input to make it conform to the form expected by the application. RDML performs these tasks automatically, using embedded documentation regarding the input data to make any necessary conforming changes to the input. In the time series example above, RDML would aggregate the monthly data into yearly data, using embedded documentation to determine whether the aggregation should be a sum, an average, etc.

Additionally, comparing data is a primary use of spreadsheets. Examples include comparing the financial statements of different companies, comparing the statistics from different states, and comparing different economic time series. When these data categories come from different sources, they are usually not directly compatible: the user must lay out the data items on a spreadsheet or similar program in a manner similar to assembling a jigsaw puzzle. As with normalization, RDML uses documentation embedded in the various input files to determine how different line items and values should be collated.

Once data is normalized and collated, the RDML data viewer 100 transforms the data automatically. Conventionally, users typically make a series of adjustments to the numbers in the data set. The input data may be, for example, denominated in "millions of dollars," while output is desired in "billions of yen." RDML provides a set of indicators for the most common transformations, permitting automatic machine translation of the numbers from their input state to the state desired by the user.

A conventional method of formatting data for output on a PC is to cut-and-paste the data to a formatting application (word processor, graph generator, spreadsheet or other), and then mark up the data to change the format to the desired output. This is time consuming and not repeatable - if the data is input again with a slight change, the whole formatting process must be repeated. The RDML data viewer 100 avoids the cut-and-paste approach by saving the original data in a central storage object (described below) in the data viewer 100 and applying separate formatting instructions to create different views 108. The user can switch among views 108 with a single mouse click and the program handles all format and numerical conversions for the user.

In some of the more advanced database management systems, a "report-writer" approach is used. Like the RDML data viewer 100, this approach applies a template to a centrally stored dataset. The problem is that the data sets are not standardized; a report writer template written for one dataset cannot typically be used for another. RDML, however, provides for reuse of style sheets in the same manner it provides reuse of data and macros.

In addition to the above-mentioned problems, RDML solves problems relating to "live" connections of numerical data involving multiple sources that typically require programming expertise. Whether the aim is to draw numbers from multiple sources over a wide area network (*e.g.*, the Internet) or over a corporate LAN, incorporating remote data is complicated by many issues:

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connection protocols, programming language dependencies, data type inconsistencies, error handling, data transformations, etc. Programmers can surmount these problems at a certain expense, but not in a flexible way that permits reuse, and users again rely on custom programming. In response to the cost, time requirements, and inflexibility of the custom programming approaches, casual users resort to labor-based solutions. In a typical case, a financial spreadsheet is created with, for example, ten assumptions related to interest rates. Every time the spreadsheet is used, the creator looks the numbers up in the newspaper and types the results into the appropriate cells, and any necessary transformations are made by hand. RDML removes the need for custom programming and manual input by providing a way to include numbers from remote RDML documents 102 in normal formulas. The RDML data viewer 100 automatically looks to the specified address on the web to retrieve the numbers, makes any necessary transformations (for example, from yen to current dollars) and places the result in the correct formula. In this way, an RDML document 102 or macro 104 can draw on multiple documents at once. Because its documentation is machine-readable, it can be read by multiple systems, none of which need be aware of the physical layout or data types of the others.

Lastly, the use of RDML enables client-side processing using Internet-supplied data thereby realizing a number of advantages. After data is retrieved, analytic routines (macros) are performed on the client side, as opposed to the conventional approach in web-based data analysis, in which the analytic routines are performed on the server side. Whereas sensitive data and calculations can remain local in the RDML data viewer 100, the user need not fear that sensitive data is being misused by a company running a server, or that data is being misappropriated over the web. Additionally, it increases speed because updates to graphs, reports and spreadsheets can be near instantaneous because there is no need for the round-trip Internet transmission, or the loading and

execution of a routine on a busy server. Users may also prefer local copies of data that they control and to which they have immediate access.

I.A.   RMML Overview

Methods and systems in accordance with the present invention provide macros and RMML, which allow numerical analysis routines to be written quickly, cheaply, and in a form that is usable by a broad range of data documents in RDML. RMML macros provide reusable user-defined calculations for use in conjunction with RDML that automatically manipulate and display numerical data contained in RDML markup documents. RMML also allows spreadsheet type macros to be posted as web documents, to be searched by search engines, to be combined into more complex programs, and to be reused with many data documents.

For example, a user viewing a chart having a series of data in an RDML data viewer may apply, with one mouse click, a macro to that chart and see an instantaneous (or nearly instantaneous) transformation of the charted series of data. Not only is the data changed, but the titles, legends, footnotes, axis scales and other properties are also changed. As a further example, a user may be looking at a time series trend of automobile sales in millions of dollars. By clicking on a macro entitled "% change", the chart recalculates itself according the percentage change from period to period. The y-axis title changes from "$ millions" to "% annual change", etc. Table manipulation macros may perform such functions as combining two tables into one, sorting a table, searching for certain line items and other database-like tasks. Other transformation macros may perform other functions such as word translation, data format translation, and report-writing.

RMML macros are highly reusable because they are made available in a cross-platform, text-based, searchable, XML-compliant format. Because the macros are portable, they have much greater

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marketability. RMML also builds into its language tags for many types of documentation so that a macro may be reused and understood by the original macro writer as well as other users.

Conventional spreadsheet programs typically base references on physical locations, a problem RMML avoids by referring to numbers by their position in a chart or formula, or by tag names, thus allowing the numbers themselves to be anywhere in a document. RMML macros also use the measurement and the meaning of numbers because RDML tags contain standard vocabularies to identify the measure, magnitude, scale, unit, precision, class, etc. of the numbers, and the RMML interpreter handles differences for the user.

Additionally, RMML builds error handling into its interpreter and makes available automated testing tools to help increase the quality of the code. Users may also graphically change parameters for the macros using check boxes, slider bars, input boxes, and selection lists, and RMML makes it easy for the author of a macro to add those visual components.

Below is a detailed description of RDML, the platform upon which RMML macros run, followed by a detailed description of RMML.

II.   System Hardware Components

Figure 2 depicts a data processing system 200 that is suitable for use with methods and systems consistent with the present invention. Data processing system 200 comprises a computer 201 and a server computer 203 interconnected via a network 214, such as the Internet, where the server computer 203 may provide RDML documents 102 to computer 201. Computer 201 includes a central processing unit (CPU) 202, a main memory 204, a secondary storage device 206, a display 210 and an input device 212.

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The main memory 204 may include the RDML data viewer 100 which may be a personal computer-based program, although one skilled in the art will appreciated that the data viewer may reside elsewhere. In addition to the data viewer 100 which includes views 108 for display, the main memory 204 includes related software components that may be used to input RDML documents 102, macro documents 104, and style sheets 106 to the data viewer. It may include the RDML document formatter 216 which a user uses to apply tags to numerical data, and/or an RDML document server 218 which provides RDML documents 102 to the data viewer 100. The main memory 204 may also comprise an RDML document editor 220 used to edit the files of RDML documents 102 and RDSL style sheet editor 222 for creating style sheets 106. The RDML/XML search engine 224, which searches RDML documents in response to queries, may also reside in memory 204 along with any additional plug-in applications 225. Each of these components and their interactions are described below in greater detail.

The memory 204 may include various software components of the data viewer 100 and related components which may be programmed in object-oriented languages such as the Java™ programming language. The Java™ programming language is described in further detail in "The Java Programming Language," 2nd Ed., Ken Arnold, James Gosling, Addison-Wesley, 1998, which is incorporated herein by reference. For further description of the Java Language, reference should be made to "The Java Language Specification," James Gosling, Bill Joy, Guy Steele, Addison-Wesley, 1996 which is also incorporated herein by reference. However, one skilled in the art will appreciate that other programming languages may be used. The RDML data viewer 100 may download RDML data documents 102 from many different sources such as a local storage disk or from a server over network 214.

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The secondary storage 206 may include the RDML image database 226 which stores documentation tag data regarding RDML document 102, and the RMML macro software development kit 228 for developing macros. The secondary storage may also store existing databases 230 for holding original data from which RDML documents 102 are created. These components may also be stored in main memory or on another remote computer and are also described in greater detail below.

Figure 2 also depicts a web server 232 on computer 203 that interacts with the computer 201 via network 214. In one system consistent with the present invention, the web server 232 sends RDML documents 102 over the network 214 and may be connected to a disk array 234 which holds RDML data documents 102. This disk array 234 may receive data documents 102 from the database server 236 which may receive data from database storage 238. Protocols used in the transmission of information between the server 232 and the computer 201 include, but are not limited to, HTTP and FTP.

One skilled in the art will appreciate that aspects of methods and systems consistent with the present invention may be stored on or read from other computer readable media besides memory like secondary devices, such as hard disks, floppy disks, and CD ROM, or a carrier wave from a network (such as the Internet). Additionally, one skilled in the art will also appreciate that the data processing system may contain additional or different components.

III.   System Overview

Figure 3 illustrates an RDML system consistent with the present invention and the relationships between the various components. These various components may reside in a memory 204 on a computer such as computer 201. Existing databases 230 store data that can be used to create RDML documents 102, and generally the data is extracted into either a "flat file" format (*e.g.*,

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comma-delimited, or fixed-width fields) or a form readable by Java Database Connectivity ("JDBC"). RDML documents 102 may be structured to model flat files so that a single RDML document 102 encapsulates a set of rows and columns. Examples of databases include SQL server by Microsoft and Oracle 8 server.

The RDML document formatter 216 is a graphical tool used by the user to reduce the amount of manual labor required to combine data and its documentation. The contents of an existing database 230 may not be enough to create an RDML document 102, because in one system consistent with the present invention, RDML uses documentation of the contents. Such documentation often may be found in a printed volume and hence must be manually input and manually combined with the data. The RDML formatter 216 allows a user (or data publisher) to map data fields from a relational database, flat file, spreadsheet file or text document to RDML data documents 102. It also allows a data publisher to add documentation to the data file (RDML data document 102) itself.

The RDML image database 226 is a relatively small database maintained by the RDML formatter 216 to hold information necessary to recreate an RDML document 102 should the underlying data change. It eliminates the need for the user to manually input the documentation again because the RDML image database 226 stores it.

An RDML document server 218 functions when RDML documents 102 are being created dynamically. The server 218 queries the existing database 230 for the desired line items, queries the image database 226 for documentation items and instructions for constructing the RDML document 102, and finally creates a valid, well-formed RDML document.

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The RDML document editor 220 allows users to edit RDML documents 102 which typically are ASCII text files (which may contain UNICODE data). As such, they may be edited by any text-oriented editor or word processor. This is, however, a time-consuming and error-prone approach to marking up an RDML (or any XML) file. A specialized RDML document editor 220 allows a user to quickly make changes, check for errors, and view information on the data and metadata. The document editor 220 may operate over the Internet: users possessing the correct permissions to modify a file can make updates or changes to the underlying RDML data document 102 by issuing commands from the RDML data viewer 100.

An RDML document 102 may be an ASCII / UNICODE text file used to transmit data and metadata to the RDML Data Viewer 100. It can be stored locally, or can be transmitted over network 214 such as a corporate LAN or the Internet (using HTTP, FTP, email, etc.). To be a valid RDML document 102, the file conforms to the RDML Document Type Definition ("DTD") which is described in detail below. The DTD describes required and optional data elements, their ordering, syntax, and the controlled vocabulary for use in certain data elements. DTDs in general are also described in "XML: Extensible Markup Language," Elliotte Rusty Harold, IDG Books Worldwide, 1998.

The RDML data viewer 100 functions as a combination RDML and HTML browser, object-oriented spreadsheet, report-writer, and application platform. The browser functions read HTML or RDML documents 102; HTML documents are rendered immediately in a browser window, while RDML documents are first cached in an internal data object (conforming to the DOM - "Document Object Model" - standard discussed below) and then rendered in views 108 selected by the user. The default view is typically a chart and a tree listing, although several other default views are available. The RDML data viewer 100 uses the cached RDML data objects to create views 108, employing a

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variety of transformation and manipulation objects to get the data to match either the form expected by the view, or to match the form of other data objects with which it is being combined.

The RDML Macro Software Development Kit ("SDK") 228 allows a function designer to create functions that can be applied generally to any data document that contains the types of data necessary for the function. The SDK is a collection of macro-writing tools, including an IDE ("Integrated Development Environment"), an editor, an object browser, and a validation tester.

RDML generally separates the form of data from general calculation routines that operate on that data. By separating format from functions, both the data and the functions can be made reusable. In conventional spreadsheets, for example, numbers can be placed in arbitrary cells selected by the creator. If a second developer decides to create an analytic function, that developer must know what row and column each number is in. That routine will then not work with another spreadsheet unless the exact same row and column structure is followed.

Applying functions generally creates one form of software reuse: users need not tell the function where their data is (the approach of "wizards" in traditional spreadsheets). A second form of reuse is that gained by inheritance: function developers can choose the existing function that most closely matches what they are trying to do, and simply make the necessary edits to create the desired new function. The SDK 228 permits a third type of reuse in the ability to attach to remote data documents and remote macros on the web to take advantage of these extra resources and to provide real-time updating of data and functions.

RMML macro documents 104 are text documents that contain routines just as RDML data is contained in a text document. This document contains the heart of the calculation: the specification of operations on numbers, such as a formula, an ordered list of other macros to perform, or list of instructions.

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RDSL style sheets 106 act as templates for output reports. The RDML data object (discussed below) in the RDML data viewer 100 can be placed into a report using one or more different style sheets. RDSL, a fully compliant implementation of XSL, allows a data publisher to provide multiple report formats for its data. They are reusable in that a style sheet written for one RDML data document 102 can be used for another if the specified restrictions are met. For example, a style sheet for a time-series data set can be used for another time series data set. The style sheet editor 222 is basically a report-writer because the user can graphically compose a report from a sample document, specify the types of RDML data documents 102 that this report can apply to, automatically create a style sheet 106 when the result is acceptable, and then use the resulting style sheet to create a report from any qualifying RDML data document 102.

The RDML search engine 224 searches RDML documents 102 similarly to the way HTML search engines search HTML documents. HTML search engines pick up key words, but can only tell a user that a particular document contains the requested word(s). They cannot, however, provide query services. For example, a user may wish to search the Internet for "all financial statements of computer services companies which have revenue growth > 10%," and the RDML search engine 224 provides this capacity. The RDML Search Engine 224, however, does not index only keywords like the HTML approach, but also the element names and key attributes. This permits searching for numerical values, or posing complex queries regarding the content and/or context of the data. The RDML search engine 224 thus acts as a generalized query processor for RDML data document 102, RMML macros 104, and RDSL stylesheets 106. Some aspects of the search engine 224 are described in greater detail in co-pending U.S. Provisional Patent Application Serial No. 60/183,152, filed on February 17, 2000.

As mentioned earlier, each view 108 in the RDML data viewer 100 is essentially a separate application denoted on Figure 3 as various RDML Plug-in applications 225. The chart view, for example, is a separate charting application that has been "plugged in" to the RDML data viewer's basic infrastructure of Internet browser, XML parser/processor, RDML transformation and manipulation objects, internal object management architecture, interfaces to other applications, and graphical user interface (described below). For example, a mapping component can be plugged into the panel in which the chart is seen. Subsequently, when a user clicks on a line item, the colors of the different countries or states will change to show a thematic map, or different dots will appear, etc. The RDML data viewer 100 may be designed in modular fashion to permit changing or adding component applications to leverage off the common components.

IV.   System Details

With further reference to Figure 3, several of the components (excluding RMML and RDSL components) are described in greater detail below. The existing databases 230 may be relational databases, object-oriented databases, or any other type of database. RDML tags in RDML documents 102 add documentation to the types of pure data found in relational databases. Since the data that already exists in relational databases can be used to create RDML documents 102, the data may be made available to either the RDML formatter 216 or the RDML server 218 and be in a flat file format (rows and columns).

For connections, both the RDML formatter 216 and the RDML server 218 read Open Database Connectivity ("ODBC") and JDBC database sources. The flat file aspect is based on the idea that RDML documents 102 effectively model a basic row and column matrix. To produce an RDML document 102, therefore, the original data source may provide a single table, or create one with a query. Relational linking is possible with RDML documents 102, through a server to a

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relational database, or indirectly through hyperlinks to other RDML documents or hyperlinks to

RDML document servers 218. This is similar to many database applications: data is collected from

various underlying tables to create a single table or screen to show the user. The data table to be

used as a source for an RDML document 102 may be oriented to have the fields be one of three basic

exemplary RDML data table types: time series, category, or X-Y plot described below.

With reference to the RDML formatter 216, once there is a flat file data table of data points

in the existing database 230, an RDML document 102 can be created by adding tags that contain

documentation regarding the data table. The information contained in these tags are maintained in

a separate data table from the original data points. The RDML formatter 216 is an application that

assists a user in selecting the proper documentation tags, saves the tags in a separate database (the

RDML image database 226), and creates the actual RDML document 102.

Figure 4 is a screen shot that shows how the RDML formatter 216 assists the user in

"tagging" data, *i.e.*, adding metadata that applies to the line items. In one implementation consistent

with the present invention, for each line item of data, there are at least 18 different potential

attributes (described in detail below) applied using the radio buttons 402. When a user selects a

radio button 402, the formatter 216 supplies a description 404 of the selected attribute. Upon

selection of a radio button 402 from the left-most box, the user is presented with a list of the possible

values in the middle option box 406. The user may either double click one of the options to add it

as an attribute of the selected line item, or type in a new value in the text box at the top of the middle

option box 406. The formatter 216 automatically updates the line item table 408 which, in this

instance, displays the line items' ID, title, format and Y-axis title (attributes which are discussed

below).

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Figure 5 shows a screen shot of the database tab and document management screen accessed by a tab 502 on the RDML formatter 216. This screen manages RDML documents 102 that can be created from a relational database 230. The user can specify a list 504 of data tables in a relational database and have the RDML formatter 216 create RDML documents 102 for each using default properties. From that point, the RDML formatter 216 is used to modify the defaults. The user may use the RDML formatter 216 to select tags from scratch (as shown in Figure 4) for a document 102, but this puts an unnecessary burden on the user to remember which properties are appropriate.

The formatter 216 references a database 230 (shown on Figure 3) specified by the documentation URL 506. The database 230 holds a list of data tables, and the formatter 216 inserts a table 504 that holds stores information regarding the data tables into the database 230 for later reference. This table 504 is referenced by the documentation table name 508. Similarly, the formatter 216 stores a list of line item attributes 408 for the database 230 in the database which are referenced by the li_data URL 510.

The RDML image database 226 contains documentation that relates to a separate set of data records in the existing database 230. The RDML formatter 216 creates and maintains the RDML image database 226. The RDML image database 226 standardizes the process of documenting data documents, and provides a controlled vocabulary for the metadata. The RDML image database 226 also performs document management and tracking, update and version control, error checking, input validation, and the creation of status reports.

The image database 226 contains a list of RDML documents 102 that it can produce. The original data may be in flat files, relational tables, or a table that results from a query on a relational database. The image database 226 contains document metadata that references the original document table or flat file in the original database 230. Documentation information contained in the

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image database 226 is added to this data. It further includes line item set metadata for the set of line items, documentation that is typically of a more technical nature and applies to the line item set as a whole. Examples of such information is table types, field definitions ("x values") and hyperlinks that apply to the line item set as a whole. (A line item set may be generally analogous to a table; it is a collection of line items, which are analogous to records in the database world.)

The image database 226 also includes line item metadata that references the individual records of the original document table or flat file in the original database 230. There may be a pointer from each line item's metadata record to the corresponding record in the original data table. Each line item includes the fields of the original record, plus, in one implementation consistent with the present invention, at least 18 additional fields that contain "attribute" documentation: object types, unit designators, hyperlinks, footnotes, and so forth. A listing of exemplary attributes of a line item is described below.

Figure 6 illustrates steps used by the data viewer 100 when accessing the RDML document server 218. The RDML server 218 occupies a middle position between a database server 230 and a user's data viewer 100 or web browser. Although one architecture for RDML is to have RDML documents 102 served from disk-based text files, users may sometimes wish to create RDML documents dynamically in response to queries. The tasks of executing the query and delivering a result in RDML document form are performed by the RDML server 218. To do so, a user submits the data request to the server 218 via the data viewer 100 (step 602). The RDML Server 218 is a server application called by a web server (not shown) which fields the user's request. The RDML server 218 queries the database 230 using known techniques (step 604), and the database returns the results to the RDML server (step 606). The server 218 then creates an RDML document 102 (step

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608) and returns the RDML document to the web server which transmits the results to the viewer 100 (step 610).

The RDML document editor 220 permits users to edit the actual elements and attributes of an RDML, RMML, or RDSL document (102, 104 and 106). The documents may be presented in a tree view for selection and direct editing. A text-based window may display the contents of the selected document for editing. Besides basic editing, it performs a number of utility functions: (1) search and replace, (2) validation, (3) well-formedness testing, (4) hyperlink validation, (5) cut-and-paste of elements, and (6) replacement of elements with defaults.

IV.A. Internal Data Viewer Architecture

Figure 7A depicts a schematic diagram of the internal architecture and program flow of the RDML data viewer 100, and Figure 7B depicts the meaning of each symbol type in Figure 7A. For each numbered component, a description is given which provides further details on that component's input and output, internal decision process, storage format, object architecture, and program flow.

Before fully describing Figure 7A, however, it is important to understand an overview of the steps involved, which is depicted in Figure 8 and discussed in conjunction with Figure 7A. Figure 8 is a flowchart describing steps in a method for downloading, processing and displaying a RDML document 102 in accordance with the present invention. Figure 8 describes an overview of the steps involved, and each related component is subsequently described in further detail with relation to Figure 7A. First, the RDML reader 704 finds and receives an RDML document 102 in text form formatted according to the structure of the RDML DTD 702 (step 802). The RDML Reader 704 may be a class that runs in a separate thread and has methods for checking the RDML document 102 type (Time Series, Category, XY) and handling errors. The RDML Reader 704 then calls the XML parser 706 which parses the text (step 804). The RDML processor 708 receives the parsed text from the

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XML parser 706, error checks it and creates an object based on the data and structure in the received text. (step 806).

The RDML processor 708 transfers the resulting object to the X-value transformer 710 which performs type-checking and manipulates the fields (x-values) of the data so that it may be displayed and stored coherently and simultaneously with other active objects of the same type (step 808). The X-value transformer 710 makes sure that the data values to be graphed against the x-axis are in common units. For example, if document A is an annual time series and document B is a quarterly time series, the X-value transformer 710 in this case would use the "li_aggregation" attributes of the line items in document B to aggregate four quarters at a time into annual data. As a second example, if document A is a category document with x-values equal to stock ticker symbols (F, IBM, XON, etc.), and document B contains x-values denominated in company names (Ford, International Business Machines, Exxon, etc.), then the x-value transformer 710 will use the "li_class" attributes in the line items of each document to match them up. The X-value transformer 710 sends the object to the primary data store 712 ("PDS") for storage with other active objects of the same type (step 810). The views (716, 720, 724 and 725) then display and present information using data from the active objects in the PDS 712 (step 812).

Details of the steps and components involved are now discussed in conjunction with Figure 7A. Described first is an RDML document 102 defined by the RDML Document Type Definition. Description of the various software components of the data viewer 102 follows.

The data and metadata of an RDML document 102 may be formatted inside tags which denote the beginning and ending points of each data element. The element tags may also include attributes to be applied to the data elements, a description of what sub-elements may be found within an element, and vocabulary choices for different attribute values.

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A full sample RDML data document 102 is shown at Appendix B. Shown below is a fragment of an RDML document 102 that supplies the data for one line item in the document. Note that element tags are designated within angle brackets ("<" and ">"), and that attributes are listed that can be applied to the data.

```
<line_item
        li_ID = "1"
        li_legend = "Department of Energy"
        li_title = "Outlays - Dept. of Energy"
        li_cat = ""
        y_axis_title = "$ in Thousands"
        level = "1"
        format = "#,##0;(#,##0)"
        relation = "Parent"
        li_notes = ""
        li_desc = ""
        li_prec = "-3"
        li_unit = "$"
        li_mag = "3"
        li_mod = "in"
        li_measure = ""
        li_scale = ""
        li_adjustment = ""
        li_aggregation = "">
    <data_y>
2754567, 2699717, 2726457, 2578954, 2343297, 2252927, 2474440, 2392904, 2392536, 2200326,
2298612, 2303643, 2233062, 3229510, 3840973, 5049308, 6412986, 7441295, 7261157, 11756883,
11657178, 10590471, 10991261, 10587245, 11026443, 10692802, 11166039, 11386923, 12083898,
12478820, 15522633, 16941547, 17839298, 17617000, 16203000, 14467000, 14366000, 15240000,
15190000, 14938000, 14412000, 14556000
    </data_y>
</line_item>
```

In this example, the 18 lines with an "=" are "attributes" of the <line_item> element, and essentially, the attributes provide machine-readable documentation for the data values specified in the sub-element <y-values>. This particular line item describes "Department of Energy outlays in thousands of dollars," but the specifics of the set of attributes are described below in conjunction with the

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RDML Document Type Definition 702 which describes the structure and elements of a RDML document 102.

RDML documents 102 may be produced by an ordinary text editor, by the RDML data formatter 216, or by the RDML data server 226. (XML browsers other than the RDML data viewer 100 are able to do little more than echo the text input to the user's screen since they cannot interpret the RDML tags.)

IV.A.1.   Document Type Definition

Figure 9 graphically shows elements of the RDML Document Type Definition 702. In one implementation consistent with the present invention, RDML documents 102 conform to the rules provided by the DTD 702 (also shown on Figure 7). In accordance with one implementation of the present invention, an RDML DTD 702 is shown at Appendix A. Attributes and elements of the DTD 702 may also be seen in the full sample RDML document 102 in Appendix B. Those two Appendices A and B are useful for examining specific attributes and elements of the DTD 702.

The DTD 702 data structure is optimized to provide information that is needed in order in which it is required, to reduce the learning required on the part of new users to RDML formatting, and to avoid unnecessary duplication. The first line of the DTD 702 in Appendix A starts with "<?xml encoding = "UTF-8"?>" because all XML documents start with a line that tells the client application, in this case the data viewer 100, what type of document it is and the version of XML.

With further reference to Figure 9, the DTD 702 used to define RDML data documents 102 is structured in a hierarchical tree structure of elements. Each element may include a list of attributes (displayed in Appendix A, but not shown on figure 9) and/or an association with one or more sub-elements. The DTD 702 specifies which attributes are required and which are optional for any embodiment of the DTD. Depending on design constraints, the required and optional elements may

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vary. At the highest level, the DTD 702 has two elements descending from a root element, <rdmldoc> 902. The first element, <rdmldoc_header> 904, contains the metadata for the document as a whole and the second, <line_item_set> 906, contains the set of the line items.

In one implementation consistent with the present invention, the <rdmldoc_header> element 904 contains several attributes itself, and the optional sub-elements <data_source> 908, <formatting_source> 910, <rdml_source> 912, <license_terms> 914, and <link_set> 916, each describing some aspect of the source of the data. In this implementation, the <rdmldoc_header> 904 element may include ten attributes describing document information as a whole. These attributes are "rdml_doc_ID," "doc_title," "timestamp," "version," "expiration," "freq_of_update," "num_line items," "num_datapoints," "x_indexes," and "first_li_with data."

The rdml_doc_ID attribute is the unique identification of the RDML document 102 and is typically a file name or URL. The doc_title is a plain language description of the document that will appear at the top of reports and views for the document for use by a user. The timestamp is typically generated by the application that created the document and may denote the time that the document was created or the time the data was accessed for creation of the document. The version describes which variant of the RDML document 102 it is and may be named by the creator. The expiration describes the date and time that the data in the document 102 may no longer be relied upon, typically when the next update is expected to be released. Freq_of_update describes how frequently the document is updated and may be used by applications that want to schedule updates to the data. The next two attributes, num_line items and num_datapoints, are integers describing the total number of line items and number of data values respectively. These attributes are optional and may be used as a "checksum" by a receiving application to ensure that the data has not been accidently changed or corrupted.

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The next field, x_indexes, denotes three data fields to use as representative data fields in the tree view 720 (described in detail below). X_indexes is a comma-delimited string of three integers, each of which is an index to a selected field. For efficiency, the indexes may denote the end of the list of fields so that, for example, "-3,-2,-1" shows the last three fields in the tree view 720. Indexes based on the end are useful because most people reading a time series want to see the most recent data. Along, similar lines, the first_li_withdata attribute is an integer index that points out which line item is to be displayed on the chart when the document 102 is loaded into the data viewer 100.

The <data_source> 908, <formatting_source> 910, <rdml_source> 912, <license_terms> 914 elements, sub-elements of <rdmldoc_header> element 904, may optionally contain one or more of sub-elements of <contact_info> 918 which contains contact information. This element can be used by the target application to create an email letter, update a contact list, or populate a database of information sources. The same element structure is used for all contact information sub-elements 918 so that the application that created the document 102 only has to create one structure.

In one implementation, this contact information is represented by eleven attributes: "role," "name," "company," "address," "city," "state," "zip," "country," "email," "form," and "comments." Role is the role played by the party in the creation of the document, *i.e.*, "data source" for the <data_ source> 908, "formatting source" for the <formatting_source> element 910, etc. "Form" determines whether the hyperlink is a "simple" link or "extended" link. Under the Xlink specification, a language designed to implement links between XML documents and resources, hyperlinks may be simple or extended. Xlink is described in "XML IE5 Programmer's Reference," Alex Homer, Wrox Press, 1999, which is incorporated herein by reference. Simple links are traditional "jump" hyperlinks in which clicking on that link will close the current page and open the target page.

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Extended links are application-specific and can identify different types of resources, such as multimedia files and other non-document resources.

The contact information in the <data_source> 908 describes who or what collected the data to create the original database, while the same attributes in <formatting_source> 910 describe who or what added the RDML tags to the original data to create the RDML document 102. The same information in <rdml_source> 912 describes the person or company that created this particular document and made it available to the outside world.

In addition to the <contact_info> 918 sub-element in <license_terms> 914 which describes the contact information regarding the licensing of the information, the <license_terms> element has its own set of licensing-related attributes. These attributes include: "copyright_cite," "holder," "license_type," "warranty," "disclaimer," "terms," "date," "email," "state," and "country." The copyright_cite is a string that may appear on reports regarding ownership of the particular data set in the RDML document 102. A typical example might be "Copyright 2000, e-Numerate Solutions, Inc. All Rights Reserved." The holder attribute lists the full legal name of the owner of the copyright. License_type lists the type of license, such as "none - proprietary and confidential," "public domain," "pay per use," etc., and terms lists the payment terms, if any, such as "$1 per download." The information in these attributes may be used by routines associated with the RDML processor 708 to automatically track and implement licenses and payments.

Another sub-element of the <license_terms> element 914 is the < linkset> element 916 which, in one implementation, has two attributes and its own sub-element <link> 922. A <linkset> 916 is a collection of hyperlinks. These hyperlinks may be either HTML files or RDML files. The individual <link> elements 922 hold the actual links and attributes. The <linkset> element's two attributes are form, described above, and href, a standard string for URL or web address, and they

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designate the HTML or RDML page where a page of hyperlinks may be found. This is useful when the creator does not want to list all of the hyperlinks in the document 102 itself.

The <link> element 922 describes hyperlinks to other documents and contains, in one implementation, nine attributes: "form," "href," "behavior," "content-role," "content-title," "role," "title," "show," and "actuate." These link related attributes are described in the XML IE5 Programmer's Reference, pp 95-97. The title is a string that appears in the application as a hyperlink title. For example, in an HTML browser, it will appear as highlighted, underlined text. Actuate specifies when the link should be traversed – when the resource that the link points to is retrieved or accessed, and show specifies how the target resource will be displayed. Behavior specifies instructions that control the behavior of the link in the way that the content is displayed or the link is traversed, and role describes what role the target resource plays in the link. Content-role and content-title are alternative places for the title and role, but are not specified in Xlink standards.

Finally, <rdmldoc_header> 904 may have its own <linkset> 916 having <link> elements 922. RDML allows users to attach hyperlinks to different elements such as an entire document, a particular line item, or other element in the RDML document 102. The reason for the multiple places that hyperlinks may be placed is so that the user can view in one place all the links that apply only to the element under consideration. For example, an RDML document 102 may contain the data for a company's financial statement. The creator of the document may decide that certain links apply to the whole company (links to product lines, competitors, etc.) and that others only apply to single line items (such as a link attached to the "Equipment Leasing" line item that points to the footnote for that line item or an accounting regulation applicable to that account). Even though they are attached to different elements, the links may have the same form. Another reason for multiple linkset elements is to facilitate keeping links together with their logical owners.

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Exhibit 1002_0486

Continuing to refer to Figure 9, on the line item side of the <rdmldoc> 902, the <line_item_set> 906 which contains information on the collection of line items in the RDML document 102 also contains several attributes and several elements. These attributes include: "line_item_set_type," "time_period," "character_set," "missing_values," "null_values," "zero_values," "dates_values," and "percentages."

The first attribute, the line_item_set_type, is, in one implementation, an important attribute which classifies the line item set into one of three types: time series, category (or cross tab), and x-y plot. Generally, the "type" in this context is the characterization of the x-axis values and whether they represent a time series, a categorization, a x-y plot or other. These line item set types are described in detail below in connection with the x-value transformer 710 which manipulates line items of the same set type. Generally, line item sets of different line item set types may not be actively manipulated together. If the line item is a time series, valid lengths in the time_period attribute may be years, quarter, months, days, etc.

Character_set designates which standard character set is represented, thereby allowing for support for foreign languages. Missing values holds a designator for the numerical value that represents a missing value, because many views of the data, in particular chart views, need to know which numbers represent blanks. Otherwise, a blank might be interpreted as "0." Null_values designates the character to be treated as null so that it is not confused with "not applicable," or "missing" or "0." Finally, zero_values designates characters that should be interpreted as "0," and not "null," "missing," "not applicable," etc.

The <line_item_set> 906 has, in one implementation, several sub-elements including <data_x> 924, <li_class_set> 926, <linkset> 916, and one or more <line_item> elements 928. At the line item set level, metadata regarding line items as a set is shared among all the line items so

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that the data need not be repeated. In particular, the <data_x> element 924 contains field information common to all line items in the line item set. The <data_x> element 924 includes the x-values and information regarding the x-values of the line items in the set of line items in the RDML document 102. For example, if the line item set is a time series, the x-values may represent the years, months or other timelines (*e.g.,* 1990, 1991, etc.) listed across the bottom of a chart with which all of the data is associated. Because this information is the same for each line item in the line item set, it is only included once in the RDML document 102. In one implementation, in addition to the actual x-values, <data_x> 924 also contains the following attributes: "x_title," "format," "x_notes," "x_desc," "x_prec," "x_unit," "x_mag," "x_mod," "x_measure," "x_scale," "x_adjustment," and "x_links."

In <data_x> 924, x_title is the title displayed on the x-axis as the data is displayed on a chart. Format is a string providing a template for the default representation of the x-axis values. The strings are those familiar from spreadsheet programs (examples may also be seen on Figure 4):

- digit(s), zeros suppressed

0 - digit(s), zeros displayed

. - decimal point

, - separator

A - z, other characters - displayed literally.

Other formatting codes can also be used (*e.g.,* codes used in scripting languages). X_notes may contain miscellaneous footnotes regarding x-values of the line item set, while x_desc may describe additional description regarding the x-axis values.

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The x_prec attribute describes the precision or number of significant digits for purposes of axis label display. In this attribute, negative numbers cause rounding of amounts greater than zero. For example, a precision of "2" will display a number as "8,254.43". That same number with a precision of "-2" will be displayed as "8,300." The underlying representation of the number will be the full value; only the formatting and representation on the screen will change. The data viewer 100 uses this primarily for formatting the axis labels, but the attribute is available for default formatting as well in other uses such as reports, footnotes, etc.

The subsequent attributes, x_unit, x_mag, x_mod, x_measure, x_scale, and x_adjustment, represent the meaning of the x-values and are used by the data viewer 100 for manipulation, reconciliation and display with other RDML documents 102. In RDML, numbers are collectively described by these attributes which describe the numbers' units. They are as follows:

Unit: the physical unit of the numerator

Magnitude: the size of the numerator

Modifier: relation of the numerator to the denominator

Scale: the size of the denominator

Measure: the physical unit of the denominator

Adjustment: special qualifier (*i.e.*, inflation adjusted)

For example, a line item reported to represent "$ in thousands per million people" can be represented as:

$$\frac{[1\ \$US] * (1,000)}{[1\ person] * (1,000,000)}$$

Therefore, the attributes of the line item are:

Unit: $US

Magnitude: 1,000

Modifier: /

Measure: 1 person

Scale: 1,000,000

Access to these attributes for line items provides enormous power to the data viewer 100. It facilitates the interpretation and transformation of the numbers. It allows multiple lines to be placed on a single chart without conflict and allows macros to be applied without the requirement of human intervention to answer questions about the units. It further allows reporting templates to make automatic adjustments to provide the most readable reports. In particular, the data viewer 100 uses these attributes to construct y-axis labels and descriptors when the user has made a transformation and the "y_axis_label" attribute is no longer appropriate.

A standard vocabulary for units and measures may be used for efficiency, and magnitude and scale may be more simply represented as a power of 10, *e.g.*, 3 for thousands, 6 for millions, etc. This permits more rapid transformations and eliminates potential confusion of variant usages and spellings (*e.g.*, million, mille, MM, etc.)

For an example of the use of these attributes, suppose the RDML data viewer 100 has plotted the following value/measurement:

426 US Dollars (in thousands) per Hour, adjusted for inflation (1996 = 100).

The user now wants to convert this to:

"X" Italian Lira (in billions) per Day, in nominal lira

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where "X" is the value to be calculated and the rest of the line is the measurement. The data viewer 100 makes this transformation automatically for the user because it has conversion factors for the following:

RDML Attribute:	Begin:	End:	Conversion factor:
Unit	US Dollar	Italian Lira	A* 0.0000234
Mag	Thousands	Billions	A* 1,000,000
Mod	per	per	A* 1
Scale	Hour	Day	A* 24
Measure	1	1	A* 1
Adjustment	Adjusted for infl.	Not adjusted	A* annual factor
Value	426	1.189	

The data viewer 100 multiplies the conversion factors (or performs any other appropriate mathematical operations) to manipulate the display. The user does not have to look up each of the conversion factors, marshall them into the correct sequence, do the arithmetic, and make corrections such as rounding adjustments. The user may simply select a new unit, magnitude, etc. from a drop-down box and make a selection.

Figure 10 illustrates steps used by the data viewer 100 to manipulate the numerical information in an RDML document 102 to produce a desired transformed display. First, the data viewer 100 locates the RDML document 102 (step 1002). The document may be located either locally or online using a URL, the search engine 224 or any other technique. Next, the data viewer 100 selects and accesses the desired document 102 (step 1004). The data viewer 100 then accesses

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the line item that needs to be transformed (step 1006) and determines the desired transformations (step 1008). The desired transformations may be received from a user or may be determined by the data viewer 100 automatically to, for example, accommodate the addition of a new document 102 to a display of a current one. The data viewer 100 accesses the unit, magnitude, modifier, scale, measure and adjustment attributes of the document or line item to be transformed (step 1010). Using these attributes, the data viewer 100 determines the conversion factors, if any, for each (step 1012). These conversion factors may be stored locally or retrieved online over a network 214. The data viewer 100 then multiplies the conversion factors to transform the numerical data into the desired display (step 1014) and displays the transformed line item or document (step 1016). If more than one line item is to be displayed, the data viewer 100 may repeat these steps so that all appropriate line items may be transformed to the desired display format (step 1018). Similarly, if more than one document 102 needs to be transformed, the steps may be repeated for each document. In this way, documents 102 having different numerical sets may be automatically manipulated for simultaneous display or quick transformation of display format without human intervention. The system automatically resolves conflicts between different documents in different formats by transforming them into one desired form.

In one implementation, when the system converts one unit to another unit, it converts the original source unit to a base unit known by the system, and then converts the base unit to the target unit. The system stores conversion factors from base units to other units in a unit list XML file, a portion of which is shown at Appendix C. For instance, suppose the base unit used by the system for length is "meters," and numerical values are to be converted from "yards" to "miles." The viewer 100 converts the yards to meters using the stored conversion factor, and then from the meters to miles using the appropriate stored conversion factor. In this way, the unit list file need only contain

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conversion factors from the base unit to various other units, and need not list a conversion factor for every possible combination between various units.

The structure of the unit list file is as follows: a <unitlist> element is the root, and it has one level of child nodes, each of which is a <unit> element. The unit elements each have a number of attributes and elements that describe the characteristics of that unit necessary to convert it into another unit or set of units.

The conversion element contains the attributes necessary for making a conversion where the source unit and the destination unit are both of the same type. For example, converting "miles" to "inches" is simply a matter of finding the correct multiplier to apply to the number of miles, because both units are measures of type "length."

The conversion element contains six elements: (1) "conv_target" describes the target unit of measurement that the following conversion factors will bring you to, (2) "conv_factor" is the number to multiply by the source value to arrive at the destination value, (3) "conv_constant" is the constant to be added to the product of the source value and the conversion factor. For example, in the conversion formula for Fahrenheit to Centigrade (F = 32 + 9/5C), 32 is the "conv_constant", (4) similarly, if the conversion involves a logarithmic conversion, the necessary factors are included in "conv_log", (5) "conv_source" is a description of the standards body that set forth this particular conversion factor, and (6) "conv_href" contains the URL for the approving standards body.

The type element contains one of the following text strings: (1) Length (base unit = meter), (2) Area (base unit = square meter), (3) Volume (base unit = cubic meter) , (4) Mass (base unit = gram), (5) Time (base unit = second), (6) Temperature (base unit = centigrade), (7) Energy (base unit = joule), (8) Currency (base unit = $US), (9) Compound (no base unit), (10) Diverse (no base unit), (11) Collection (no base unit), and (12) Occurrences (no base unit).

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The Compound and Diverse types are constructed from one or more of the basic units. Compound types are simple combinations of others. Example: "miles per hour" is a combination of a length unit and time unit. In order to convert a Compound type into another type, it is necessary to be able to make the necessary conversions of the decomposed units.

Diverse types are those that are constructed of descriptions. For example, an "ohm" is an electrical unit described as "the resistance offered to an unvarying electrical current by a column of mercury at the temperature of melting ice, 14.4521 grams in mass, of a constant cross-sectional area, and 106.3 centimeters in length."

A Collection type is a collection of persons, places, things, etc. For example, a data series denominated in "people in millions" means that one unit of this type is a collection of one million people. Collection types can use any of the conversion elements. For a simple conversion example, suppose there are 2.4 people per family in a sample. Then "people" could be converted to "families" by a simple division by the 2.4 conversion factor.

An Occurrence type is a collection of events. "Cycle" would be an Occurrence type that could be divided by "seconds" to produce a compound "cycles per second" unit of measurement.

The "subtype" element is for finer distinctions among types. The "plural" element is for constructing new titles, legends and labels at the completion of a conversion operation. An "alias" element is provided for enabling conversions where data has been entered in a common, but nonstandard form. For example, tables often use "in" instead of "inches." The "desc" element is provided so that a plain language description can be given the user. The "icon" element provides a place for giving the unit an icon to be used in lists, drop-down boxes, etc.

Referring back to the elements and attributes of Figure 9, in <x_data> 924, there is an x_links attribute which may be a comma-delimited string of URL's for linking to other sources.

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In addition to this element, the <li_class_set> 926 element represents the set of line item class elements and, in one implementation, has no attributes but has one or more sub-elements representing line item class, <li_class> 930. These line item class tags specify categories in various classification systems to which the numbers belong, such as "<US Dollars>" or "<Total Revenues>". The data viewer 100 uses these class tags to select which macros can apply, to adjust report formats, and to make the correct selections of assumptions in analytic processing. The class designations permit validation and conforming of different data sets, thereby allowing the data viewer 100 to combine documents from unrelated sources into a single unified source. Class tags may be used by macros that look at the class tag list to see if it qualifies to act on the particular line item. For example, if a line item in a financial statement is tagged as of the class "debt," the macro knows that it can use this line in calculating "debt-to-equity" ratios. But if the line item is tagged "piano," for instance, the macro will not be applied. Note that, in this implementation, the element names for the classes are entered as comma-delimited strings.

The <li_class> element 930, in one implementation, has five attributes. These are "class_name," "parent_class," "form," "href," and "description." Class_name is the name of the class to which the line item set belongs, and parent_class denotes the name of the parent class. These attributes may be used by more advanced features of the data viewer 100 such as the macros.

The <line_item_set> element 906 further contains a <linkset> 916 similar to the previously described <linkset>. As before, this <linkset> 916 further has a <link> element 922 previously described.

The <line_item> 928 element may have, in one implementation in accordance with the present invention, four sub-elements and 18 attributes. The elements are <data_x> 938, which contains the x-values for this line item if they are different from the default x-value in the

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line_item_set element <data_y> 932 which contains the y-data values, the data numbers or values of the line item, a <linkset> 916 having a <link> 922 as previously described, and a <note_set> element 934. The <noteset> 934 contains one or more < note> elements 936 which have user readable, plain language notes regarding the line item.

The attributes of the line item include: "li_ID," "li_legend," "li_title," "li_cat," "y_axis_title," "level," "format," "relation," "li_notes," "li_desc," "li_prec," "li_unit," "li_mag," "li_mod," "li_measure," "li_scale," "li_adjustment," and "li_aggregation." Several of those attributes have the same meaning as attributes previously described except that they specifically describe only the line item and y-values to which they are attached.

The li_ID is a unique identification number for the <line_item> element 928 and may be numbered from 0 to n (where n is the number of line_item elements). In one implementation consistent with the present invention, the numbers are unique and in order.

The li_legend attribute is a plain language string describing the line item that does not need to be unique. Generally, it appears in the leftmost column of the views. The li_title is a string defining the general subject of the line item. In the data viewer 100, this may be used as the title of the chart and as titles in reports. Typically, titles are the same for line items grouped together, but they are not required to be.

The li_cat attribute represents a line item category. As opposed to the li_legend and the li_title, which are displayed on the chart in the data viewer 100, the li_cat is not normally displayed. It is generally a non-printing designator for a category that the line item might belong to. Often, this may be a table name, or a primary key in a database, or some other organizing identifier. It may be used to group line items for reports.

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The y_ axis_title attribute is a string which will appear on the y-axis as the title of that axis. However, if the user applies a transformation to any variable in the descriptor, this hard-coded y-axis title will be replaced by one generated by the data viewer 100 using other attributes.

The level attribute and relationship attribute specify hierarchical relationships between line items. Conventional links in relational databases are maintained by matching records on the basis of "key fields." One drawback of this approach is that nothing is known about the character of the relationship except that it exists, and there is no way to tell, absent specific documentation elsewhere, that one record is a child or parent of the other, and whether that nature is a containment, a derivation, and inheritance, etc. In RDML, the creator of the data may specify the hierarchical level of each line item and the nature of that hierarchical relationship. The data viewer 100 uses the level attribute and the relationship attribute to create a hierarchical tree, to place icons representing the relationship in front of each line item to summarize the derivation of numbers and describe their context, and to assist macros and updating data tables. The level attribute specifies how many levels down from the parent node a line item is, while the relationship attribute specifies the nature of the relationship, such as whether the line item is a child of another line item or contained by another. It may also determine whether the line item is an additive or subtractive subcomponent of a parent, or a subtotal that is dependent on other child line items. These previously mentioned attributes and elements make up a DTD 702 in accordance with methods and systems consistent with the present invention.

Li_aggregation is an attribute useful if a user wants to "aggregate" or "deaggregate" data based on differing x-axis transformations. This attribute explains to the data viewer 100 how to handle this particular line item when such transformations are attempted. For example, if a line item set presents bank account information, each line item may be a time series and presents quarterly

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data, but the user may wish to see the data on an annual basis. For some line items in the set, it is simply a matter of summing up four quarters worth of data (*e.g.*, deposits) in which case the attribute value would be "sum," but for other line items (*e.g.*, closing balance), only the last quarter's value need be shown, in which case the attribute value would be "last." Similarly, if a minimum annual balance is desired for four quarters of minimum balances, only the lowest balance for all four quarters would be needed. Such a line item's li_aggregation attribute value would be "minimum." Possible accepted values include: "sum," "average," "minimum," "maximum," "first," "last," and "none."

IV.A.2.   Reader, Parser and Processor

With reference back to Figure 7A, the RDML reader 704 may be an object within the RDML data viewer 100 which manages the process of finding an RDML document 102 (locally, on a LAN, or on a Wide Area Network such as the Internet), passes it to the XML parser 706, relays error notices to the user, and coordinates the updating of other components states to reflect a rejected or damaged RDML document 102. The user of the RDML data viewer 100 may initiate the download of an RDML document 102 in many different ways including: clicking on an RDML hyperlink (these are like any other hyperlink, except that the target document may end in ".rdm"), typing a ".rdm" URL into the "Address" box of RDML data viewer, or requesting the loading of the document in a macro. Also, while conventional HTML browsers have a cache of only HTML documents represented as the "history" of the browser, the browsers may only display one of these documents at a time. Given an URL address, the RDML reader 704 reads in Document Object Model ("DOM") compliant documents (e.g., RDML documents 102), discussed below. The XML reader 704 may be implemented by a third-party set of Java classes, such as the XML4J parser developed and licensed by IBM, but others may also be used. The RDML reader 704 may cache multiple

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documents in RAM if they are compatible with the active data set. Not only are these documents immediately available, but sub-elements of the documents are available immediately because the data viewer 100 may maintain indexes of important data and metadata in the documents. Additionally, macros may be used to find specific elements in the document that is read in by the RDML reader 704.

The XML parser 706 takes a serial stream of text characters from the RDML data document 102, performs basic functions such as eliminating white space, dividing input into words and groups of words and searching for opening and closing characters (primarily "<" and ">"). The XML parser 706 used in the RDML data viewer 100 may also be a third-party set of Java classes, such as the XML4J parser developed and licensed by IBM, but other parsers may also be used.

The processor 708 receives the parsed text and creates a tree-shaped data structure of the data elements, matching the structure of the RDML DTD 702 hierarchy. The hierarchical structure conforms to the DOM Model, meaning that data is available in a standard form, and that a standard library of methods and functions are available for accessing data, editing elements, searching through nodes to find certain elements, and so forth. The XML DOM standard is controlled by the World Wide Web Consortium, and can be found at "http://www.w3.org/TR/REC-DOM-Level-1/".

The RDML Processor 708 generally performs three primary functions on the incoming parsed text to create an internal software object: error checking, structuring, and adding functionality. The error checking functions of the processor 708 simply compare the output of the parser 706 against the text expected as defined by the DTD 702. If the incoming document does not conform, the processor 708 determines whether the defect is: (1) not critical, in which case a warning is sent to a log and work continues, or (2) critical, in which case work stops and an error message is sent to the routine that called the parser 706.

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The structuring function is a matter of assembling the text into a hierarchical data structure matching the hierarchy described in the DTD 702. The target data structure may be a vector of vectors, or other collection of collections. When the data structure is created, it is "wrapped" in a software object (an "RDMLDoc" object) that adds an interface to the data so that other software objects can communicate with it. Most of the added functions ("methods") provide access to specific subsets of the data or particular elements or attributes.

The functions of the RDML processor 708 can be performed by the same class as the RDML Reader 704, where the RDML reader 704 has been set up on a "callback" relationship with the XML Parser 706. In that way, when the parser 706 gets a new element from the RDML document 102, it informs the RDML reader 704 that it found the element and returns it to the reader. In such a way, the RDML reader 704 acts as a processor as well as reader (even though it may hand off the actual element handling to another class).

IV.A.3.   X-value Transformer and Line Item Set Types

Regarding the X-value transformer 710, the term "X-value" refers to the fact that the fields of the input data records are plotted along the x-axis of the chart view 716 by default. (The values of each record for each field are plotted on the Y axis.) For example, a time series will, by default, be plotted in the chart year with the time periods plotted on the x-axis. When more than one data document is input, their data fields must be correlated before they can be presented together in a common view. The X-value transformer 710 determines what adjustments have to be made, and then accomplishes them.

Generally, the RDML data viewer 100 recognizes three different types of line item sets (*i.e.,* (1) "time series," (2) "category," and (3) "X-Y Plot") which account for the majority of end user tables. The X-value transformer 710, by recognizing these types, can automatically provide the

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correct display and transformation routines, saving the user the time and expense of changing a broad range of details. To give an example of this, when a times series table is encountered, the data viewer 100 can recognize that the x-values must fit the permissible types of dates, check them, conform them, and format them, thus sparing the user the work. In one implementation consistent with the present invention, a line item set type is a required attribute of the line item set element 906.

Figure 11 shows the steps used by the X-value transformer 710 to store a new document in the primary data store ("PDS") 712 described below. Generally, the X-value transformer 710 determines whether a newly input data document is of the same type as the one(s) currently stored in the "active documents" list of the PDS 712. Active documents are available for display in the tree view 720, to be charted, to be added to the spreadsheet view 724, and so forth.

First, the X-value transformer 710 receives a new document 102 (step 1102). It then determines the type of the active documents in the PDS 712 (step 1104). If the newly arrived document is the same line item set type as the active documents (step 1106), it is added to them in the PDS 712 (step 1108). If it is of a different type than the currently active documents in the PDS 712, the user is notified that it does not match the currently active documents (step 1110). The user may choose to reject the new document 102 (step 1112), in which case the object is not added to the PDS 712 (step 1114). If the user chooses to erase the currently active documents (step 1116), the currently active documents are erased (step 1118) and the new one is loaded (step 1120). Otherwise, the new document 102 is placed in the PDS 712 as a "standby" document (step 1122). Standby documents are available for providing data to scripts and macros, but do not interfere with the active document views. Optionally, if the x-value transformer 710 need not perform any transformations, the RDML reader 704 may store the document in the PDS 712.

If the newly arriving document is of the same line item set type as the active documents, the X-value transformer 710 matches the data_x fields of the new document to the existing documents. They may be in a different order, may be spelled differently, be in a different form, or otherwise not immediately compatible. The X-value transformer 710 makes the necessary adjustment according to the type of line item set. For example, time series line item sets have elements which are ordered in time. One obvious incompatibility is that periods may be different. Often, one set of data is in years and the other in, for example, months. The X-value transformer 710 uses attributes of the line items to handle each correctly. However, monthly data cannot just be added up to produce a yearly value, for example, because the number might represent a non-additive value. For example, a line item might be "Ending Bank Balance," but adding up 12 monthly ending balances does not produce a year-ending balance. The line item provides a period-length attribute that specifies that it is a "period-end" value, and the X-value transformer 710 uses the last month only to create a yearly value. In another example, monthly "deposits" would be added together, and monthly "average interest rate" might be a "period-average." Each line item provides instructions on how it is to be handled in conversion to other periods; this is provided by the li_aggregation attribute.

Another change that might be made is in the date format. Some data sets might simply display the year ("YYYY"), others might use a standard date format ("YYYY-MMDD:HHMMSS.MSS"), or some other variant. The X-value transformer 710 puts these all into a common form.

The data viewer 100 additionally provides tags describing how it is to be handled in the event of a period widening/shortening, or a period shift. Numbers may be tagged as "sum," "median," "average," "last value," "first value" or a specified formula. The X-value transformer 710 and the data viewer 100 may also handle "period shifts," a related type of conformance. For example, a first

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data source may be based on a calendar year ending on December 31 while a second data source is based on a fiscal year ending on September 30. The RDML data viewer 100 may use the period_length attribute of the x_data element 924 to designate the period length of the data, in conjunction with the li_aggregation attribute of the y_data element. The latter attribute is used to estimate a conforming transformation.

Y-values, the data values in a line item, may change when the x-values have been conformed. For instance, if twelve months of "average interest rate" is aggregated to produce "annual average interest rate," the updated designation of the number that will appear in legends or axis titles changes. The data viewer 100 recognizes that the resulting values may possibly undergo a transformation based on unit, magnitude, modifier, scale, measure, and adjustment attributes. These attributes allow efficient and automatic interpretation, translation, manipulation and presenting of data in a line items. They further facilitate the automatic changing of text descriptions in charts and reports to be automatically changed by macros.

Additionally, to conform differing time periods in separate documents, the X-value transformer 710 and the data viewer 100 may prompt user assistance if needed. For example, a first data source may be denominated by fields such as "Week 1," "Week 2," etc., while a second data source is denominated by "April 4, 1999," "April 11, 1999," and so forth. The X-value transformer 710 recognizes this problem (and a broad set of similar circumstances), and presents a dialog box asking the user for the actual date that "Week 1" begins on.

The Category line item set type is a common type of line item set that is often referred to as a "crosstab." In this line item set type, the x-values are categories. On a chart, for instance, the x-axis may be divided into eight categories for eight companies, with the y-axis showing the values of revenues or profits. Sometimes matching the fields of different source documents by name is too

dependent on wording, spelling, or language to permit efficient matching. The challenge for categories line item sets is to handle these differences in usage. For example, company income statements may start with a concept of "sales," but the actual words used may be "revenues," "total revenues," "gross income," or any other designation used in different languages, dialects, or industry-specific terms. To handle these line item sets, the X-value transformer 710 lines up categories from multiple data sets by first matching up any actual matches in spelling (ignoring cases in the default). Second, it looks at the class elements 930 to see if there are standard vocabulary tags; these standards may be different for different industries or uses. When dealing with companies, for example, the ticker symbol may be used as the matching tag. For instance, one data set may have a category for "Ford" another for "Ford Motor Company," and another for "F." All would be matched by the common presence of a tag <"F"> (Ford's ticker symbol) in the class element 930. If this fails to provide matches, the data viewer 100 presents the user with a dialog box with two lists of fields. Using "drag and drop" techniques, the user can quickly match the two sets of fields, and fields with no match are simply appended as new fields. In addition to creating a mapping dictionary based on text, class sets, and user input, the data viewer 100 can use a mapping file specified by a user or an input document to combine files automatically.

Figures 12A, 12B and 12C depict screenshots of an X-Y plot 1202 in accordance with the present invention. Most commonly found in scientific statistical series, an X-Y plot 1202 by its nature treats every x-value as distinct. This display plots individual data points on the graph. The X-value transformer 710 is only required for collating only exact matches. The screenshot also displays a tree view 720 that corresponds to the data in the X-Y plot 1202 and a legend 1204. As shown on Figure 12A, the X-Y plot 1202 displays the selected line item 1206, and the legend 1204

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changes as the line item selection changes. The Figures 12B and 12C show the X-Y plots 1202

resulting from the selection of different line items 1206 in the tree view 720.

IV.A.4.   Primary Data Store

Figure 13 depicts a primary data store 712 and some objects which it stores. The primary

data store 712 is a cache of loaded RDML documents 102 that may be implemented in a number of

ways (*e.g.,* as a vector, as a dictionary or hash table, or as some other collection of objects).

Once the X-value transformer 710 has determined an active or standby status for a newly

arrived data document 102, and made any necessary modifications to the x-values, it passes a new

RDMLDoc object 1302 to the PDS 712, which manages its communications with the various views

or plug-in applications. This PDS 712 central storage allows the different views (716, 720, 724, and

728) to have access to an object 1302 representing the original source data. The individual views

(described below) make their own copies of the portions of the data that they need, and in whatever

transformed form they require. The PDS object 712 generally does not perform transformations on

data; it simply holds them, adds and removes them, and makes them available in a public interface

to other objects. Table 1 below shows an exemplary class diagram of the PDS object 712. Note that

vectors are used to hold the RDML documents 102 in this implementation; it would also be possible

to use a hash table or collection data structure.

Table 1

```
                 PrimaryDataStorage

-Active_RDMLDocs : Vector
-Active_RDMLLines : Vector
-Standby_RDMLDocs : Vector
-Standby_RDMLLines : Vector

+Add_RDMLDoc(rdmldoc : RDMLDoc) : void
+Add_RDMLLine(rdml_li : RDMLLineItem) : void
+getRDMLDoc(rdmldoc : RDMLDoc, Status : int) : RDMLDoc
+getRDMLLineItem(rdml_li : RDMLLineItem, status : int) : RDMLLineItem
+getNumRDMLDocs() : int
+getNumRDMLLineItems() : int
+clearRDMLDoc(rdmldoc : RDMLDoc) : void
+clearRDMLLineItem(rdml_li : RDMLLineItem) : void
```

In the class diagram, the upper section lists the object's variable names followed by their types. The lower section lists the method names with the argument name and type in parentheses followed by the method output type. As shown, the PDS 712 provides variables and methods for storing active and standby RDMLDocs 1302 and RDMLLineItems 1304. The PDS 712 object includes methods to add, retrieve and clear documents and line items, in addition to methods for determining the number of documents and line items.

An RDMLDoc object 1302 is a full internal representation of the RDML document 102. It contains as its central attribute the tree-structured data elements contained in the document's original tags and implements the DOM interface. Applications that work with DOM objects may also work with RDMLDoc objects 1302. The RDMLDoc object 1302 provides a higher level interface for the different views of the RDML data viewer 100. The Table 2 below shows a class diagram of an exemplary RDMLDoc object 1302 in accordance with the present invention.

Table 2

RDMLDoc
-txDoc1 : txDocument
+RDMLDoc() : RDMLDoc
+createDoc(filename : String) : TXDocument
+getAttributeValue(elementname : String, attributeName : String) : String
+getAttValue(lev1_tag : String, lev2_tag : String, lev3_tag : String, att_name : String) : String
+getData_xDefaults() : JCVector
+getLinkAttValue(element : String, index : int, attname : String) : Atring
+getLinkText(element : String, index : int) : String
+getNumLineItems() : int
+getNumLinksForElement(elementname : String) : int
+getRDMLLineItem(att_name : String, att_value : String) : RDMLLineItem
+getTXDoc() : TXDocument
+makeRDMLLineItem(li : Node) : RDMLLineItem
+parseCommaDelimString(in : String) : JCVector
+setTXDoc(txDoc_in : TXDocument) : void
+traverseDOMBranch(node : Node) : void

Described below are class methods shown in Table 2 of an RDMLDoc object 1302 in accordance with one implementation consistent with the present invention. First, RDMLDoc() is a constructor for creating an internal RDMLDoc object 1302. The method "createDoc" reads in the file indicated by an input URL, parses it, and creates a new TXDocument which the user then usually assigns to this RDMLDoc object 1302. A TXDocument is an object which implements the Document Object Model (DOM) interface. The TXDocument creates the DOM structure for the file and "wraps" it with various access and administrative methods. It is the DOM-compliant original representation of the document. The "setTXDoc" method sets the underlying TXDocument, and initializes object properties such as the number of line items, and "getTXDoc" returns the underlying TXDocument.

Whereas an RDML document 102 forms a tree of elements having attributes with values, the "getAttributeValue" method returns the attribute values for the named element, and "getAttVal" returns as a string the attribute value found at an inputted element name and attribute name. The

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"getLinkAttValue" method gets the attribute value of a hyperlink element, according to the element name and attribute specified and "getLinkText"gets the corresponding hyperlink text.

When called, "getNumLineItems" returns the number of line items in the RDMLDoc 1302 and similarly "getNumLinksForElement" returns the number of links for an element.

The "getRDMLLineItem" method supplies the first RDMLLineItem 1304 (described below) based on the value of a particular attribute. For example, specifying "li-ID" and "3" will return the RDML Line item in which the "li-ID" attribute equals "3." The method called "makeRDMLLineItem" takes the indicated node, assigns it to a new RDMLLineItem object 1304 and initializes the object.

The method "getData_Defaults" returns a vector of the default x-values. Furthermore, "parseCommaDelimString" takes a comma-delimited string as input and returns the values between commas as elements of a vector and returns a vector of the strings. Finally, "traverseDOMBranch" takes an input node as a parameter and then traverses from that node downwards, and at each node, an operation, such as finding an element with a particular name, may occur.

Similar to the RDMLDoc object 1302, the "RDMLLineItem" 1304 is an object that provides high-level methods for retrieving data on a line item, any associated links or notes, and the attributes. The views of the RDML data viewer 100 work with RDMLDocs 1302 and RDMLLineItems 1304 to create their presentations. Table 3 shows a class diagram for an exemplary RDMLLineItem object 1304.

Table 3

RDMLLineItem
-data_x : TXElement -data_y : TXElement -jcvdata_x : JCVector -jcvdata_y : JCVector -li : TXElement -line_item_set_att : NamedNodeMap
+RDMLLineItem() : void +get_jcvData_X() : JCVector +get_jcvData_Y() : JCVector +get_strX_Value(index : int) : String +get_strY_Value(index : int) : String +getAttributeValue(attributeName : String) : String +getLinkAttribute(index : int, attName : String) : String +getLinkText(index : int) : String +getNumDataPoints() : int +getNumLinks() : int +initLineItem(doc : RDMLDoc, lineitem : Node) : void +set_li(input : TXElement) : void

Described below are class methods shown on Table 3 of an RDMLLineItem 1304 in accordance with one implementation consistent with the present invention. Methods with the same name as described above in connection with the RDMLDoc object 1302 have the same general function although, since a line item is already specific to an element, the methods take different arguments because they typically do not need an element specified in the given arguments.

RDMLLineItem() is a constructor that creates an RDML LineItem object, and "initLineItem" initializes the line item to the values found in the RDMLDocument. The method "get_jcvData_X" and "get_jcvData_Y" return the x- and y-value vector for the indicated number of the line item. The "get_strX_Value" method and "get_strY_Value" return the x- and y-value at the number of the line item in the x_values vector as a string.

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The "getNumDataPoints" method is called to receive the number of data points, *i.e.*, the number of x-values, in a line item. The method "set_li" allows the calling routine to set the line item in the RDML document 102 that this particular RDMLLineItem is to represent.

Referring back to Figure 7A, in one implementation consistent with the present invention, the chart manager object 714 takes up to six RDMLLineItems 1304 from the PDS 712 and displays them on a chart displayed on the graphical user interface 734 and is typically used in conjunction with the tree view 720 and the macro panel 732. When a user clicks a mouse on a line item in the tree view 720, that line item is added to the chart. When the user clicks the mouse on a macro line in the macro panel 732, the selected line items that are charted are transformed according to the programming of the macro. The chart manager 714 may be separated from the graphical chart view 716 to allow the ability to change chart software components easily should different or better graphic chart components become desirable.

<u>Views</u>

The data viewer 100 presents the user with a number of different views (716, 720, 724, and 728 as shown on Figure 7A) which the user may use to view the information in RDML documents 102 stored in the PDS 712. These views include a chart view 716, which shows graphical charts and graphs of the data, and a tree view 720 showing hierarchical representations of line items. Additionally, the data viewer 100 presents a spreadsheet view 724 which shows a data sheet similar to a spreadsheet, and a footnote view 728 which shows the text of footnotes associated with RDML documents 100. The views are discussed in detail below.

IV.A.5.   Chart View

Upon receiving RDML markup documents, the chart view transforms, formats, manipulates

and displays data stored in the markup documents using the attributes describing the meaning of the

data. The chart view uses the attributes of the numbers to, for example, facilitate the simultaneous

display of different series of numbers of different types on a single chart and automatically display

appropriate descriptive textual components.

As an example, the chart view automatically determines when a first series is in the "U.S.

dollars" and the second series is in "French francs"; it may automatically place them on separate axes

or automatically translate the units. It can also determine the titles for these axes and set the labels

on the axes. The chart constructs itself automatically using the attributes of the individual elements

of the markup document, and these actions may be initiated with a single mouse click.

Figures 14A-F depict the chart view 716 in the top half of the screen, and the tree view 720

in the lower half. The chart view 716 has two primary components: the chart itself and the chart

legend 1402. The line item 1206 that has been selected in the tree view 720 is automatically graphed

in the chart 716. The chart manager 714 generally has three primary responsibilities: (1) collecting

messages from the tree view 720, macro panel 732 and main menu (not shown) regarding changes

to make to the chart 716, (2) obtaining the correct line items or macros from the PDS 712 or the

macro manager 732, and coordinating transformations to the data, and (3) managing the chart's data

object (the "chart data" object 715), which contains the data in the form in which it will be used in

the chart, and the attributes of those line items.

Generally, the chart manager 714 handles updates and manipulations to the chart itself (*e.g.*,

axes, labels, etc.) while the chart data object 715 handles the plotting of the data on the chart 716.

The chart manager object 714 provides the information the chart data object 715 needs to update its

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internal data structures. Chart data 715 is a data model that is used by the central graphical chart 716 to paint itself, but other components also use the data: the footnotes, the chart legends and titles, and any macros that are operating on the data.

One way to visualize the role of the chart manager 714 (and its data partner, the chart data object 715) is to view the steps of a method of a complete sample scenario: the user has selected a line item 1206 in the tree view 720 and the chart manager 714 is notified that this line item is to be added to the chart 716. There are various ways to set up the chart data/chart manager architecture. One way described in detail below is to create the chart up front and then feed it changes in data (initialization, clearing, updating data series, etc.) A second general approach is to use the data to create a new chart upon every request for a change.

Figures 14A-F will now be described in greater detail, and in particular, Figures 14A and 14B will be described in connection with Figures 15A, 15B, and 15C, which illustrate steps of a method for updating a chart view 716 upon the selection of a line item 1206 in the tree view 720 in an exemplary scenario in accordance with the present invention. Figure 15A illustrates steps mainly involving the tree view 720 and graphical interface 734, while Figures 15B and 15C illustrate steps mainly involving the chart data object 715 and chart manager 714 respectively.

As illustrated in Figure 15A, a user selects a line item 1206 in the tree view 720 on the graphical interface 734 (step 1502). The tree view 720 obtains the ID of the selected line item 1206 (step 1504) and removes any old macros that are applied (step 1506). The chart manager 714 then deletes the last series (displayed data of a line item) from the chart view 716 to make way for the newly selected line item (step 1508).

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Referring now to Figure 15B, the chart data object 715 removes existing data from the chart 716 (step 1512). It then obtains the RDMLDoc object 1302 from the PDS 712 (step 1514) and the RDMLLineItem object 1304 from the RDMLDoc object (step 1516). After doing this, the chart data object 715 normalizes the x-value data (step 1518). For example, if one charted series displays data from 1961 to 1998, and the new one displays data from 1973 to 2005, the chart data object 715 ensures that the chart displays data from 1961 to 2005. The chart data object 715 then fills the x-axis 1404 with data (step 1520) and fills the y-axis 1406 with data (step 1522).

As shown in Figure 14B, a chart may have more than one y-axis 1406 charted at a time, (*i.e.*, a different y-axis on either side of the chart) to display multiple line items simultaneously. Thus, the chart data object 715 further marks which y-axis the series is on (step 1524), and if it is on a Y2 axis 1408 (a second y axis) (step 1526), it adds that axis (step 1528). The chart data object 715 sets the number formats for the axis labels 1406 and 1408 (step 1530) and sets the number precision (step 1532). Finally, it updates the footnotes (step 1534) and runs any macros that are applied (step 1536).

Referring now to Figure 15C, the chart manager 714 then sets the Y1 title (step 1538) and the Y2 title (step 1540) using line item attributes. After that, it updates the series styles (step 1542), the chart title 1410 (step 1544), the legend 1402 (step 1546), and the x-axis 1404 (step 1548). After these updates, and the chart manager 714 updates the number precision (step 1550), the y-axis 1406 (step 1552) and the chart types (i.e., area, bar, stacked bar, line, pies, points, etc.) (step 1554). Subsequently, it updates the footer 1412 (step 1556) and sets the maximum x-value to the extent of the last used value, disposing of blanks on the right side of the chart 716 (step 1558). Finally, the graphical interface 734 repaints the graphical chart 716 with the newly created updates (step 1560).

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The chart manager 714 and chart view 716 can chart different series types on a single chart and handle transformations automatically. Because two (or more) data series may be placed on the chart 716 from different source documents 102, they are synchronized for purposes of placing them on the common graph. The chart manager 714 uses data_x elements or the metadata tags to automatically transform data to permit different series types to appear together on a chart. It recognizes, for example, when a first series is in "US Dollars" and a second series is in "French Francs"; it makes arrangements automatically to place them on separate axes. There is no need for the user to go through a charting "wizard" or to find, understand, and translate the various units, titles, and adjustments. One click on each of the series' lines in the tree view 720 (potentially with a modifier key (*e.g.*, the CTRL key) depressed) instructs the chart view 716 to construct itself given the metadata of the individual elements. The chart manager 714 and chart data object 715 consider and take into account the following in updating the chart: the unit type, magnitude, scale, modifier, measure, y-axis title, chart title, chart footnote, precision, number format, chart type (line, bar, etc.), legend and colors of the various components.

The data viewer 100 also permits the adding of a series to a chart using a single click or command. Adding a series to a chart increases the number of series displayed on the chart. In conventional spreadsheets, charting programs, and data graphical interfaces, this task requires the user to either rebuild the whole chart through the wizard, fill in a dialog box with information on the new series, or add the numbers by custom programming. When the data viewer 100 adds the new series to the chart with a single mouse click. The existing data is maintained as it was, and any necessary changes to the chart's type, format, scale, etc. is made automatically by the chart manager 714 and chart view 716 to accommodate the new series.

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Just as a series can be added with one mouse click (or one command from the menu), so can it be removed. There is no need for the user to worry about accidentally deleting something, as no actual information is lost from the data viewer 100. It can always be added back to the chart 716 with a simple mouse click.

The chart view 716 also supplies an expandable legend 1402 as shown on Figure 14A. A significant problem for most users of spreadsheet programs has been the inability of the user to control the size, format, and handling of the legend 1402. The result is that charts usually end up with legends such as "MSFT" and "SUNW," rather than longer descriptions with multiple colors and fonts, word-wrapping and other readability enhancements. The chart view 716 chart provides legends that (1) can grow to unlimited sizes, (2) support word-wrapping, (3) can contain multiple fonts, (4) can contain multiple font types (bold, italics, normal), and (5) can contain varying colors for emphasis. If the legend information (typically stored in the li_legend attribute) for a line item is too long for the legend box on the chart, the information may word-wrap and scroll to accommodate the additional information.

The chart view 716 permits further convenience by automatically specifying the y-axis title 1414. Current spreadsheet and charting programs require the user to provide a y-axis title, usually through a chart wizard or by specifying a location to look up a title. The RDML shifts this burden to the data originator, who is in a better position to accurately specify the description of the y-axis values. The y-axis title 1414 specified by the data originator is placed in an attribute field (y_axis_title) of the line item element tag and is used by the chart view 716 as the default y-axis title 1414 when the line item is added to the chart view 716.

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Often, however, the user wants to make a change to the numbers and display the transformed series on the chart 716. In this case, the default y-axis title 1414 may no longer be correct. Rather than require the user to manually figure out what the new value description is (a process that could take several minutes or longer with current analytic programs), the chart manager 714 and chart view 716 data automatically generates a new y-axis title 1414 upon transformation of values using the information provided in the modified unit, magnitude, modifier, scale, measurement, and adjustment attributes of the line item 1206.

For example, suppose a first series is charted as "$ in Millions," and the user applies a macro that divides every number in the series by 1,000. The chart manager 714 automatically creates a new y-axis title 1414 of "$ in Billions." Number transformations can lead to quite complicated transformations of the y-axis title 1414. A user may multiply a first series ("Gallons in Millions") by a second series ("US $ per Gallon"); the result will be a series of numbers, a third series ("US $ in Millions"). If there are ambiguities, the data viewer 100 presents the user with a dialog box displaying all the known information regarding the quantities involved and requests that the user supply a title.

Similarly, the chart manager 714 and chart view 716 can automatically generate the x-axis title and chart titles 1410 using the metadata attributes. In addition to generating y-axis and x-axis titles, the data viewer 100 automatically performs the task of creating a new chart title 1410 when the charted series are changed or when multiple series are added to the same chart. For example, a first series has a default chart title of "Total Sales," a second series has a default chart title of "Total Expenses," and a third series has a default chart title of "Total Sales." The data viewer 100 will create a combined chart title of "Total Sales; Total Expenditures" by combining the dissimilar elements, and eliminating the duplicate elements.

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Three examples illustrate other types of automatic title manipulation. In the first example, suppose a chart has two series placed on it: Series A has a title of "GDP" and a legend of "China", and Series B has a title of "GDP" and a legend of "Malaysia". If both are put on the chart, the titles will duplicate each other. In one implementation consistent with the present invention, duplicate titles are removed such that the title for this chart will be simply "GDP". Because the series legends are different, the legend on the side of the chart will have two entries: "China" and "Malaysia".

As a second example, suppose the legends are duplicative: Series A has a title of "China" and a legend of "GDP", and Series B has a title of "Malaysia" and a legend of "GDP". Because both legend entries would be "GDP", there may be confusion about which legend applies to which line on the chart. In this case, the data viewer 100 transposes the legend and chart title entries such that the result is the same as in the first example above; the title of the chart is "GDP" (the duplicate is removed) and the legend entries are "China" and "Malaysia".

Finally, in a third example, suppose the series have different titles and different legends. Series A has a title of "GDP" and a legend of "China", and Series B has a title of "National Savings" and a legend of "Malaysia". The legends are left as is, and a new chart title is created by appending one to the other separated by a ";". The chart title on the display thus becomes "GDP; National Savings", and the first legend becomes "GDP - China" and the second legend becomes "National Savings - Malaysia". All three of these changes are string manipulations (selecting and/or appending).

The chart manager 714 and chart view 716 can also automatically trim beginning and ending x-values 1404, thus relieving the user of the need to trim null leading and trailing values from charts. In conventional spreadsheet and charting programs, chart pointers must be recreated or manually adjusted when the underlying data is enlarged or shortened. For example, if a series is charted that

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Exhibit 1002_0517

runs from 1990 to 1998 and it is replaced by data from 1990 to 1996, there would be two blank

spaces at the right side of the chart. The data viewer 100 and chart manger 714 avoid this and

similar problems by handling missing or null values at the front or back of line items as indications

that the chart should be automatically restructured.

The chart manager 714 also automatically formats the x- and y-axis labels 1404 and 1406.

RDML shifts the burden of formatting the numbers on the x-axis 1404 and y-axis 1406 from the user

(of which there may be thousands or millions, each reformatting the numbers manually one or more

times) to the data originator (of which there is one, who only has to do it once.) The format

templates are regular expression strings found in current spreadsheets and programming languages.

The data viewer 100 uses the formatting strings for the axis labels on the chart view 716, for the

numbers in the tree view 720, and as defaults for the numbers in reports. The formatting templates

are automatically changed if a macro moves the numbers outside of the precision range that is legible

on the chart 716, or out of a format that makes sense in the tree view 720 or in a report.

As stated previously, one of the RDML line item element attributes is the precision of the

number, the number of significant digits to be displayed in a chart. Unlike conventional products,

which leave this entirely up to the user to figure out, the data viewer 100 uses the specified precision

to set the scale of the y-axis 1406, and the format and precision of its labels and tick marks.

Additionally, the chart manager 714 automatically creates and removes a second y-axis 1408

as shown on Figure 14B. A chart with two dissimilar series plotted on it will require two axes. The

y-values may not be of the same units, measures or scales. A user might, for example, have plotted

a series denominated "$ in Millions" and then want to add to the same chart 716 a series

denominated "% of GDP," and these two series cannot share a common y-axis. Chart manager 714

recognizes this incompatibility, creates a new y-axis 1408, and directs all subsequent formatting,

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macros, etc., to the proper axis. Current spreadsheets and charting programs require that the user restructure the chart with a charting wizard (entailing many directives to be entered, and much trial and error to get the various scales, colors, etc., correct), or by custom programming. The data viewer 100 automates this process, creating and formatting a new axis if required by the specifics of the unit and scale attributes of the line items. If the series is removed from the chart, the associated axis is removed and the various scales, colors, etc., of the remaining series are updated to make the chart readable immediately.

Table 4 shows a class diagram of the chart manager 714.

Table 4

ChartManager
-chart1 : JCChartComponent -chart_data : ChartData -chart_legend : ChartLegend -chart_title : JCTitle -CDV1 : ChartDataView -CDV2 : ChartDataView -DS : DataStore -LineColors : JCVector -mainFrame : MainFrame -series1 : ChartDataViewSeries -series2 : ChartDataViewSeries -x_value_labels : JCVector -xaxis : JCAxis -xtitle : JCTitle -y1axis : JCAxis -y1title : JCTitle -y2axis : JCAxis -y2title : JCTitle -yLabelGenerator1 : YLabelGenerator -yLabelGenerator2 : YLabelGenerator
+addSeries(key : String) : void +addY2Axis() : void +ChartManager(mainFrame : MainFrame, chart_comp : JCChartComponent, legend : ChartLegend) : void +checkYAxisTitle(series : int, y1title : JCAxisTitle, y2title : JCAxisTitle) : int +deleteLastSeries() : void +deleteSeriesAfterFirst() : void +getAddSeriesFlag() : boolean +getChartData() : ChartData +getYAxisTitle(series : int) : String +initChart() : void +markWhichYAxis(num_series : int) : void +replotChart() : void +replotSeries() : void +resetChart() : void +setAddSeriesFlag(flag : boolean) : void +setChartType(type : int) : void +setDataStore(ds : DataStore) : void +setStartPeriod(sp : String) : void +updateChartTitle() : void +updateChartTypes() : void +updateFooter(num_series : int) : void +updateFootnotes() : void +updateLegend() : void +updatePrecision() : void +updateSeriesStyles(num_series_local : int) : void +updateXAxis() : void +updateYAxis(num_series_local : int) : void

Class methods of a chart manager object in accordance with one implementation consistent with the present invention are described below. ChartManager() is a constructor for the chart manager object 714, and "initChart" initializes the chart to be empty, and "getChartData" gets the chart data object 715.

The method "addSeries" adds a series to the chart while "deleteLastSeries" removes the last added series. Similarly, "deleteSeriesAfterFirst" deletes all series beyond the first series.

A series flag is set to "true" if the next series is to be added in addition to the already charted series. A "false" flag tells the chart to erase the last current series and replace it with the new series. The methods "getAddSeriesFlag" and "setAddSeriesFlag" retrieve and set this flag.

The method "getYAxisTitle" returns the y-axis title, and "checkYaxisTitle" checks the current y-axis title to see if the newly plotted series is to be on the current axis, or if a new axis is to be created. "AddY2Axis" adds a second y-axis to the chart if needed. The method "markWhichYAxis" tells the ChartData object which axis the new line item has been plotted on.

The method "resetChart" resets the chart to the state it was in when the data viewer 100 started while "replotChart" updates the physical aspects of the chart. Similarly, "replotSeries" replots a series due to changes.

The "setChartType" method tells the chart manager what chart type to display upon calling replotChart, and "setDataStore" tells the chart manager what data store object 712 it will be dealing with. If the data is a time series, "setStartPeriod" sets the internal variable for the starting period of the chart. Finally, the update methods each update the corresponding aspect of the chart in response to potential manipulations or changes, *e.g.*, "updatePrecision" updates the precision of the chart.

Table 5 shows a class diagram of the chart data object 715.

Table 5

ChartData
-chtData : JCVector -chtHeader : JCVector -cm : ChartManager -originalPlottedYear : String -start_period : String -zeroData : String[][]
+addSeriesToChart(ds : DStore, key : String) : void +decrementNumSeries() : void +deleteLastSeries() : void +deleteSeriesAfterFirst() : void +fillXAxis_CT(rdml_li : RDMLLineItem) : void +fillXAxis_TS(rdml_li : RDMLLineItem, yearsDiff : int, sizeDiff : int) : void +fillYAxis_CT() : void +fillYAxis_TS(rdml_li : RDMLLineItem, start : int, yearsDiff : int, sizeDiff : int) : void +getAddSeriesFlag() : boolean +getChtData() : JCVector +getChtHeader() : JCVector +getChtHeaderElement(series : int, element : String) : String +getDataInterpretation() : int +getDataItem(row : int, column : int) : Object +getDifferencesInX(rdml_li : RDMLLineItem, yearsDiff : int[], sizeDiff : int[]) : void +getName(series : int) : String +getNumRows() : int +getNumSeries() : int +getPointLabels() : String[] +getRow(row : int) : Vector +getSeriesLabel(series : int) : String +getSeriesName(series : int) : String +getStartPeriod() : String +incrementNumSeries() : void +normalizeValues(rdml_li : RDMLLineItem, xory : int, yearsDiff : int, sizeDiff : int) :   JCVector +setAddSeriesFlag(input : boolean) : void +setChtData(jcvIn : JCVector) : void +setChtHeader(jcvIn : JCVector) : void +setChtHeaderElement(series : int, element : String, value : String) : void +setDataItem(row : int, column : int, c : Object) : boolean +setNumSeries(new_num : int) : void +setOriginalPlottedPeriod(in : String) : void +setStartPeriod(in : String) : void +zeroChtData() : void

Below are class methods shown in Table 5 of a chart data object in accordance with one implementation consistent with the present invention. Methods having names that are the same as methods in the chart manager are not described because they perform the same function on the data alone.

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The chart data object uses the methods "fillXAxis_CT," "fillXAxis_TS," "fillYAxis_CT," and "fillYAxis_TS" to fill the x- and y-axes of time series and chart data sets. The methods "decrementNumSeries" and "incrementNumSeries" change a counter storing the number of series on the chart.

The method "getChtData" returns a vector of chtData, which is a vector of vectors: each element of the outer vector is a vector of data for one line item. The "getChtHeader" method returns a vector of chtHeader, which contains a vector of header information for each line item. This vector is a list of the values of the attributes of a line item, *e.g.,* magnitude, title, etc., and "getChtHeaderElement" gets the value of a particular element from chtHeader for the indicated series.

Operating on data sets, "getName" returns the data set name, and "getNumRows" returns the number of rows in the data set. The method "getRow" returns one row of a series while "getSeriesLabel" returns the label. The "getDifferencesInX" method aligns the time periods for time series charts, and "getNumSeries" returns the number of series in the num_series variable. Many of the get methods have corresponding set methods that set the value instead of receiving it.

The chtData variable is a vector of vectors (each sub-vector is the data for one series), and "getDataItem" returns the data value in a particular row and column of chtData. Used by the constructor, "zeroChtData" posts an empty chart. The "getPointLabels" method returns an array of strings, each of which is a point label of chtData

For a time series, "getStartPeriod" retrieves the start period of the time series, and "normalizeValues" normalizes values upon the addition of a series to the chart. The method "getDataInterpretation" returns either "array" or "general" to describe what form the data source structure is in. (A returned value of "array" is for Times Series and Category data -- which share x

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values --, and a returned value of "general" is for XY data, in which X values are generally independent.)

IV.A.6.   Tree View

Referring back to Figure 14A, this screen shot further contains the tree view 720 on the lower half of the screen. The tree view 720 presents a hierarchical view of the data. The tree view 720 serves a different purpose than "datasheet view" of conventional spreadsheets and database management systems. It shows the numbers in their context visually. The user can see the dependency relationships, identify from icons and visual clues how the different line items are related to their parents, peers, and children. The "Units" column 1416 prominently displays the units, scales, magnitudes, etc., of each line item, an important display in mixed data sets, where the unit context changes from line item to line item.

Each line item in the various active RDML documents 102 is displayed in the original order. In the tree view 720, each RDML document 102 begins a new top level node. The information displayed in the tree view 720 is a summary of important data from and about the line item, not a display of all the data points as would be found in a typical spreadsheet view. Instead of presenting a potentially confusing matrix of raw data digits that make the discerning of patterns difficult, the tree view 720 shows, in one implementation, the following information for each line item: legend 1402, units 1416, three user-selectable representative data points 1418, and one or more summary columns 1420. In the example on Figure 14A, there is some important documentation 1416 (description, units), some representative data 1418 (in this case, three year's worth), and a summary data column 1420 (in this case, the sum of all the data points). The first column 1416 displays the legend of the line item. This is the plain language description; it is repeated in each view where identification of the line item must be made by a human.

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The representative data columns 1418 in the tree view 720 give the user visual clues as the relative importance, the types, and the format of the line items. The RDML data viewer 100 permits the user to select different fields to be displayed. For example, one user might want to see "1940, 1970, 2000" to get a sense of the long term trends, while another might only wish to see "1998, 1999, 2000" to see the recent trends.

The summary column 1420 allows the user to choose a statistic that is either desired to understand the lines and their context better, or that is desired for purposes of sorting the columns from greatest to least or vice versa. Any of the columns can be sorted simply by clicking on them. The summary column provides much easier statistics for the user than database or spreadsheet formulas because the RDML data viewer 100 provides one-click selection of statistical methods, thus removing the need to write formulas, adjust for missing values, handle nulls in the denominators, etc. Some examples of summary statistics include: (1) sum, (2) average (3), median, (4) minimum, (5) maximum, (6) moving average, (7) variance/standard deviation, (8) % difference (selected periods or categories), (9) % of parent, (10) % of specified line item, (11) correlation with parent, and (12) custom formulas. For each of these statistical measures, the RDML data viewer 100 provides a dialog box in which the user can adjust the assumptions. For example, the "moving average" can be for one period, five periods, ten periods, and so forth.

The tree view 720 emphasizes that line items are the primary data unit in the RDML data viewer 100, as opposed to single numbers as are found in spreadsheets as cells. Since each line item 1206 is an object, the RDML data viewer 100 may be thought of as an object-oriented spreadsheet. The icons 1422 for each line item identifies that line item's context. For example, a "+" icon 1422 indicates that adding that line item to its peers will produce the parent line item. This feature

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addresses a shortcoming of spreadsheets and database datasheet views: the inability to view formulas and data at the same time. It shows the user how the numbers are related to one another.

Conventional database management systems, spreadsheet and numerical analysis tools have no built-in indication of how one record is related to another. In relational databases, the position or row may have no relevance to its data. RDML and the tree view 720 changes this by making the position of a line item in a set a usable piece of information by a user, and icons 1422 may visually designate the relationship of a line item to its parent node.

In one implementation consistent with the present invention, the following values are used for relationship icons: (1) plus, (2) minus, (3) times, (4) divide, (5) equals, (6) computed at, (7) member, (8) collection, (9) child, (10) parent, (11) memo, (12) general, (13) note, (14) none, and (15) root.

Sub-line items may add up to the parent line item (or may be modified by other relationships of their sibling line items.) "Plus" may add to siblings while "minus" subtracts from them. For example, a line item called "Net Sales" may have two children: "Total Revenues" and "Cost of Goods Sold." If "Total Revenues" has an li_relationship attribute of "PLUS", and "Cost of Goods Sold" has one of "MINUS", then the treeview 720 can show that Net Sales is equal to Total Revenues minus Cost of Goods Sold. "TIMES" and "DIVIDE" show multiplication and division of line items respectively.

"EQUALS" is the same as "plus," but shows the result of calculations of line items above it in order. "COMPUTED AT" is used for assumptions, such as percentages, interest rates, etc., while "MEMBER" denotes that the line item is simply a member of a collection of line items denoted by the parent line item. In this case, no assumption is made regarding arithmetic relationship, if any.

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Exhibit 1002_0526

"COLLECTION" denotes that the line item has child members one level directly below it and denotes the concepts of sets or collections. "CHILD" illustrates that the line item is simply a "child" of the "parent" line item. It implies a sort of descent, derivation, or inheritance. No assumption is made regarding arithmetic relationship, if any.

"MEMO" is a line item that might be of interest to those looking at the sibling line items, but which is not necessarily related to the siblings, while "GENERAL" is a generic designator. "NOTE" is usually used for line items with text values, and "NONE" denotes that no relationship is implied. "ROOT" states that the line item is the root line item.

The tree view 720 also provides other capabilities. It allows the user to chart multiple line items 1206 by holding down the "shift" key. Although number browsing can be done in the data viewer 100 with a mouse, it is also possible for users to graph line items using arrow keys. When the focus is on the tree view 720, navigating up and down with the arrow keys automatically chart the selected line item 1206. If the "shift" key is held down, the succeeding data series will be added to the chart, rather than just replacing the previously selected series.

Figure 14C shows that, in one implementation consistent with the present invention, when a user right-clicks on a selected series, a pop-up menu 1424 is displayed showing the different types of documentation available. As shown in Figure 14D, selecting "description" shows a window 1426 containing information about the particular series, with the information being transferred from the tag form to a plain language, user-friendly format.

Figure 14E shows that, in one implementation consistent with the present invention, the user may graph multiple line items simply by selecting different "checkboxes" 1450 in line items in the tree view 720. In this implementation, the collection of selected line items is passed to the chart data object, which is then charted by the chart manager 714.

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In one embodiment of the present invention, the selection of a contiguous set of lines that is less than all the lines in the tree view 720 is facilitated through a series of mouse events. First, a mouse down event is performed over a line (e.g., Bristol Center). The mouse is then dragged down (highlighting lines in the process) to the last line to be included in the group (e.g., Hamlet West Center). By delaying the mouse up event while retaining the cursor over the last line to be included, the user is able to signal the system (and the system is able to detect) that all elements in the selected/highlighted group are to be added. Accordingly, the system checks their corresponding check boxes.

The tree view 720 further provides an easy way of creating an RDML document 102 through drag-and-drop techniques. In conventional spreadsheet and DBMS applications, it is possible to create new tables from existing ones by selecting the data rows and cutting and pasting them, or by writing a SQL query. In the tree view 720, creating a new RDML document 102 complete with necessary documentation can be performed by dragging and dropping the desired line items to an icon that represents the new document. Macros may also be created and manipulated in the same manner.

The data viewer 100 may also set macros to be executed automatically as the selected line items are changed. Known as "locking" of macros, this permits browsing through data in a transformed state.

Figure 14F shows that a line item may have a visual link associated with it that can be activated by a user. Upon activation of the link 1430, a list of associated hyperlinks 1432 is displayed for selection by the user. The link 1430 itself may indicate the number of associated hyperlinks 1432. The user may then select any of the hyperlinks to access the corresponding web site.

IV.A.7.   Spreadsheet View

Figure 16 depicts a screen shot that shows the spreadsheet view 724 in the lower half and the chart view 716 in the top half. The ultimate goal of many users is to get a set of numbers arranged into a format that will fit into an existing spreadsheet of theirs. While many programs offer cut and paste transfer of numbers from a source application to a target spreadsheet, such an approach still leaves the user with the task of manipulating, normalizing, aligning and transforming the data. A cut-and-paste operation is therefore usually followed by the manual recalculation and retyping of every number. The RDML data viewer 100, by contrast, allows the user to make the necessary data transforms with mouse-driven operations before loading the numbers into a spreadsheet.

Referring to Figure 16, as line items 1206 are added to and subtracted from the chart view 716 or tree view 724, they are added to and subtracted from the spreadsheet 724. In addition, any changes to the lines plotted on the chart view 716 (as the result of applying a macro or combination of macros) are immediately reflected in the numbers in the spreadsheet 724. This provides one-click addition of information to the spreadsheet view 724. Therefore, the way to copy data into the spreadsheet is simply to add them to the chart 716. It is also possible to copy an entire data document 102 or collection of data documents from the tree view 720 to the spreadsheet view 724, making any desired macro changes in the process.

Furthermore, RDML documents 102 may be created directly from the spreadsheet view 724. Whereas a data table is shown in the spreadsheet 724 (either created from another RDML document 102 or typed in from scratch), an RDML document may be created from that data in from the default specified by the user. This performs a task similar to an XML editor, but does so in a table format for the data, which is a more natural way to enter tabular data, not in the tree structure of current XML editors.

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The spreadsheet view 724 may also directly read Internet data using a URL 1602. It will except formulas that use Xpointers (used by Xlink to specify destination of a link) to read in data from remote RDML documents 102. In this manner, data may be incorporated into a single spreadsheet from a number of sources with no need to prepare query or provide custom programming code.

As shown in the class diagram below in Table 6, the spreadsheet manager 722 may be a simple object; the chart manager/chart data 714 and 716 combination may be the actual repositories of the data. The chart manager 714 feeds data to the spreadsheet manager 722, which places the data in the correct cells. The spreadsheet manager 722 communicates directly with a graphical spreadsheet object 724, which in the case of the RDML data viewer 100 may be a third-party component.

Table 6

SpreadSheetManager
-gridControl : GridDataSheet -chartmanager : ChartManager
+fillFromChart() : void

IV.A.8. Footnote View

Figure 17 is a screenshot which shows the footnote view 728 in the lower half. Generally, footnotes are a type of extended documentation that often get lost in transmitting and displaying numbers. Each line item has, as an attribute, a text string providing short footnotes which may be accessed by a mouse click (that is, by clicking the "Footnotes" tab 1702 at the bottom of the data viewer 100). As with the spreadsheet view 724, the default value is for only the plotted series to

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have their footnotes displayed. However, it is possible to display all of the footnotes of an RDML document 102 in the spreadsheet or style sheet report views.

The footnotes in the footnotes view 728 are intended to be simple, important reminders about the data. Typically these include usual periods (a fiscal year), adjustments, special problems and so forth. By default, the footnotes view 728 also shows the source of the RDML document 102 and the original underlying data. In one implementation consistent with the present invention, anything requiring more than 255 bytes is represented in an HTML page for which there is a hyperlink in the line item. These longer footnotes may be displayed in the HTML window as HTML documents.

Furthermore, as the user adds and subtracts series from a chart, the footnotes are automatically updated from the source data, even if there are multiple source documents. The footnotes in the RDML "Footnotes" tab also automatically update their numbers and labels to match the chart. This is in contrast to current spreadsheet and charting programs, which require that the user, not an automated lookup routine, supply the footnotes.

The macro manager 730 manipulates and implements macros in the data viewer 100. Macros allow a user to apply transformations or calculations to line items on a one-click basis, instead of having to write formulas or queries.

IV.A.9   Tagging Wizard

The data viewer 100 may also create XML and RDML documents 102 from spreadsheet files. To this end, it may use a spreadsheet "wizard" to create tagged documents from a table of data in a spreadsheet. In one implementation consistent with the present invention, a wizard (using at least one dialog box) is created in a scripting language (*e.g.*, Excel Visual Basic for Applications) allowing tabular data in a spreadsheet (*e.g.*, Excel) to be used as the source for creating a tagged text document in the RDML format.

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Figure 21 shows a flowchart illustrating steps used in a method for tagging information from spreadsheets in accordance with the present invention. Figures 22A-D depict exemplary screen shots for different stages in the document creation process.

Figure 22A shows that the user makes the data ready in tabular form (step 2102). Each row will become one line item; the first row 2202 will become the data for the "data_x" element 924. The first column 2204 will populate the "li-legend" attributes of the respective line items. Note that most tabular data is already essentially in this form: the category (or time period) descriptions run across the top, the plain-language line item descriptions run down the left, and the values themselves fill the table.

The user then highlights the legends in the left most column 2204 and opens the first dialog box 2206 (step 2104), shown on Figure 22B, which will insert new columns for information in front of the data table, each column containing one type of attribute (step 2106).

Figure 22C shows that pressing "OK" on the dialog box 2206 creates the column and fills in the default data (step 2108). The wizard inputs the desired default values, saving most of the tedious typing, and the user checks the columns 2208 to see if changes need to be made. Appendix F shows exemplary code for routines that perform those functions. For each attribute, a column is added to the spreadsheet, the correct value of the attribute is selected (*e.g.*, blank, hand-worded, or taken from the appropriate field in the dialog box), and the correct number of cells are filled with that value in the appropriate column 2208.

Figure 22D shows that the user then brings up the document creation dialog 2210 (step 2110). The user first uses the first entry field 2212 to specify the range of the data table (including the attribute columns). The "default" data file will be used to provide defaults for the rdmldoc-header element 904 values, as well as other elements and attribute values in the line_item_set

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element 906 (step 2112). Finally, the user fills out the remaining fields and presses "OK", which causes the tagged RDML document 102 to be created and saved (step 2114). As would be appreciated by one of ordinary skill in the art from this disclosure, the information gathered in the exemplary dialog boxes could instead be gathered in a single dialog box before creating RDML-compliant data.

Appendix G provides code used in one implementation to create an RDML document 102. Generally, the process comprises steps of: (1) opening file and buffers for writing, (2) calling an element-creation method for each element in the DTD 702 which can be nested within others, and (3) saving and closing the files when finished.

IV.A.10.   Aspects of RMDL Markup Documents

RDML is designed to be used to describe numbers across industries and domains. To do so, it provides a basic set of tags and a matching vocabulary to describe six aspects of a table of numbers: (1) value, (2) structure, (3) format, (4) semantics, (5) provenance, and (6) measurement.

Value denotes that numbers are transmitted as strings, with additional tags to define their data type, degrees of precision, handling of missing values, handling of nulls, and other directives to the end application.

Structure refers to a structuring of the data in within a table. RDML permits records to be arranged hierarchically within a table. Although not a standard approach for relational tables, this permits multiple levels of information to be placed in a single two-dimensional table. Users desire this, for example, when viewing financial statements, where a single line item (*e.g.*, "Equipment leasing") may have several sub-components ("Autos," "Trucks," "Office Equipment.")

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Format allows the application to present users with numbers in human readable form. The tags specify default formats for numbers, internationalization issues such as comma/decimal point handling, and default legends and chart titles. These formats may be changed by the users at run time.

Semantics refers to the fact that RDML provides generic tags in which indicators of the "meaning" of the numbers, including the vocabularies of other SGML and XML markup languages, can be placed. This allows RDML to act as a "wrapper" for data from other markup language documents. Semantic meaning is also conveyed in text-based attributes: legends, titles, labels, footnotes, etc.

Provenance is the documentation of various elements. RDML elements include information on the source of the data, who marked it up, timestamps and link addresses, and licensing information, etc.

Finally, in the context of generic numbers, "Measurement" refers to the characteristics necessary to describe the measurement aspects of the domain the number is taken from: units ("meters", "feet"), magnitude ("millions", "billions"), modifiers ("Adjusted for inflation, 1997 index"), and so forth. This permits macros to ensure the results of any calculation are adequately derived and described to the end user.

IV.B. Graphical User Interface and HTML Browser

The screen shots of Figures 14A-D, 16 and 17 have been of the graphical user interface ("GUI") 734 which has several responsibilities. Generally, it creates itself and other visual components upon start-up of the application, and provides a central storage place for a minimal number of global variables of the application (such as file directories, etc.). Further, it responds to

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user actions, such as mouse clicks and keyboard shortcuts, and repaints the screen, or portions of the screen, at appropriate moments.

The HTML browser 736 may be a third party component which displays HTML files. Although this browser has been designated as an HTML browser, one of ordinary skill in the art would appreciate from this disclosure that other browsers (*e.g.,* an XML browser) can likewise be used. This component provides basic web-browsing capabilities and a way to view hyperlinks for RDML documents 102. Additionally, it acts as a display window for certain pages generated by the RDML data viewer 100 (such as RDML document source code, chart documentation, etc.)

IV.C.   Reusable Macro Markup Language

Figure 18 graphically shows elements of the RMML Document Type Definition 1800. In one implementation consistent with the present invention, RMML documents 104 conform to the rules provided by the DTD 1800. In accordance with one implementation of the present invention, an RMML DTD 1800 is shown at Appendix D. Attributes and elements of the DTD 1800 may also be seen in the full sample RMML document 104 in Appendix E. These two Appendices D and E are useful for examining specific attributes and elements of the RMML DTD 1800.

The RMML DTD 1800 data structure is optimized to provide information needed in the order in which it is required, to reduce the learning on the part of new users to RMML Macro development, and to avoid unnecessary duplication. The first line of the DTD 1800 in Appendix D starts with '<?xml encoding = "UTF-8"?>' because XML documents start with a line that tells the client application, in this case, the RMML Interpreter 1980 (described below) and the data viewer 100, what type of document it is and the version of XML.

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With further reference to Figure 18, the DTD 1800 used to define RMML macro documents 104 is structured in a hierarchical tree structure of elements. Each element may include a list of attributes (displayed in Appendix D, but not shown on Figure 18) and/or an association with one or more sub-elements. As with the RDML DTD described above, some attributes may be required while others may be optional, depending on design parameters. At the highest level, the DTD 1800 has three elements descending from a root element, <macrodoc> 1802. The first element, <macro_header> 1804, contains the metadata for the document as a whole. The second, <macro_code> 1806 contains the source code expression to be evaluated, related variables, and instructions to the application regarding the graphical user interfaces for any parameters. The third, <macro_references> 1808 contains elements related to remote data (RDML documents 102) or other macros (RMML documents 104).

The macro_header element 1804 is designed to match, as closely as possible, the rdmldoc_header element of RDML documents 102. This saves learning time for developers and end users, and allows reusable code modules to be built for both purposes.

Nevertheless, in one implementation consistent with the present invention, the <macro_header> element 1804 contains several attributes that are unique. In this implementation, there are 8 unique attributes in the <macro_header> element 1804. The first of these is "macro_type." This attribute tells the application which general capability this particular macro requires within the context of that application. The application uses this attribute in a factory class 1912 to create the correct type of macro object for internal use. Two example types consistent with this implementation are: (1) "TSL" (time series line, a macro that works with time series to create a new line or lines on the chart), and (2) "TSO" (time series overlay, a macro that works with time

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series to create a new overlay on the chart 716, such as gray backgrounds behind certain time periods.)

The result_type attribute tells the RDML data viewer 100 how to display the results of any transformation created by the macro. There are, in one implementation, five permissible values for this string: "Replace Each," "Replace All," "Replace AB," "Add New," "Add Annotation," and "Add Overlay." Replace Each removes every line on the chart 716 in the RDML data viewer 100, and replaces it with the transformed version. For example, if there are four series on the chart, all denominated in "miles", and user selects a macro "to kilometers", then every line will be converted to kilometers, the miles lines erased, and the kilometers lines placed on the chart in their place.

Replace All is used where all current lines are being replaced by one line. For example, if A and B are charted, a macro called "B as % of A" would replace them with a single line. Replace AB is a special case of Replace All where there are only two lines charted. Add New adds a line to whatever is plotted. For example, a macro called "Average" might draw a line through the existing line at the average level. Add Annotation adds a label with a pointer to a certain value on a chart (e.g., "2-3 Stock Split"). Add Overlay adds a shaded area behind certain regions of the chart.

The attribute "rdmldoc_type" designates the type of RDML Document 102 with which the macro is designed to work. Valid strings for this attribute are TS, CT and XY, corresponding to the types of RDML Documents 102.

The elements <macro_source> 1810 and <license_terms> 1812 are identical to, and play the same role as, <data_source> 908 and <license_terms> 914 in the RDML Document Type Definition 702. The <documentation> 1814 element is a container for two sub-elements: <macro_description> 1816 and <help_page> 1818. The <macro_description> element contains a short string (e.g., under 50 characters) which describes the basic functionality of the macro. It appears in the description

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label of the parameters panel 1960 (shown in Figures 20A-D and described below) For users

desiring a more detailed description of the macro, the <help_page> 1818 element contains a text

block that provides this information. This text block can be read by the data viewer 100 in an HTML

pane as part of the regular help system. This text block is intended to provide information on all

aspects of the macro that might be of interest to the user: its use, its code, its parameters, and its

inputs.

The second top-level element is <macro_code> 1806. This section contains the actual source

code and related variables. The <code> 1820 element contains one or more expressions which

evaluate to a transformation of certain numbers in the RDML data viewer 100. In one

implementation consistent with this invention, the transformations apply to the chart view 716 in the

RDML data viewer 102. But transformations may also be applied to the treeview 720 or other views.

The expression(s) in this element are formulas similar to those seen in spreadsheet formulas:

the expression is a series of (1) operators, (2) literals, (3) variables, (4) functions, and (5)

miscellaneous expression delimiters. The main difference from traditional spreadsheet formulas is

that the variables may stand for either scalars or vectors, depending on the source or the context. A

sample expression follows:

A * (B + 2000) - IF(A > 3, 12 ,45)

Operators are: addition (+), subtraction (-), multiplication(*), division(/), less than (<), greater

than (>), or (|), and (&). The operators have different meanings based on the types of the sub-

expressions they work on. Operating on two vectors is interpreted as element-by-element operation

on the two vectors. Thus, A * B, where A and B are vectors, is C = {a1 * b1, ... an * bn}.

Literals are defined either directly in the expression (e.g., "46"), or assigned to a variable

(e.g., "pi = 3.14156").

Variables can come from one of six different places in RMML. First, they can be defined as variables directly in the RMML document 104. This is done by creating a <variable> element and assigning it a default value. Second, variables can be associated with graphical components in the parameters panel 1960 in the RDML data viewer 102. In one implementation consistent with this invention, there are four different types of "gui components." These are listed and described below under <gui> element 1824. Third, a variable can be defined from a line item element identical to those found in an RDML document 102. Because they are identical, a line item can be simply cut and pasted from an RDML document 102 to an RMML document 104. Fourth, a variable can be drawn from a remote source. In one implementation consistent with the present invention, that remote source can be a hyperlink to a line item in an RDML document 102. This is accomplished by using an Xpointer hyperlink in the "href" attribute of a variable element. Fifth, a variable can be defined as one of the series of data that is currently plotted on the chart. In one implementation in accordance with the present invention, there can be a maximum of six series on the chart; each can be accessed by using the reserved words A, B, C, D, E, and F. As would be appreciated by one of ordinary skill in the art, any number of uniquely definable series may be used. If the result type attribute of a macro is "Replace All", then the expression is evaluated once for each series, with A being the series currently being transformed. Sixth, variables can be taken from an RDML document 102 that is already loaded in the RDML data viewer 100. In this case, the expression indicates the URL and a class string that can be found in one of the li_class elements of a line item element. The expression then uses that line item as the variable value.

Functions that are built in are provided by the interpreter 1980 in one implementation consistent with the present invention and are a principal means of extending the language. These

are in the form "FUNCTION_NAME(expression)". Functions include: IF(x,y,z); SUM(x); AVERAGE(x); COUNT(x); MIN(x); MAX(x) and so forth.

Miscellaneous delimiters are implemented by separating expressions by a semi-colon (;). This indicates that the expressions are to be evaluated in order. Expressions can also be grouped in parentheses to tell the interpreter 1980 how to evaluate sub-expressions.

Any string appearing in the <instructions> element 1822 will be displayed in the parameters panel 1960 to give the user any last minute instructions or suggestions. The <gui> element 1824 contains any number of elements that describe graphical components. These graphical components will appear in the parameters panel 1960 to give the user the ability to make changes to the macro's parameters. Four gui components (not shown) may be: <comp_vector>, <comp_list>, <comp_rbutton>, and <comp_ipanel>. The <comp_vector> is a vector variable, where the individual values of the vector can be viewed in a scrolling list box. A <comp_list> element is a scrolling list; each time the user clicks on a different item, the value of the variable attached to that component is changed to the value associated with that item. A <comp_rbutton> is a collection of radio buttons; each is associated with a different value. As the user clicks on different buttons, the value associated with the component itself is changed, and the macro is re-run. A <comp_ipanel> is an input field that allows the user directly to input changes to the macro.

Generally, macros are not meant to run blindly on all data. First, the interpreter 1980 checks if the macro has any "qualifiers" that must be checked against the data. If there are any strings in the <qualifiers> element 1826 of the RMML document 104, these are checked against strings in the <li_class> element 930 or other elements or attributes of the data. If the data is qualified, the interpreter 1980 will proceed with running the macro. For example, if the <qualifiers> element 1826

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of the macro specifies "li_unit==currency", then the macro will only be run if the li_unit attribute of the data being operated on is a currency value.

The <error_handling> element 1828 holds error messages that can be displayed by the RDML data viewer 100 if there are problems of an indicated type. The <testing> element 1830 holds instructions to testing applications regarding automated testing routines. These applications undertake basic unit testing such as checking for out-of-bounds problems, missing value problems, divide-by-zero issues, etc.

The third major section of the RMML document 104, the <macro_references> element 1808 holds references to outside macros and data sets that might be incorporated into the macro by reference. The two sub-elements are, accordingly, the <rmmldocs> element 1832 and the <data_docs> element 1834.

IV.C.1.   RMML Macro Package

Generally, there are three major areas of the RMML Macro Package: the RMML document handling classes (Figure 19A), the graphical interface (Figure 19B), and the macro interpreter (Figure 19C). In one implementation consistent with the present invention, this package of software classes connects to the RDML data viewer 100 in only a few places: it gets data from the ChartManager 714/ChartData 715 objects, posts its graphical components through the GUI 734 object, and can access the loaded RDML documents 102 in the Primary Data Store 712.

RMML Document Handling

Figure 19A shows objects responsible for managing the process of RMML document handling: loading documents, creating internal macro objects from them, cataloging them and caching them, and making them ready for use as objects. The RMMLDoc Reader 1910 locates an RMML Document 104 (either locally or over the internet) passes it to an XML Parser 706 (which

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may be a third-party component), relays error messages if any to the RDML data viewer 100, creates an internal representation of the RMML Document 104 as an RMMLDoc 1906 object, and places a reference to the RMMLDoc 1906 in the RMML_Lib 1908.

The RMMLDoc 1906 can be structured in two ways: either wrapping a TXDocument object to arrive at an RMMLDoc 1906, or creating a new RMMLDoc 1906 object with the data from the TXDocument.

The RMMLDoc 1906 object contains methods for accessing individual elements and attributes of the document in a way that is easy to comprehend in the context of the macro package. The RMML_Lib 1908 object is a cache for loaded and active RMMLDoc objects 1906.

The RMMLDoc 1906 is a raw collection of data about a macro -- its formula, its help text, etc. -- and generally does not act on data sets to transform them. The macro's capabilities first have to be used to create an internal object (macro interface 758) that is capable of doing the calculations. This internal macro object 758 is created by a collaboration between the MacroLibrary 1926 object (which is a cache of the graphic objects for the active macros) and the MacroFactory 1912 (which determines which type of internal macro to create.)

There are four types of internal macros: time series (TS), category (CT), xy plot (XY) and overlay (OVERLAY). The macro_type attribute is used by the MacroFactory 1912 to create the correct type of internal macro: Macro_TSL 1918, Macro_CT 1920, Macro_XY 1922, and Macro_OVER 1924 respectively. The MacroAdapter 1916 class performs the work of the macros.

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Table 7

MacroAdapter
-mm : MacroManager -mem : Memento -rmmldoc : RMMLDoc -eval : Evaluator -mag : MacroAssumptionGroup -desc : MacroDescription -isChangedFlag : boolean -result_type : int -curr_li : int -series_label_modifier : String -series_label_type : String
+createMemento() : void +evaluateFormula(strExpr : String, index : int) : Vector +initMacro() : void +performTransformation(result_type : int) : void +replaceVariable(strExpr : String, index : int) : String +resetMemento(mem : MacroMemento) : void +undoTransformation() : void +updateChartTitle() : void +updateLabels() : void +updateLegend() : void +updateYAxisTitle() : void

Described below are class methods shown in Table 7 of a MacroAdapter object 760 in accordance with one implementation consistent with the present invention. First, MacroAdapter() is the constructor that creates a MacroAdapter 760 object. Before a macro is run, it has a chance to make a copy of the data that it is about to transform so that undo operations can be performed. The createMemento() method takes a snapshot of the data plotted on the chart by copying the ChartData object 715 to a Memento object.

Also, before a macro is run, the method initMacro() is run and gives the macro a chance to load any remote data or macro code. The replaceVariable() method runs the macro on multiple series on a chart. For example, if the result_type is "Replace Each" and there are four series charted on the chart, the macro will be run four times. The first time, A in the formula represents the first series, the second time it represents the second series and so forth. The method

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Exhibit 1002_0543

performTransformation() evaluates the transformation string, and updates the various titles and legends. An important part of performTransformation()'s code is to determine the result_type of the macro and call the evaluateFormula() method in the correct manner. For "Replace Each," it is called once for each series, while for "Replace All," it is run only once.

The performTransformation() method also calls the four update methods: updateChartTitle(), updateLabels(), updateLegend() and updateYAxisTitle(). Each of these modifies the relevant strings in the ChartData object 715 so it can be passed on to the chart.

<u>RMML Graphical Interface</u>

Figure 19B illustrates objects responsible for managing the process of creating, managing, and handling events from the graphical user interface 734. Figure 20A shows a screen shot of the RDML data viewer 100; the NewMacroPanel 732 is displayed in the lower half of the screen. The available macros are displayed in individual windows in the MacroLibrary panel 1926 on the left side of the lower panel. The right side of the macro panel 732 is the macro information panel 2002 which holds the macro description panel 1958 and the parameter panel 1960.

The NewMacroPanel 732 may be a subclass of a JPanel 1942 in Java's Swing set of classes. Those skilled in the art will be able to chose the appropriate class to use for other major platforms. The left side of the NewMacroPanel 732 is a frame for a multiple document interface (in this case, a Desktop for JinternalFrame objects from Java's Swing Set). Each MacroLibrary 1926 that is opened created a new internal frame, which allows users to select macros from multiple libraries at the same time.

When a MacroLibrary 1926 is opened, all macros within it are loaded and registered. "Registration" is a series of methods wherein the macro's variables are found in various elements

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of the RMMLDoc 104, and graphical representations of these variables are built for inclusion in the parameter panel 1960.

The graphical components for all of the variables associated with a set of macros are created in the MacroAssumptionGroup 1944 class. This class has a factory method that examines the attributes of the variables reported by the RMMLDoc 104 (variable name, variable value, gui type, default value, etc.) and creates the appropriate MacroGUI class: MacroGUI_List 1952 (see Figure 20A), MacroGUI_RadioButton 1954 (see Figure 20B), MacroGUI_Vector 1956 (see Figure 20C), or MacroGUI_Default 1950 (see Figure 20D). Each of these graphical compents appears differently in the parameter panel 1960 as shown in the screen shots noted.

The registration of macros by the MacroLibrary 1926 also involves creating an MVariable 1946 object to go with each variable, and adding these to a cache of available Mvariables 1946. These Mvariable 1946 objects are used in the actual evaluation of expressions. The registration process also involves registering the MacroGUI 1948 objects as sources for events that the MacroManager 1980 object can use to trigger the running of a macro. Mvariables 1946 encapsulate the various characteristics of a variable: its value, default, and source.

The description panel 1958 and the parameter panel 1960 are populated with graphical components and text when a particular macro is selected in the treeview 720 listing of a MacroLibrary1926 internal frame. The macro that is selected provides the description text, the various labels and the MacroGUI 1948 components.

RMML Interpreter

The MacroManager object 730 is responsible for detecting that a macro has been selected or a parameter changed, getting the various data sets and variables called up and made available to an

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Evaluator object 1984, and that the data set charted (or showing on the treeview 720) is obtained and transformed and sent back to be recharted on the chart 716 or relisted on the treeview.

ChartData 715 contains the data from the current chart 716 (or active treeview 720, depending on the type of the macro). It makes this data available as just another variable to the Evaluator object 1984, and takes the final result of the Evaluator object 1984.

The Evaluator 1984 evaluates the string expression(s) in the <code> element 1920 of the RMML document 104, or the various expressions from the macros that have been selected. The expression is broken up into tokens by the Tokenizer classes 1994. These tokens are the various operators, variables, literals, functions and other control symbols used in the RMML expression language detailed above. From these tokens, the Formula object 1990 builds a parse tree, by recursive descent, made up of FormulaNode 1992 objects created from the tokens. The FormulaNode 1992 objects evaluate themselves using the resolver objects VariableResolver 1986 and FunctionResolver 1988. These resolvers in turn call the Evaluator objects 1984 to give them the current value of a variable or a function. For example, the FormulaNode 1982 evaluation process may have an "A" token; the Evaluator object 1984 knows that this means series A on the chart, and uses the vector of data (it could be an array or other data structure) currently found in the chart 716. The formula exception 1996 relays errors associated with the processing of a function.

The foregoing description of an implementation of the present invention has been presented for purposes of illustration and description. It is not exhaustive and does not limit the present invention to the precise form disclosed. Modifications and variations are possible in light of the above teaching or may be acquired from practicing of the present invention. The scope of the present invention is defined by the claims and their equivalents.

APPENDIX A: RDML Document Type Definition ("DTD")

```
<?xml encoding="UTF-8"?>

<!-- The root element: a whole portfolio of data is an "rdmldoc" -->
<!ELEMENT rdmldoc (rdmldoc_header, line_item_set)>

<!-- RDMLDOC_HEADER -->

<!-- Information about the rdmldoc.  An rdmldoc consists of an rdmldoc_header
    and a line_item_set.  Line items in the line_item_set share a
    common data structure.
-->

<!ELEMENT rdmldoc_header (data_source?, formatting_source?, rdmldoc_source?,
            license_terms?, linkset?)>
<!ATTLIST rdmldoc_header
        rdmldoc_ID              CDATA           #REQUIRED
        doc_title               CDATA           #REQUIRED
        timestamp               CDATA           #REQUIRED
        version                       CDATA          #IMPLIED
        expiration              CDATA           #IMPLIED
        freq_of_update          CDATA       -   #IMPLIED
        num_line_items          CDATA           #IMPLIED
        num_datapoints          CDATA           #IMPLIED
        x_indexes               CDATA           #IMPLIED
        first_li_withdata       CDATA           #IMPLIED >

<!ELEMENT data_source (contact_info+)>

<!ELEMENT formatting_source (contact_info+)>

<!ELEMENT rdmldoc_source (contact_info+)>

<!ELEMENT license_terms (contact_info?, linkset?)>
<!ATTLIST license_terms
        copyright_cite      CDATA           #REQUIRED
        holder              CDATA           #REQUIRED
        license_type        CDATA           #IMPLIED
        warranty            CDATA           #IMPLIED
        disclaimer          CDATA           #IMPLIED
        terms               CDATA           #IMPLIED
        date                CDATA           #IMPLIED
        email               CDATA           #IMPLIED
        state               CDATA           #IMPLIED
```

```
            country              CDATA              #IMPLIED >

<!ELEMENT contact_info (#PCDATA)>
<!ATTLIST contact_info
        role                 CDATA              #REQUIRED
        name                 CDATA              #IMPLIED
        company              CDATA              #IMPLIED
        address              CDATA              #IMPLIED
        city                 CDATA              #IMPLIED
        state                CDATA              #IMPLIED
        zip                  CDATA              #IMPLIED
        country              CDATA              #IMPLIED
        email                CDATA              #IMPLIED
        form                 CDATA              #IMPLIED
        href                 CDATA              #IMPLIED
        comments             CDATA              #IMPLIED >

<!ELEMENT linkset (link*)>
<!ATTLIST linkset
        form                 CDATA              #FIXED 'extended'
        href                 CDATA              #IMPLIED >

<!ELEMENT link (#PCDATA) >
<!ATTLIST link
        form                 CDATA              #FIXED 'simple'
        href                 CDATA              #REQUIRED
        behavior             CDATA              #IMPLIED
        content-role         CDATA              #IMPLIED
        content-title        CDATA              #IMPLIED
        role                 CDATA              #IMPLIED
        title                CDATA              #IMPLIED
        show                 CDATA              #FIXED 'new'
        actuate                CDATA                #FIXED 'user' >


<!-- LINE_ITEM_SET -->

<!-- Information about the collection of line items -->

<!ELEMENT line_item_set (data_x, li_class_set?, linkset?, line_item+) >
<!ATTLIST line_item_set
        line_item_set_type   CDATA              #REQUIRED
        time_period          CDATA              #REQUIRED
        character_set        CDATA              #IMPLIED
        missing_values       CDATA              #IMPLIED
```

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```
              null_values          CDATA           #IMPLIED
              zero_values          CDATA           #IMPLIED
              dates_values         CDATA           #IMPLIED
              percentages          CDATA           #IMPLIED >

<!ELEMENT data_x (#PCDATA) >
<!ATTLIST data_x
              x_title              CDATA           #REQUIRED
              format               CDATA           #REQUIRED
              x_notes              CDATA           #IMPLIED
              x_desc                      CDATA              #IMPLIED
              x_prec               CDATA           #REQUIRED
              x_unit               CDATA           #REQUIRED
              x_mag                CDATA           #REQUIRED
              x_mod                       CDATA              #REQUIRED
              x_measure            CDATA           #REQUIRED
              x_scale              CDATA           #REQUIRED
              x_adjustment         CDATA           #REQUIRED
              x_links                     CDATA              #REQUIRED >

<!ELEMENT li_class_set (li_class+)>

<!ELEMENT li_class (#PCDATA)>
<!ATTLIST li_class
              class_name           CDATA           #REQUIRED
              parent_class         CDATA           #REQUIRED
              form                 CDATA           #FIXED 'simple'
              href                 CDATA           #IMPLIED
              description          CDATA           #IMPLIED >


<!-- LINE_ITEM   -->

<!-- Information about the Line Item -->

<!ELEMENT line_item (data_x?, data_y, linkset?, note_set?) >
<!ATTLIST line_item
              li_ID                CDATA           #REQUIRED
              li_legend            CDATA           #REQUIRED
              li_title             CDATA           #REQUIRED
              li_cat               CDATA           #IMPLIED
              y_axis_title         CDATA           #REQUIRED
              level                CDATA           #REQUIRED
              format               CDATA           #REQUIRED
              relation             CDATA           #REQUIRED
```

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```
            li_notes           CDATA              #REQUIRED
            li_desc                CDATA              #REQUIRED
            li_prec                CDATA              #REQUIRED
            li_unit            CDATA              #REQUIRED
            li_mag                 CDATA              #REQUIRED
            li_mod                 CDATA              #REQUIRED
            li_measure         CDATA              #REQUIRED
            li_scale           CDATA              #REQUIRED
            li_adjustment      CDATA              #REQUIRED
            li_aggregation     CDATA              #IMPLIED >

<!ELEMENT data_y (#PCDATA)>

<!ELEMENT analysis (linkset?)>

<!ELEMENT note_set (note+)>

<!ELEMENT note (#PCDATA)>
<!ATTLIST note
            note_type              CDATA              #IMPLIED >
```

APPENDIX B: Sample RDML Document

```
<rdmldoc>
  <rdmldoc_header
        rdmldoc_ID = "rdml_thomson_cs1"
        doc_title = "Computer Services Companies"
        timestamp = "1999-01-19T23:00:00"
        version = "1.0.0"
        expiration = "2000-01-19T23:00:00"
        freq_of_update = "Annual"
        num_line_items = "0"
        num_datapoints = "0"
        x_indexes =  "-9, -8, -7"
        first_li_withdata = "3" >

<data_source>
  <contact_info
        role = "Data Source"
        name = "Russell T. Davis"
        company = "RDML, Inc."
        address = "2 Wisconsin Circle, Suite 700"
        city = "Chevy Chase"
        state = "MD"
        zip = "20815"
        country = "USA"
        email = "rt_davis@sprynet.com"
        xlink:form = "simple"
        href = "http://www.rdml.com"
        comments = "" >
</contact_info>
</data_source>
<formatting_source>
<contact_info
        role = "Formatting Source"
        name = "Russell T. Davis"
        company = "RDML, Inc."
        address = "2 Wisconsin Circle, Suite 700"
        city = "Chevy Chase"
        state = "MD"
        zip = "20815"
        country = "USA"
        email = "rt_davis@sprynet.com"
        xlink:form = "simple"
        href = "http://www.rdml.com"
        comments = "" >
```

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```
  </contact_info>
</formatting_source>
<rdmldoc_source>
 <contact_info
        role = "RDMLDoc Source"
        name = "Russell T. Davis"
        company = "RDML, Inc."
        address = "2 Wisconsin Circle, Suite 700"
        city = "Chevy Chase"
        state = "MD"
        zip = "20815"
        country = "USA"
        email = "rt_davis@sprynet.com"
        xlink:form = "simple"
        href = "http://www.rdml.com"
        comments = "" >
  </contact_info>
</rdmldoc_source>
<license_terms
        copyright_cite = "Copyright 1998, RDML, Inc.  All Rights Reserved"
        holder = "RDML, Inc."
        license_type = "Payment Per Download"
        warranty = "No warranty is expressed or implied.  Use this data at your own risk."
        disclaimer = "This data is provided 'as-is'.  The provider assumes no
responsibility for its use or misuse."
        terms = "$1 per RDMLDoc download"
        date = "1999.0123000000.00"
        email = "license@rdml.com"
        href = "http://www.rdml.com"        state = "MD"        country = "USA" >

  <contact_info
        role = "RDMLDoc Source"
        name = "Russell T. Davis"
        company = "RDML, Inc."
        address = "2 Wisconsin Circle, Suite 700"
        city = "Chevy Chase"
        state = "MD"
        zip = "20815"
        country = "USA"
        email = "rt_davis@sprynet.com"
        xlink:form = "simple"
        href = "http://www.rdml.com"
        comments = "" >
  </contact_info>
</license_terms>
```

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```
</rdmldoc_header>
<line_item_set
        line_item_set_type = "Category"
        time_period = ""
        character_set = ""
        missing_values = ""
        null_values = ""
        zero_values = ""
        dates_values = ""
        percentages = "" >

<data_x
        x_title = "Company"
        format = ""
        x_notes = ""
        x_desc =  ""
        x_prec = ""
        x_unit = ""
        x_mag = ""
        x_mod = ""
        x_measure = ""
        x_scale = ""
        x_adjustment = ""
        x_links = "" >
AUD, BSYS, CEN, CSC, CVG, DST, EDS, FISV, GLC, PAYX, TSG, SDS  </data_x>
  <li_class_set>
  <li_class
        class_name = ""
        parent_class = ""
        xlink:form = "simple"
        href = ""
        description = "" >        </li_class>
  </li_class set>
  <linkset>
  <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >        </link>
```

```
</linkset>

<line_item
        li_ID = "1"
        li_legend = "Computer Services Companies"
        li_title = ""
        li_cat = ""
        y_axis_title = ""
        level = "1"
        format = ""
        relation = "Parent"
        li_notes = ""
        li_desc = ""
        li_prec = ""
        li_unit = ""
        li_mag = ""
        li_mod = ""
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>

' ' ' ' ' ' ' ' ' ' ' '

    </data_y>
    <linkset>
    <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>
        </linkset>

</line_item>
<line_item
        li_ID = "2"
        li_legend = "Stock Performance"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = ""
        level = "2"
```

```
                        format = ""
                        relation = "Parent"
                        li_notes = ""
                        li_desc = ""
                        li_prec = ""
                        li_unit = ""
                        li_mag = ""
                        li_mod = ""
                        li_measure = ""
                        li_scale = ""
                        li_adjustment = "">
              <data_y>

'  '  '  '  '  '  '  '  '  '  '  '

              </data_y>
              <linkset>
              <link
                        xlink:form = "simple"
                        href = "http://www.rdml.com"
                        behavior = ""
                        content-role = ""
                        content-title = ""
                        role = "Original Data Sources"
                        title = "RDML Formatted Source Table"
                        show = "new"
                        actuate = "user" >        </link>

              </linkset>

      </line_item>
      <line_item
                        li_ID = "3"
                        li_legend = "Stock Price (12/31/98)"
                        li_title = "Stock Overview"
                        li_cat = ""
                        y_axis_title = "$ per share (12/31/98)"
                        level = "3"
                        format = "#, ##0.00; (#, ##0.00)"
                        relation = "ChildStyle"
                        li_notes = ""
                        li_desc = ""
                        li_prec = "2"
                        li_unit = "$"
                        li_mag = "0"
                        li_mod = "per"
```

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```
                li_measure = "share"
                li_scale = ""
                li_adjustment = "">
        <data_y>
40.1, 51.63, 69.81, 64.44, 22.13, 67.06, 50.19, 51.44, 43.5, 51.44, 44.5, 39.69,
        </data_y>
        <linkset>
         <link
                xlink:form = "simple"
                href = "http://www.rdml.com"
                behavior = ""
                content-role = ""
                content-title = ""
                role = "Original Data Sources"
                title = "RDML Formatted Source Table"
                show = "new"
                actuate = "user" >        </link>

         </linkset>

        </line_item>
        <line_item
                li_ID = "4"
                li_legend = "Shares Outstanding"
                li_title = "Stock Overview"
                li_cat = ""
                y_axis_title = "Shares outstanding"
                level = "3"
                format = "#, ##0; (#, ##0)"
                relation = "ChildStyle"
                li_notes = ""
                li_desc = ""
                li_prec = "0"
                li_unit = "shares"
                li_mag = "6"
                li_mod = ""
                li_measure = ""
                li_scale = ""
                li_adjustment = "">
        <data_y>
627, 27, 74, 162, 145, 64, 494, 85, 105, 166, 131, 107,
        </data_y>
        <linkset>
         <link
                xlink:form = "simple"
```

```
            href = "http://www.rdml.com"
            behavior = ""
            content-role = ""
            content-title = ""
            role = "Original Data Sources"
            title = "RDML Formatted Source Table"
            show = "new"
            actuate = "user" >      </link>

</linkset>

    </line_item>
    <line_item
        li_ID = "5"
        li_legend = "%  Institutional Holdings"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "% of outstanding shares"
        level = "3"
        format = "0.00%; (0.00%)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li_unit = "%"
        li_mag = "0"
        li_mod = "of"
        li_measure = "outstanding shares"
        li_scale = ""
        li_adjustment = "">
    <data_y>
0.65, 0.8, 0.75, 0.64, 0, 0.44, 0.49, 0.67, 0.25, 0.53, 0.13, 0.71,
    </data_y>
    <linkset>
    <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>
```

```
</linkset>

</line_item>
<line_item
        li_ID = "6"
        li_legend = "Market Capitalization"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "$ in Millions"
        level = "3"
        format = "#, ##0; (#, ##0)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "0"
        li_unit = "$"
        li_mag = "6"
        li_mod = "in"
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>
25142.7, 1394.01, 5165.94, 10439.28, 3208.85, 4291.84, 24793.86, 4372.4, 4567.5,
8539.04, 5829.5, 4246.83,
    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >        </link>

    </linkset>

</line_item>
<line_item
        li_ID = "7"
        li_legend = "Reported EPS"
        li_title = "Stock Overview"
        li_cat = ""
```

```
            y_axis_title = "Earnings per share"
            level = "3"
            format = "#, ##0.00; (#,##0.00)"
            relation = "ChildStyle"
            li_notes = ""
            li_desc = ""
            li_prec = "2"
            li unit = "$"
            li_mag = "0"
            li_mod = "per"
            li_measure = "share"
            li_scale = ""
            li_adjustment = "">
    <data_y>
1.13, 2.05, 1.9, 2.1, 0.71, 1.48, 1.7, 1.35, 1.86, 0.82, 1.72, 1.17,
    </data_y>
    <linkset>
     <link·
            xlink:form = "simple"
            href = "http://www.rdml.com"
            behavior = ""
            content-role = ""
            content-title = ""
            role = "Original Data Sources"
            title = "RDML Formatted Source Table"
            show = "new"
            actuate = "user" >       </link>

    </linkset>

</line_item>
    <line_item
            li_ID = "8"
            li_legend = "Earnings"
            li_title = "Stock Overview"
            li_cat = ""
            y_axis_title  = "$ in Millions"
            level = "3"
            format = "#, ##0; (#,##0)"
            relation = "ChildStyle"
            li_notes = ""
            li_desc = ""
            li_prec = "0"
            li_unit = "$"
            li_mag = "6"
```

```
            li_mod = "in"
            li_ measure = ""
            li_scale = ""
            li_adjustment = "">
      <data_y>
708.51, 55.35, 140.6, 340.2, 102.95, 94.72, 839.8, 114.75, 195.3, 136.12,
225.32, 125.19,
      </data_y>
      <linkset>
       <link
            xlink:form = "simple"
            href = "http://www.rdml.com"
            behavior = ""
            content-role = ""
            content-title =
            role = "Original Data Sources"
            title = "RDML Formatted Source Table"
            show = "new"
            actuate = "user" >      </link>

      </linkset>

</line_item>
<line_item
            li_ID = "9"
            li_legend = "Cash Flow per share"
            li_title = "Stock Overview"
            li_cat = ""
            y_axis_title = "$ per share"
            level = "3"
            format = "#, ##0; (#,##0)"
            relation = "ChildStyle"
            li_notes = ""
            li_desc = ""
            li_prec = "2"
            li_unit = "$"
            li_mag = "0"
            li_mod = "per"
            li_measure = "share"
            li_scale = ""
            li_adjustment = "">
<data_y>
1.41, 2.13, 3.71, 4.95, 1.39, 3.18, 4, 1.98, 3.44, 0.96, 3.2, 2.5,
      </data_y>
      <linkset>
```

```
<link
    xlink:form = "simple"
    href = "http://www.rdml.com"
    behavior = ""
    content-role = ""
    content-title = ""
    role = "Original Data Sources"
    title = "RDML Formatted Source Table"
    show = "new"
    actuate = "user" >      </link>

</linkset>

</line_item>

<line_item
        li_ID = "10"
        li_legend = "Cash Flow"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "$ in Millions"
        level = "3"
        format = "#, ##0; (#, ##0)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "0"
        li_unit = "$"
        li_mag = "6"
        li_mod = "in"
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>
884.07, 57.51, 274.54, 801.9, 201.55, 203.52, 1976, 168.3, 361.2, 159.36, 419.2,
267.5,
    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
```

```
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >     </link>


</linkset> .

</line_item>
<line_item
        li_ID = "11"
        li_legend = "Price/Earnings Ratio (PE)"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "P/E Ratio"
        level = "3"
        format = "#, ##0; (#,##0)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li_unit = "P/E Ratio"
        li_mag = "0"
        li_mod = ""
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y> .
35.4867256637168,   25.1853658536585,   36.7421052631579,   30.6857142857143,
31.169014084507,    45.3108108108108,   29.5235294117647,   38.1037037037037,
23.3870967741935,   62.7317073170732,   25.8720930232558,   33.9230769230769,
    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >     </link>


    </linkset>
```

```
</line_item>
<line_item
        li_ID = "12"
        li_legend = "Estimated 5-year growth"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "% growth"
        level = "3"
        format = "0.00%; (0.00%)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li_unit = "%"
        li_mag = "0"
        lit_mod = ""
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>
0.15, 0.18, 0.2, 0.22, 0.23, 0.22, 0.15, 0.2, 0.15, 0.3, 0.13, 0.2,
    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >       </link>

</linkset>
```

```
</line_item>
<line_item
        li_ID = "13"
        li_legend = "Return on Equity"
        li_title = "Stock Overview"
        li_cat = ""
        y_axis_title = "Earnings as % of Book Value"
        level = "3"
        format = "0.00%; (0.00%)"
        relation = "ChildStyle"
        li_notes = ""
        li_desc = ""
        li_prec = "2"
        li_unit = "%"
        li_mag = "0"
        li_mod = ""
        li_measure = ""
        li_scale = ""
        li_adjustment = "">
    <data_y>

    ' ' ' ' ' ' ' ' ' '

    </data_y>
    <linkset>
     <link
        xlink:form = "simple"
        href = "http://www.rdml.com"
        behavior = ""
        content-role = ""
        content-title = ""
        role = "Original Data Sources"
        title = "RDML Formatted Source Table"
        show = "new"
        actuate = "user" >      </link>

    </linkset>
   </line_item>
  </line_item_set>
</rdmldoc>
```

APPENDIX C: UnitList XML document

```xml
<?xml version="1.0" encoding="utf-8" ?>
<unitlist>
<unit name="inch">
    <conversion
        conv_target = "centimeter"
        conv_factor = "2.5400050"
        conv_constant = ""
        conv_log = ""
        conv_source = "FGM"
        conv_href = "">
    </conversion>
    <type>Length</type>
    <subtype>Linear</subtype>
    <plural>inches</plural>
    <alias>in</alias>
    <desc>Approximately the width of a man's thumb.</desc>
    <icon href="inch.gif"></icon>
</unit>

<unit name="foot">
    <conversion
        conv_target = "meter"
        conv_factor = "0.30480060"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>length</type>
    <subtype>Linear</subtype>
    <plural>feet</plural>
    <alias>ft</alias>
    <desc>Originally, the average length of a human foot</desc>
    <icon href="foot.gif"></icon>
</unit>

<unit name="yard">
    <conversion
        conv_target = "meter"
        conv_factor = "1.082"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
```

```
        conv_href = "">
    </conversion>
    <type>length</type>
    <subtype>Linear</subtype>
    <plural>yards</plural>
    <alias></alias>
    <desc>Three feet</desc>
    <icon href="yard.gif"></icon>
</unit>

<unit name="meter">
    <conversion
        conv_target = "meter"
        conv_factor = "1.0"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>length</type>
    <subtype>Linear</subtype>
    <plural>meters</plural>
    <alias>m,mtr</alias>
    <desc>One thousandth of a kilometer</desc>
    <icon href="meter.gif"></icon>
</unit>

<unit name="mile">
    <conversion
        conv_target = "kilometer"
        conv_factor = "1.6093472"
        conv_constant = ""
        conv_log = ""
        conv_source = "FGM"
        conv_href = "">
    </conversion>
    <type>length</type>
    <subtype>Linear</subtype>
    <plural>miles</plural>
    <alias></alias>
    <desc>English surveying unit, set to be equal to 8 furlongs.</desc>
    <icon href="mile.gif"></icon>
</unit>

<unit name="dollar">
```

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```
<conversion
    conv_target = "pound"
    conv_factor = "1.312"
    conv_constant = ""
    conv_log = ""
    conv_source = "ISO"
    conv_href = "">
</conversion>
<type>currency</type>
<plural>pounds</plural>
<alias>sterling</alias>
<desc>British pound sterling.  </desc>
<icon href="pound.gif"></icon>
</unit>

<unit name="Deutschmark">
    <conversion
        conv_target = "dollar"
        conv_factor = "1.732"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>currency</type>
    <plural>Duetschmarks</plural>
    <alias>Marks</alias>
    <desc>German Deutschmarks</desc>
    <icon href="marks.gif"></icon>
</unit>

<unit name="Francs">
    <conversion
        conv_target = "dollar"
        conv_factor = "0.812"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>currency</type>
    <plural>francs</plural>
    <alias>ff</alias>
    <desc>French francs</desc>
    <icon href="francs.gif"></icon>
```

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```
</unit>

<unit name="acres">
    <conversion
        conv_target = "square meter"
        conv_factor = "5125"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>area</type>
    <plural>acres</plural>
    <alias>acr</alias>
    <desc>In medieval times, the amount of land one man could plow in one day.</desc>
    <icon href="acre.gif"></icon>
</unit>

<unit name="square foot">
    <conversion
        conv_target = "square meter"
        conv_factor = "0.15"
        conv_constant = ""
        conv_log = ""
        conv_source = "ISO"
        conv_href = "">
    </conversion>
    <type>area</type>
    <plural>square feet</plural>
    <alias>sq ft</alias>
    <desc>An area one foot by one foot.</desc>
    <icon href="sqfoot.gif"></icon>
</unit>

</unitlist>
```

APPENDIX D: RMML Document Type Definition ("DTD")

```
<?xml encoding="UTF-8"?>

<!-- The root element: a whole macro is a "macrodoc".
A macrodoc consists of three elements:
    a macro_header, a macro_code, and a macro_references element.
-->
<!ELEMENT macrodoc (macro_header, macro_code, macro_references)>

<!-- MACRO_HEADER -->
<!-- Information about the macro.
-->

<!ELEMENT macro_header (macro_source, license_terms, linkset?, documentation)>
<!ATTLIST macro_header
        macrodoc_ID     CDATA           #REQUIRED
        macro_title     CDATA           #REQUIRED
        macro_type      CDATA           #REQUIRED
        result_type         CDATA           #REQUIRED
        rdmldoc_type    CDATA           #REQUIRED
        timestamp       CDATA           #IMPLIED
        version         CDATA           #IMPLIED
        expiration      CDATA           #IMPLIED
        freq_of_update  CDATA           #IMPLIED >

<!ELEMENT macro_source (contact_info+)>

<!ELEMENT license_terms (contact_info, linkset?)>
<!ATTLIST license_terms
        copyright_cite  CDATA           #REQUIRED
        holder          CDATA           #IMPLIED
        license_type    CDATA           #IMPLIED
        warranty        CDATA           #IMPLIED
        disclaimer      CDATA           #IMPLIED
        terms           CDATA           #IMPLIED
        date            CDATA           #IMPLIED
        email           CDATA           #IMPLIED
        state           CDATA           #IMPLIED
        country         CDATA           #IMPLIED >

<!ELEMENT contact_info (#PCDATA)>
<!ATTLIST contact_info
        role            CDATA           #IMPLIED
        name            CDATA           #IMPLIED
```

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```
        company          CDATA              #IMPLIED
        address          CDATA              #IMPLIED
        city                    CDATA                   #IMPLIED
        state            CDATA              #IMPLIED
        zip              CDATA              #IMPLIED
        country          CDATA              #IMPLIED
        email            CDATA              #IMPLIED
        xlink:form              CDATA                   #IMPLIED
        href             CDATA              #IMPLIED
        comments         CDATA              #IMPLIED >

<!ELEMENT linkset (link*)>
<!ATTLIST linkset
        xlink_form       CDATA              #FIXED 'extended'
        href             CDATA              #IMPLIED >

<!ELEMENT link (#PCDATA) >
<!ATTLIST link
        xlink_form       CDATA              #FIXED 'simple'
        href             CDATA              #REQUIRED
        behavior         CDATA              #IMPLIED
        content-role     CDATA              #IMPLIED
        content-title    CDATA              #IMPLIED
        role             CDATA              #IMPLIED
        title            CDATA              #IMPLIED
        show             CDATA              #FIXED 'new'
        actuate          CDATA              #FIXED 'user' >

<!ELEMENT documentation (macro_description, help_page*)>

<!ELEMENT macro_description (#PCDATA)>

<!ELEMENT help_page (#PCDATA)>

<!ELEMENT macro_code (code, instructions, gui, variable_set?, qualifiers, error_handling,
testing)>

<!ELEMENT code (#PCDATA)>

<!ELEMENT instructions (#PCDATA)>

<!ELEMENT gui (comp_rpanel? | comp_ipanel? | comp_list? | comp_vector?)>

<!ELEMENT comp_rpanel (comp_rbutton*)>
<!ATTLIST comp_rpanel
```

```
    variable_name    CDATA              #REQUIRED
    intro_label            CDATA                #IMPLIED
    visible          CDATA              #IMPLIED
    legend           CDATA              #IMPLIED
    legend_type      CDATA              #IMPLIED >

<!ELEMENT comp_rbutton (#PCDATA)>
<!ATTLIST comp_rbutton
    label            CDATA              #REQUIRED
    value            CDATA              #REQUIRED
    isDefault        CDATA              #REQUIRED
    icon             CDATA              #IMPLIED
    desc             CDATA              #IMPLIED
    legend           CDATA              #IMPLIED
    legend_type      CDATA              #IMPLIED >

<!ELEMENT comp_ipanel (comp_ifield*)>

<!ELEMENT comp_ifield (#PCDATA)>
<!ATTLIST comp_ifield
    variable_name    CDATA              #REQUIRED
    variable_label   CDATA              #REQUIRED
    intro_label            CDATA                #REQUIRED
    default_value    CDATA              #REQUIRED
    desc             CDATA              #IMPLIED
    legend           CDATA              #IMPLIED
    legend_type      CDATA              #IMPLIED >

<!ELEMENT comp_list (comp_listitem*)>
<!ATTLIST comp_list
    variable_name    CDATA              #REQUIRED
    intro_label            CDATA                #REQUIRED
    default_item     CDATA              #REQUIRED
    legend           CDATA              #IMPLIED
    legend_type      CDATA              #IMPLIED >

<!ELEMENT comp_listitem (#PCDATA)>
<!ATTLIST comp_listitem
    label            CDATA              #REQUIRED
    value            CDATA              #REQUIRED
    icon             CDATA              #IMPLIED
    desc             CDATA              #IMPLIED
    legend           CDATA              #IMPLIED
    legend_type      CDATA              #IMPLIED >
```

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```
<!ELEMENT comp_vector (line_item)>
<!ATTLIST comp_vector
    variable_name    CDATA           #REQUIRED
    intro_label         CDATA               #REQUIRED
    default_item     CDATA           #REQUIRED
    desc             CDATA           #IMPLIED
    legend           CDATA           #IMPLIED
    legend_type      CDATA           #IMPLIED >

<!ELEMENT variable_set (variable*)>

<!ELEMENT variable (#PCDATA | line_item)*>
<!ATTLIST variable
    variable_name    CDATA           #REQUIRED
    variable_type    CDATA           #REQUIRED
    value            CDATA           #REQUIRED
    href             CDATA           #IMPLIED
    subref           CDATA           #IMPLIED >

<!ELEMENT qualifiers (#PCDATA)>

<!ELEMENT error_handling (#PCDATA)>

<!ELEMENT testing (#PCDATA)>

<!ELEMENT macro_references (macrodocs?, datadocs?)>

<!ELEMENT macrodocs (#PCDATA)>

<!ELEMENT datadocs (#PCDATA)>

<!ELEMENT line_item (data_x?, data_y, linkset?, note_set?) >
<!ATTLIST line_item
    li_ID            CDATA           #REQUIRED
    li_legend        CDATA           #REQUIRED
    li_title         CDATA           #REQUIRED
    li_cat           CDATA           #IMPLIED
    y_axis_title     CDATA           #REQUIRED
    level            CDATA           #REQUIRED
    format           CDATA           #REQUIRED
    relation         CDATA           #REQUIRED
    li_notes         CDATA           #REQUIRED
    li_desc          CDATA           #REQUIRED
    li_prec          CDATA           #REQUIRED
    li_unit          CDATA           #REQUIRED
```

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```
        li_mag          CDATA              #REQUIRED
        li_mod          CDATA              #REQUIRED
        li_measure          CDATA                  #REQUIRED
        li_scale        CDATA              #REQUIRED
        li_adjustment   CDATA              #REQUIRED
        li_aggregation  CDATA              #IMPLIED >


<!ELEMENT data_y (#PCDATA)>


<!ELEMENT note_set (note+)>


<!ELEMENT note (#PCDATA)>
<!ATTLIST note
        note_type       CDATA              #IMPLIED >


<!ELEMENT data_x (#PCDATA) >
<!ATTLIST data_x
        x_title         CDATA              #REQUIRED
        format          CDATA              #REQUIRED
        x_notes         CDATA              #IMPLIED
        x_desc          CDATA              #IMPLIED
        x_prec          CDATA              #REQUIRED
        x_unit          CDATA              #REQUIRED
        x_mag           CDATA              #REQUIRED
        x_mod           CDATA              #REQUIRED
        x_measure           CDATA                  #REQUIRED
        x_scale         CDATA              #REQUIRED
        x_adjustment    CDATA              #REQUIRED
        x_links         CDATA              #REQUIRED >
```

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APPENDIX E: Sample RMML document

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE macrodoc PUBLIC "-//.." "RMML1.dtd" >

<macrodoc>
 <macro_header
     macrodoc_ID = "rmml_sort"
     macro_title = "Sort"
     macro_type = "TSL"
     result_type = "replace_each"
     rdmldoc_type = "TS"
     timestamp = "1999-01-19T23:00:00"
     version = "1.0.0"
     expiration = "2000-01-19T23:00:00"
     freq_of_update = "Annual" >

  <macro_source>
   <contact_info
     role = "Macro Source"
     name = "Russell T. Davis"
     company = "RDML, Inc."
     address = "2 Wisconsin Circle, Suite 700"
     city = "Chevy Chase"
     state = "MD"
     zip = "20815"
     country = "USA"
     email = "rt_davis@sprynet.com"
     href = "http://www.rdml.com"
     comments = "" >
   </contact_info>
  </macro_source>

  <license_terms
     copyright_cite = "Copyright 1998, RDML, Inc. All Rights Reserved"
     holder = "RDML, Inc."
     license_type = "Payment Per Download"
     warranty = "No warranty is expressed or implied.  Use this data at your own risk."
     disclaimer = "This data is provided 'as-is'.  The provider assumes no responsibility for its use
or misuse."
     terms = "$1 per RMMLDoc download"
     date = "1999.0123000000.00"
     email = "license@rdml.com"
     state = "MD"
     country = "USA" >
```

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```
<contact_info
    role = "Licensee"
    name = "Russell T. Davis"
    company = "RDML, Inc."
    address = "2 Wisconsin Circle, Suite 700"
    city = "Chevy Chase"
    state = "MD"
    zip = "20815"
    country = "USA"
    email = "rt_davis@sprynet.com"
    href = "http://www.rdml.com"
    comments = "" >
 </contact_info>
</license_terms>

<linkset
    xlink_form = "extended"
    href = "http://www.rdml.com" >
 <link
    xlink_form = "simple"
    href = "http://www.rdml.com"
    behavior = ""
    content-role = ""
    content-title = ""
    role = ""
    title = ""
    show = "new"
    actuate = "user" >
 </link>
</linkset>

<documentation>
 <macro_description>
Adds a line showing the minimum or maximum, according to the parameters
 </macro_description>
 <help_page>
   No Help Page is currently available
 </help_page>
</documentation>

</macro_header>

<macro_code>

 <code>
```

```
    IF(ichoice=0, SORT(A,0), IF(ichoice=1, SORT(A,1), A))
</code>

<instructions>
</instructions>

<gui>
  <comp_rpanel
      variable_name = "ichoice"
      intro_label = "Select a parameter:" >

    <comp_rbutton
      label = "Ascending"
      value = "0"
      isDefault = "true"
      icon = "" >
    </comp_rbutton>

    <comp_rbutton
      label = "Descending"
      value = "1"
      isDefault = "false"
      icon = "" >
    </comp_rbutton>

  </comp_rpanel>
</gui>

<qualifiers>
</qualifiers>
<error_handling>
</error_handling>
<testing>
</testing>
</macro_code>

<macro_references>
 <macrodocs>
 </macrodocs>
 <datadocs>
 </datadocs>
</macro_references>

</macrodoc>
```

Appendix F: MS Excel Visual Basic routine for adding "attribute value columns" to a data table

```
Private Sub UserForm_Initialize()

  cmdOK.SetFocus
  txtChartTitle.Text = ""
  txtYAxisTitle.Text = ""
  cboFormat.AddItem ("#,##0;(#,##0)")
  cboFormat.AddItem ("#,##0.00;(#,##0.00)")
  cboFormat.AddItem ("0.00%;(0.00%)")
  cboFormat.ListIndex = 0
  txtFootnote.Text = "Source: "


  Dim NodeX As Node
  Set NodeR = treeUnit.Nodes.Add(, , "r", "Select One: (Default is blank)")
  'Currency
  Set NodeA = treeUnit.Nodes.Add("r", tvwChild, "c", "Currency")
  Set Nodes = treeUnit.Nodes.Add("c", tvwChild, "dus", "$ US")
  Set NodeX = treeUnit.Nodes.Add("c", tvwChild, "puk", "Pounds UK")
  Set NodeX = treeUnit.Nodes.Add("c", tvwChild, "yjp", "Yen Japanese")

  'Length
  Set NodeX = treeUnit.Nodes.Add("r", tvwChild, "l", "Length")
  Set NodeX = treeUnit.Nodes.Add("l", tvwChild, "Feet", "Feet")
  Set NodeX = treeUnit.Nodes.Add("l", tvwChild, "Meters", "Meters")

  'Area
  Set NodeX = treeUnit.Nodes.Add("r", tvwChild, "a", "Area")
  Set NodeX = treeUnit.Nodes.Add("a", tvwChild, "SqFeet", "Square Feet")
  Set NodeX = treeUnit.Nodes.Add("a", tvwChild, "SqMeters", "Square Meters")

  'tree formatting
  NodeA.EnsureVisible

  'Magnitude ComboBox
  cboMagnitude.AddItem ("As-Is")
  cboMagnitude.AddItem ("Thousands")
  cboMagnitude.AddItem ("Millions")
  cboMagnitude.AddItem ("Billions")
  cboMagnitude.ListIndex = 0

End Sub

Private Sub cmdCancel_Click()
```

```
        End
End Sub

Private Sub cmdOK_Click()

    rcount = Selection.Rows.Count

    'li_ID
    Selection.EntireColumn.Insert
    ActiveCell.Select
    ActiveCell.FormulaR1C1 = "li_ID"
    ActiveCell.Offset(1, 0).Range("A1").Select
    ActiveCell.FormulaR1C1 = "1"
    ActiveCell.Offset(1, 0).Range("A1").Select
    ActiveCell.FormulaR1C1 = "=R[-1]C+1"
    ActiveCell.Select
    Selection.Copy
    r = "A1:A" & (rcount - 3)
    ActiveCell.Offset(1, 0).Range(r).Select
    ActiveSheet.Paste
    Application.CutCopyMode = False

    'li_legend
    ActiveCell.Offset(-3, 1).Range("A1").Select
    ActiveCell.FormulaR1C1 = "li_legend"

    'li_title
    ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
    Selection.Insert Shift:=xlToRight
    ActiveCell.Select
    ActiveCell.FormulaR1C1 = "li_title"
    ActiveCell.Offset(1, 0).Range("A1").Select
    ActiveCell.FormulaR1C1 = txtChartTitle.Text
    ActiveCell.Select
    Selection.Copy
    r = "A1:A" & (rcount - 2)
    ActiveCell.Offset(1, 0).Range(r).Select
    ActiveSheet.Paste
    Application.CutCopyMode = False

    'li_cat
    ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
    Selection.Insert Shift:=xlToRight
    ActiveCell.Select
    ActiveCell.FormulaR1C1 = "li_cat"
```

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```
'y_axis_title
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "y_axis_title"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = txtYAxisTitle.Text
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
Selection.ColumnWidth = 8
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'level
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "level"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = "1"
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
Selection.ColumnWidth = 8
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'format
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "format"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = cboFormat.value
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False
```

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```
'relation
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "relation"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = "Parent"
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'li_notes
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_notes"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = txtFootnote.Text
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
Selection.ColumnWidth = 8
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False


'li_desc
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_desc"


'li_prec
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_prec"


'li_unit
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
```

```
ActiveCell.FormulaR1C1 = "li_unit"
ActiveCell.Offset(1, 0).Range("A1").Select
u = ""
On Error Resume Next
u = treeUnit.SelectedItem.Text
ActiveCell.FormulaR1C1 = u
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False

'li_mag
'first calculate the value to put in
If (StrComp(cboMagnitude.value, "As-Is") = 0) Then
    m = 0
End If
If (StrComp(cboMagnitude.value, "Thousands") = 0) Then
    m = 3
End If
If (StrComp(cboMagnitude.value, "Millions") = 0) Then
    m = 6
End If
If (StrComp(cboMagnitude.value, "Billions") = 0) Then
    m = 9
End If

ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_mag"
ActiveCell.Offset(1, 0).Range("A1").Select
ActiveCell.FormulaR1C1 = m
ActiveCell.Select
Selection.Copy
r = "A1:A" & (rcount - 2)
ActiveCell.Offset(1, 0).Range(r).Select
ActiveSheet.Paste
Application.CutCopyMode = False

'li_mod
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
```

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```
ActiveCell.FormulaR1C1 = "li_mod"

'li_measure
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_measure"

'li_scale
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_scale"

'li_adjustment
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_adjustment"

'li_aggregation
ActiveCell.Offset(0, 1).Columns("A:A").EntireColumn.Select
Selection.Insert Shift:=xlToRight
ActiveCell.Select
ActiveCell.FormulaR1C1 = "li_aggregation"

End
End Sub
```

Appendix G: MS Excel Visual Basic routine creating a tagged document from a spreadsheet data table

```
Private Sub Frame1_Click()

End Sub

Private Sub UserForm_Initialize()

    cmdOK.SetFocus
    RefEdit_data.value = "Sheet1!$A$1:$AB$51"
    txtDefaultFile.Text = "D:\default1.rdm"
    txtOutputDir.Text = "D:\"
    txtOutputFile.Text = "out.rdm"
    cboLineItemType.AddItem ("TimeSeries")
    cboLineItemType.AddItem ("Category")
    cboLineItemType.AddItem ("XYPlot")
    cboLineItemType.ListIndex = 0
    cbNonFileDefaults.value = False

End Sub

Private Sub cmdCancel_Click()
    End
End Sub

Private Sub cmdOK_Click()
    Dim buff As String
    buff = createIntro
    buff = buff & createHeader
    buff = buff & createLISet
    buff = buff & createLineItems
    buff = buff & "</line_item_set>" & Chr(10)
    buff = buff & createEnding
    replaceAttribute buff, "rdmldoc_header", "rdmldoc_ID", txtOutputFile.value
    replaceAttribute buff, "rdmldoc_header", "doc_title", txtDocTitle.value
    replaceAttribute buff, "line_item_set", "line_item_set_type", cboLineItemType.SelText
    replaceAttribute buff, "data_x", "x_title", txtXAxisTitle.value
    fillXData buff
    CreateFile (buff)
    End
End Sub

Private Sub cmdBrowseDefault_Click()
```

```
CommonDialog1.ShowOpen
txtDefaultFile.Text = CommonDialog1.Filename

End Sub

Private Sub cmdBrowseOutputDir_Click()
  CommonDialog1.ShowOpen
  txtOutputFile.Text = CommonDialog1.Filename

End Sub

Private Sub UserForm_Click()

End Sub

Private Sub getConfiguration()

End Sub

Private Function createHeader()

    'buff will be the buffer that collects the string
    Dim buff As String

    'If user wants the program to create a default
    If cbNonFileDefaults.value = True Then
       buff = buff & defHeader
    End If

    'Or get the default header values from a file
    buff = createDefHeader

    'return
    createHeader = buff

End Function

Private Function createDefHeader()

    'Declarations
    Dim h As String
    Dim wholefile As String

    'open the default file
    Dim Def_file As String
```

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```
Def_file = txtDefaultFile.Text
Open Def_file For Input As #2
wholefile = Input$(LOF(2), 2)
Close #2

'put the rdmldoc_header into a string
h = getElementByTagName(wholefile, "rdmldoc_header")
createDefHeader = h
```

End Function

Private Function createLISet()

```
'Declarations
Dim h As String
Dim wholefile As String

'open the default file
Dim Def_file As String
Def_file = txtDefaultFile.Text
Open Def_file For Input As #2
wholefile = Input$(LOF(2), 2)
Close #2

'put the the line item set overall tags into a string
h = getOpeningElementTag(wholefile, "line_item_set")
h = h & getElementByTagName(wholefile, "data_x")
h = h & getElementByTagName(wholefile, "li_class_set")
h = h & getElementByTagName(wholefile, "linkset")
createLISet = h
```

End Function

Public Function getElementByTagName(str As String, el As String)

```
startPos = InStr(1, str, "<" & el, 1)
endPos = InStr(1, str, "</" & el, 1)
element = Mid(str, startPos, endPos - startPos + Len(el) + 4)
getElementByTagName = element
```

End Function

Public Function getOpeningElementTag(str As String, el As String)

```
startPos = InStr(1, str, "<" & el, 1)
```

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```vb
    endPos = InStr(startPos, str, ">", 1)
    element = Mid(str, startPos, endPos - startPos + 5)
    getOpeningElementTag = element

End Function


Private Sub CreateFile(buff)

    Dim Outfile As String
    Outfile = txtOutputDir.Text & txtOutputFile.Text

    Open Outfile For Output As #1
    Print #1, buff
    Close #1

End Sub

Private Function createIntro()

    buff = ""

    'Header Information
    buff = buff & "<?xml version=" & Chr(34) & "1.0" & Chr(34)
    buff = buff & " encoding=" & Chr(34) & "UTF-8" & Chr(34)
    buff = buff & " standalone=" & Chr(34) & "no" & Chr(34)
    buff = buff & "?>" & Chr(10)

    'DTD Declaration
    buff = buff & "<!DOCTYPE rdmldoc PUBLIC "
    buff = buff & Chr(34) & "-//.." & Chr(34) & " "
    buff = buff & Chr(34) & "RDML1.dtd" & Chr(34)
    buff = buff & " > " & Chr(10)

    'begin rdmldoc tag
    buff = buff & "<rdmldoc>" & Chr(10)

    'return
    createIntro = buff

End Function

Private Function createEnding()

    buff = ""
```

```
buff = buff & "</rdmldoc>" & Chr(10)

    'return
    createEnding = buff

End Function

Private Function defHeader()

    buff = ""

    'return
    defHeader = buff

End Function

Private Function createLineItems()

    Dim data As Range
    t = RefEdit_data.value
    createLineItems = fillLineItems(Range(t), cboLineItemType.value)

End Function

'-----------------------------------------------------------------
'  Procedure:    Fill_line_item()
'
'  Purpose:      Prepare the line_item element
'                This element contains information about the line_item
'
'  From DTD:
'<!ELEMENT line_item (data_x?, data_y, li_class_set?, analysis?,
'link_set?, note_set?) >
'<!ATTLIST line_item
'   li_ID          CDATA      #REQUIRED
'   li_legend      CDATA      #REQUIRED
'   li_title       CDATA      #REQUIRED
'   li_table       CDATA      #IMPLIED
'   y_axis_title             CDATA      #REQUIRED
'   level          CDATA      #REQUIRED
'   format         CDATA      #REQUIRED
'   relation       CDATA      #REQUIRED
'   li_notes       CDATA      #REQUIRED
'   li_desc        CDATA      #REQUIRED
```

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```
'   li_prec          CDATA     #REQUIRED
'   li_unit          CDATA     #REQUIRED
'   li_mag           CDATA     #REQUIRED
'   li_mod           CDATA     #REQUIRED
'   li_measure       CDATA     #REQUIRED
'   li_scale         CDATA     #REQUIRED
'   li_adjustment    CDATA     #REQUIRED >
'--------------------------------------------------------------
Public Function fillLineItems(data As Range, litype As String)

'Declarations
Dim J, K As Integer
Dim Max As Integer

'If this is an XYPlot, use the other routine
If litype = "XYPlot" Then
    'Fill_line_item_xy
Else

'Initializations
K = 1
buff = ""
NumLI = data.Rows.Count

'Cycle through all the line items
For N = 2 To NumLI

'Insert opening tag
buff = buff & "  <line_item" & Chr(10)

'Insert the Attributes
addAttribute buff, "li_ID", data.Cells(N, 1), 6, 0
addAttribute buff, "li_legend", data.Cells(N, 2), 6, 0
addAttribute buff, "li_title", data.Cells(N, 3), 6, 0
addAttribute buff, "li_cat", data.Cells(N, 4), 6, 0
addAttribute buff, "y_axis_title", data.Cells(N, 5), 6, 0
addAttribute buff, "level", data.Cells(N, 6), 6, 0
addAttribute buff, "format", data.Cells(N, 7), 6, 0
addAttribute buff, "relation", data.Cells(N, 8), 6, 0
addAttribute buff, "li_notes", data.Cells(N, 9), 6, 0
addAttribute buff, "li_desc", data.Cells(N, 10), 6, 0
addAttribute buff, "li_prec", data.Cells(N, 11), 6, 0
addAttribute buff, "li_unit", data.Cells(N, 12), 6, 0
addAttribute buff, "li_mag", data.Cells(N, 13), 6, 0
addAttribute buff, "li_mod", data.Cells(N, 14), 6, 0
```

```
addAttribute buff, "li_measure", data.Cells(N, 15), 6, 0
addAttribute buff, "li_scale", data.Cells(N, 16), 6, 0
addAttribute buff, "li_adjustment", data.Cells(N, 17), 6, 1

'Fill the body of the tag with a comma-delimited string of the y-data numbers
buff = buff & "    <data_y>" & Chr(10)
MaxLI = NumLI - 2
MaxDP = data.Columns.Count - 17
For K = 1 To MaxDP
   buff = buff & data.Cells(N, 18 + K) & ", "
   If (K Mod 10) = 0 Then
     buff = buff & Chr(10)
   End If
Next K
buff = buff & Chr(10) & "    </data_y>" & Chr(10)

'Insert ELEMENT: analysis
'Insert ELEMENT: li_class_set
'Insert ELEMENT: 'linkset'
'Call FillTag("linkset")
'Insert ELEMENT: note_set

'Insert closing tag for that line item
buff = buff & Chr(10) & "  </line_item>" & Chr(10)

'Every 10 line items, flush the buffer
'If N Mod 5 = 0 Then
'    Call SaveToFile(buff)
'End If

Next N

'Closes the test for XYPlot at beginning of routine
End If

fillLineItems = buff

End Function
'-------------------------------------------------------------
'  Procedure:     addAttribute(name, value)
'
'  Purpose:       Adds an attribute line to "buff"
'
'-------------------------------------------------------------
Public Sub addAttribute(buff, name, value, indent, last)
```

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```vbnet
' Build the indentation
Dim strIndent As String
strIndent = ""
For J = 1 To indent
    strIndent = strIndent & " "
Next J

' Build the string
buff = buff & strIndent & name & " = " & Chr(34) & value & Chr(34)

'Add an ending '>' tag if "last" is 1; else simple add a carriage return
If last = 1 Then
    buff = buff & " >" & Chr(10)
Else
    buff = buff & Chr(10)
End If

End Sub

Private Sub replaceAttribute(f As String, el As String, att As String, val As String)

    f = Replace(f, att & " = " & Chr(34) & Chr(34), att & " = " & Chr(34) & val & Chr(34))

End Sub

Private Sub fillXData(f As String)

    'build the string of X values
    'Dim data As Range
    Dim v As String
    t = RefEdit_data.value
    v = Chr(10) & Range(t).Cells(1, 19)
    For J = 20 To Range(t).Columns.Count
        v = v & ", " & Range(t).Cells(1, J)
    Next J
    v = v & Chr(10)

    'replace the current x data element text
    f = Replace(f, "></data_x>", ">" & v & " </data_x>")

End Sub
```

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CONFIRMATION NO. 5842

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

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OC000000033720704

Date Mailed: 12/24/2008

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Applicant(s)
    Russell T. Davis, Bethesda, MD;
Assignment For Published Patent Application
    E-Numerate Solutions, Inc.
Power of Attorney:
Arthur Garrett--20338   James Hammond--31964
Charles O'Rourke--26014   Jeffrey Berkowitz--36743
Robert Converse Jr--27432   Charles Van Horn--40266
Edward Yoches--30120
Richard Burgujian--31744

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Foreign Applications

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Early Publication Request: No

Title

      Reusable data markup language

Preliminary Class

      715

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/222,752	08/15/2008	Russell T. Davis	07643.0002-02

CONFIRMATION NO. 5842

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

PUBLICATION NOTICE

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Title: Reusable data markup language

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/222,752	08/15/2008	Russell T. Davis	07643.0002-02	5842

22852   7590   08/05/2011
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER
AMIN, MUSTAFA A

ART UNIT	PAPER NUMBER
2176	

MAIL DATE	DELIVERY MODE
08/05/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

Office Action Summary	Application No.	Applicant(s)
	12/222,752	DAVIS, RUSSELL T.
	Examiner	**Art Unit**
	MUSTAFA AMIN	2176

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2008*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-66* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-21,24-31,40-48 and 51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 November 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date *08/15/2008*.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Exhibit 1002_0596

Detailed Action

Claims 1-66 are pending.

Claims 1-12, 22-23, 32-39, 49-50 and 52-66 are canceled.

Claims 13-21, 24-31, 40-48, and 51 are rejected.

Information Disclosure Statement

The information disclosure Statement (IDS) submitted on 08/15/2008 is in

compliance with the provisions of 37 CFR 1.97. Accordingly, the IDS statements are

being considered by the examiner.

Drawings

The drawings submitted on 11/05/2008 are accepted.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 40-48 are is rejected under 35 U.S.C. 101 because the claimed invention

is directed to non-statutory subject matter.

Claim 40:

In summary, claim 40 recites "*a computer readable medium*". In the

specification of the present application, the "*computer readable medium*" is

expressly defined as including (spec page 27) "**carrier wave**". In such

embodiments the recited "*computer readable medium*" is signal per se.

Accordingly, the recited "*computer readable medium*" is not a "process", a

"machine", a "manufacture", or "composition of matter", as defined in 35 U.S.C.

101.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claim 13-21, 24-25, 27, 30, 40-48 and 51 are rejected under 35 U.S.C. 103(a)

as being unpatentable over Chen et al. (US 6507856 B1, referred hereinafter as

CHEN).

As per claim 13, CHEN discloses,

- *A method in a data processing system, comprising steps the*

  steps of,(CHEN, title) , "Dynamic business process automation system

  using XML documents"

- *receiving a first markup document and a second markup*

  document, (CHEN, figure 5, 6, 7-10 and accompanying text, col. 1

  lines 34-64)), "business process automation system may receive an

  XML message or document and its corresponding Data Type Definition

  (DTD), and generate a return XML message based on a return

  document DTD, with certain fields pre-filled from the first XML

  message", clearly includes receiving a first markup document (e.g. po)

  and a second markup document (e.g. return template as illustrated by

  10A).

- *both the first mark document and the second markup document*

  including numerical values and tags reflecting characteristics of

  the numerical values(CHEN, figure 1-2, figure 8-10, col. 4 lines 4-67),

  "XML document is depicted for encoding a purchase order (PO), where

  there are two items ordered, i.e. , item Nos. 0001... ", clearly includes

  the first mark document including numerical values (e.g. po) and tags

  reflecting characteristics of the numerical values and furthermore

  discloses the second markup document (e.g. template document as

  shown in figure 10A) and tags reflecting characteristics of numerical

  values. Although CHEN fails to specifically disclose that the second

Exhibit 1002_0599

mark document includes **numerical values**, this limitation would have

been to one of ordinary skill in the art at the time of the invention in

view CHEN's teaching of the first document including numerical values

and furthermore it is commonly known in that xml template documents

may include any type of data (i.e. including numerical values).

Accordingly, it would have been obvious to one having ordinary skill in

the art at the time the invention was made to include second markup

document including *numerical values*, for the purpose of providing

various different prices quotes (e.g. numerical values) in a returned

invoice based on a received purchase order.

- **automatically combining the first markup document and the**

  second markup document into a single data set using the tags,

  (CHEN, figure 1-2, figure 8-10 and accompanying text, col. 4 lines 4-

  67), "merging algorithm is implemented to merge to merge the

  message with the return template... XML document is depicted for

  encoding a purchase order (PO), where there are two items ordered,

  i.e. , item Nos. 0001... ", clearly includes automatically combining the

  first markup document and the second markup document into a single

  data set using the tags (e.g. as shown in figure 7).

- **and displaying the single data set** (CHEN, col. 5 lines 10-13, figure

  4), "render the XML document to a browser", displaying xml

  documents on browser is well known in the art and clearly disclosed by

CHEN as shown in figure 4 (i.e. displaying "purchase order" or

"invoices").

As per claim 14, the rejection of claim 13 further incorporated, CHEN

discloses

-   *wherein the automatically combining step further comprises the*

    steps of resolving conflicts between the characteristics of the

    first markup document and the second markup document, (CHEN,

    figure 1-2, figure 8-10 and accompanying text, col. 4 lines 4-67, col. 3

    lines 55-66), "XML name tag map table matches relevant name tag of

    document fields of a first document to the corresponding name tag of

    the second document's (or return document's) fields... higher level

    qualifier or names tags maybe need to uniquely identify the specific

    name tag for potential ambiguity... merging algorithm is implemented to

    merge the message with the return template... XML document is

    depicted for encoding a purchase order (PO), where there are two

    items ordered, i.e. , item Nos. 0001... ", clearly includes automatically

    combining the first markup document and the second markup

    document into a single data set (e.g. shown in figure 7) by resolving

    conflicts (e.g. higher level qualifier or name tags or name tag tables are

    used for mapping tag names in order to resolve conflicts) between the

Exhibit 1002_0601

characteristics of the first markup document and the second markup

document.

As per claim 15, the rejection of claim 13 further incorporated, CHEN

discloses

-   **wherein the displaying step further comprises the steps of**

    manipulating the display of the single data set using the tags

    reflecting the characteristics of the numerical value, (CHEN, col. 1

    lines 56-67), "partial invoice in XML format is transmitted over the

    internet and displayed on suppliers browser 203. The supplier can edit

    the partial invoice 204", clearly includes and manipulating (e.g. editing)

    the display of the single data set using the tags reflecting the

    characteristics of the numerical values (e.g. for instance the user can

    change prices or change address etc. as well known in the art).

    Furthermore as shown in figure 4, the XML document of figure 1 is

    shown or rendered in a browser where "rendering" of the XML

    document via using XSL or CSS in a browser includes and

    manipulating the display of the single data set using the tags reflecting

    the characteristics of the numerical values.

As per claim 16, the rejection of claim 13 further incorporated, CHEN

discloses

Exhibit 1002_0602

- ***Wherein the characteristics include at least one of magnitude,
  scale, modifier, units, and measure,***(CHEN, figure 1), clearly as
  shown in figure 1 tags" <PONnumer>", "<ItemNO>", "<Unit>",
  "<Quantity>", "<Price>" can all be equated to wherein the
  characteristics include at least one of magnitude, scale, modifier, units,
  and measure.

- ***and wherein the steps of manipulating includes the steps of
  manipulating the display of the single data set using the tags
  reflecting at least one of magnitude, scale, modifier, units, and
  measure characteristics of the numerical values,*** (CHEN, col. 1
  lines 56-67), "partial invoice in XML format is transmitted over the
  internet and displayed on suppliers browser 203. The supplier can edit
  the partial invoice 204", clearly includes and wherein the steps of
  manipulating includes the steps of manipulating the display of the
  single data (e.g. editing invoice) set using the tags reflecting at least
  one of magnitude, scale, modifier, units, and measure characteristics
  of the numerical values (e.g. for instance the user can change prices or
  change address or quantities etc. as well known in the art).
  Furthermore as shown in figure 4, the XML document of figure 1 is
  shown or rendered in a browser where "rendering" of the XML
  document via using XSL or CSS in a browser includes and

Exhibit 1002_0603

manipulating the display of the single data set using the tags reflecting

the characteristics of the numerical values.

As per claim 17, the rejection of claim 13 further incorporated, CHEN

discloses

- ***wherein the characteristics include magnitude, and wherein the***

  step of manipulating comprises the steps of manipulating the

  display of the single data set using a tag reflecting the magnitude

  of the numerical value, (CHEN, figure 1), clearly as shown in figure 1

  tags" <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>"

  can all be equated to wherein the characteristics include at least one of

  magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

  col. 1 lines 56-67), "partial invoice in XML format is transmitted over

  the internet and displayed on suppliers browser 203. The supplier can

  edit the partial invoice 204", clearly includes manipulating (e.g. editing

  invoice of po) the display of the single data set using a tag reflecting

  the magnitude of the numerical value (e.g. for instance the user can

  change prices or change address or quantities etc. as well known in

  the art). Furthermore as shown in figure 4, the XML document of figure

  1 is shown or rendered in a browser where "rendering" of the XML

  document via using XSL or CSS in a browser includes and

manipulating the display of the single data set using the tags reflecting

the characteristics of the numerical values.

As per claim 18, the rejection of claim 13 further incorporated, CHEN

discloses

- *wherein the characteristics include scale, and wherein the step of*

  manipulating comprises the step of manipulating the display of

  the single data set using a tag reflecting the scale of the

  numerical values, (CHEN, figure 1), clearly as shown in figure 1 tags"

  <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>" can all

  be equated to wherein the characteristics include at least one of

  magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

  col. 1 lines 56-67), "partial invoice in XML format is transmitted over

  the internet and displayed on suppliers browser 203. The supplier can

  edit the partial invoice 204", clearly includes manipulating (e.g. editing

  invoice or purchase order as shown in figure 4) the display of the

  single data set using a tag reflecting the scale of the numerical value

  (e.g. for instance the user can change prices or change address or

  quantities etc. as well known in the art). Furthermore as shown in

  figure 4, the XML document of figure 1 is shown or rendered in a

  browser where "rendering" of the XML document via using XSL or CSS

Exhibit 1002_0605

in a browser includes and manipulating the display of the single data

set using the tags reflecting the characteristics of the numerical values.

As per claim 19, the rejection of claim 13 further incorporated, CHEN

discloses

> - ***wherein the characteristics include a modifier, wherein the step of***
>
>   ***manipulating comprises the steps of manipulating the display of***
>
>   ***the single data set using a tag reflecting the modifier of the***
>
>   ***numerical values,*** (CHEN, figure 1), clearly as shown in figure 1 tags"
>
>   <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>" can all
>
>   be equated to wherein the characteristics include at least one of
>
>   magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,
>
>   col. 1 lines 56-67), "partial invoice in XML format is transmitted over
>
>   the internet and displayed on suppliers browser 203. The supplier can
>
>   edit the partial invoice 204", clearly includes manipulating (e.g. editing
>
>   invoice or purchase order as shown in figure 4) the display of the
>
>   single data set using a tag reflecting the modifier of the numerical
>
>   value (e.g. for instance the user can change prices or change address
>
>   or quantities etc. as well known in the art). Furthermore as shown in
>
>   figure 4, the XML document of figure 1 is shown or rendered in a
>
>   browser where "rendering" of the XML document via using XSL or CSS

Exhibit 1002_0606

in a browser includes and manipulating the display of the single data

set using the tags reflecting the characteristics of the numerical values.

As per claim 20, the rejection of claim 20 further incorporated, CHEN

discloses

- *wherein the characteristics include units, and wherein the steps*

   of manipulating comprises the step of manipulating the display of

   the single data set using a tag reflecting the units of the

   numerical values, (CHEN, figure 1), clearly as shown in figure 1 tags"

   <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>" can all

   be equated to wherein the characteristics include at least one of

   magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

   col. 1 lines 56-67), "partial invoice in XML format is transmitted over

   the internet and displayed on suppliers browser 203. The supplier can

   edit the partial invoice 204", clearly includes manipulating (e.g. editing

   invoice or purchase order as shown in figure 4) the display of the

   single data set using a tag reflecting the units of the numerical value

   (e.g. for instance the user can change prices or change address or

   quantities etc. as well known in the art). Furthermore as shown in

   figure 4, the XML document of figure 1 is shown or rendered in a

   browser where "rendering" of the XML document via using XSL or CSS

Exhibit 1002_0607

in a browser includes and manipulating the display of the single data

set using the tags reflecting the characteristics of the numerical values.

As per claim 21, the rejection of claim 13 further incorporated, CHEN

discloses

- ***Wherein the characteristics include units, and wherein the steps***

   of manipulating comprises the step of manipulating the display of

   the single data set using a tag reflecting the measure of the

   numerical values, (CHEN, figure 1), clearly as shown in figure 1 tags"

   <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>" can all

   be equated to wherein the characteristics include at least one of

   magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

   col. 1 lines 56-67), "partial invoice in XML format is transmitted over

   the internet and displayed on suppliers browser 203. The supplier can

   edit the partial invoice 204", clearly includes manipulating (e.g. editing

   invoice or purchase order as shown in figure 4) the display of the

   single data set using a tag reflecting the measure of the numerical

   value (e.g. for instance the user can change prices or change address

   or quantities etc. as well known in the art). Furthermore as shown in

   figure 4, the XML document of figure 1 is shown or rendered in a

   browser where "rendering" of the XML document via using XSL or CSS

in a browser includes and manipulating the display of the single data

set using the tags reflecting the characteristics of the numerical values.

As per claim 24, CHEN discloses

-   ***A method in a data processing system, comprising the steps of,***

    (CHEN, title) , "Dynamic business process automation system using

    XML documents", clearly includes a method in a data processing

    system, comprising the steps of

-   ***receiving a request for numerical value, the request indicating at***

    least one characteristic of the numerical value, (CHEN, figures 1, 4,

    6-7 and accompanying text , col. 5 lines 56-67), "submitting a "prepare

    invoice" request 202 to the web server", clearly includes receiving a

    request for numerical value (e.g. requesting invoice, where the invoice

    is a XML document with numerical data), the request indicating at least

    one characteristic of the numerical value (e.g. as shown in figure 10A

    <price> tag indicates characteristic of the numerical value to be

    included in the generation of an invoice).

-   ***receiving a first markup document and a second markup***

    document, (CHEN, figure 5, 6, 7-10 and accompanying text, col. 1

    lines 34-64)), "business process automation system may receive an

    XML message or document and its corresponding Data Type Definition

    (DTD), and generate a return XML message based on a return

Exhibit 1002_0609

document DTD, with certain fields pre-filled from the first XML

message", clearly includes receiving a first markup document (e.g. po)

and a second markup document (e.g. return template as illustrated by

10A).

- ***both the first markup document and the second markup***

document containing numerical values and tags reflecting

characteristics of the numerical values, (CHEN, figure 1-2, figure 8-

10, col. 4 lines 4-67), "XML document is depicted for encoding a

purchase order (PO), where there are two items ordered, i.e. , item

Nos. 0001... ", clearly includes the first mark document including

numerical values (e.g. po) and tags reflecting characteristics of the

numerical values and furthermore discloses the second markup

document (e.g. template document as shown in figure 10A) and tags

reflecting characteristics of numerical values. Although CHEN fails to

specifically disclose that the second mark document includes

numerical values, this limitation would have been to one of ordinary

skill in the art at the time of the invention in view CHEN's teaching of

the first document including numerical values and furthermore it is

commonly known in that xml template documents may include any

type of data (i.e. including numerical values). Accordingly, it would

have been obvious to one having ordinary skill in the art at the time the

invention was made to include second markup document including

Exhibit 1002_0610

numerical values, for the purpose of providing various different prices

quotes (e.g. numerical values) in a returned invoice based on a

received purchase order.

- ***at least one of the tags having the indicated characteristic of the***

  requested numerical value, (CHEN, figures 1, 4, 6-7 and

  accompanying text , col. 5 lines 56-67), "submitting a "prepare invoice"

  request 202 to the web server", clearly includes at least one tag having

  the indicated characteristic of the requested numerical value (e.g. as

  shown in figure 1 <price> tag indicates characteristic of the numerical

  value).

- ***automatically combining the first markup document and the***

  second markup document into a single data set by resolving

  conflicts between the characteristics of the first markup

  document and the second markup document, (CHEN, figure 1-2,

  figure 8-10 and accompanying text, col. 4 lines 4-67, col. 3 lines 55-

  66), "XML name tag map table matches relevant name tag of

  document fields of a first document to the corresponding name tag of

  the second document's (or return document's) fields... higher level

  qualifier or names tags maybe need to uniquely identify the specific

  name tag for potential ambiguity... merging algorithm is implemented to

  merge the message with the return template... XML document is

  depicted for encoding a purchase order (PO), where there are two

Exhibit 1002_0611

items ordered, i.e. , item Nos. 0001... ", clearly includes automatically

combining the first markup document and the second markup

document into a single data set (e.g. shown in figure 7) by resolving

conflicts (e.g. higher level qualifier or name tags or name tag tables are

used for mapping tag names in order to resolve conflicts) between the

characteristics of the first markup document and the second markup

document

- ***displaying the single data set,*** (CHEN, col. 5 lines 10-13, figure 4),

"render the XML document to a browser", displaying xml documents on

browser is well known in the art and clearly disclosed by CHEN as

shown in figure 4 (i.e. displaying "purchase order" or "invoices").

- ***and manipulating the display of the single data set using the tags***

reflecting the characteristics of the numerical values(CHEN, col. 1

lines 56-67, figure 4 and accompanying text), "partial invoice in XML

format is transmitted over the internet and displayed on suppliers

browser 203. The supplier can edit the partial invoice 204", clearly

includes and manipulating (e.g. editing) the display of the single data

set using the tags reflecting the characteristics of the numerical values

(e.g. for instance the user can change prices or address etc. as known

in the art. Furthermore as shown in figure 4, the XML document of

figure 1 is shown or rendered in a browser where "rendering" of the

XML document via using XSL or CSS in a browser includes and

Exhibit 1002_0612

manipulating the display of the single data set using the tags reflecting

the characteristics of the numerical values.

As per claim 25, CHEN discloses,

- **A data processing system comprising ,**(CHEN, title) , "Dynamic

  business process automation system using XML documents"

- **A non-volatile storage device with a first markup document and a**

  second markup document, (CHEN, figure 5, 6, 7-10 and

  accompanying text, col. 1 lines 34-64, col. 2 lines 29-31; col. 5 lines

  35-50), "business process automation system may receive an XML

  message or document and its corresponding Data Type Definition

  (DTD), and generate a return XML message based on a return

  document DTD, with certain fields pre-filled from the first XML

  message... storage device", clearly includes receiving a first markup

  document (e.g. po) and a second markup document (e.g. return

  template as illustrated by 10A).

- **both the first mark document and the second markup document**

  including numerical values and tags reflecting characteristics of

  the numerical values(CHEN, figure 1-2, figure 8-10, col. 4 lines 4-67),

  "XML document is depicted for encoding a purchase order (PO), where

  there are two items ordered, i.e. , item Nos. 0001... ", clearly clearly

Exhibit 1002_0613

includes the first mark document including numerical values (e.g. po)

and tags reflecting characteristics of the numerical values and

furthermore discloses the second markup document (e.g. template

document as shown in figure 10A) and tags reflecting characteristics of

numerical values. Although CHEN fails to specifically disclose that the

second mark document includes **numerical values**, this limitation

would have been to one of ordinary skill in the art at the time of the

invention in view CHEN's teaching of the first document including

numerical values and furthermore it is commonly known in that xml

template documents may include any type data (i.e. including

numerical values). Accordingly, it would have been obvious to one

having ordinary skill in the art at the time the invention was made to

include second markup document including *numerical values*, for the

purpose of providing various different prices quotes (e.g. numerical

values) in a returned invoice based on a received purchase order.

- **a memory with a program that receives the first markup document**

  and the second markup document, that automatically combines

  the first markup document and the second markup document into

  a single data set using the tags, (CHEN, figure 1-2, figure 8-10 and

  accompanying text, col. 4 lines 4-67), "merging algorithm is

  implemented to merge to merge the message with the return

  template... XML document is depicted for encoding a purchase order

Exhibit 1002_0614

(PO), where there are two items ordered, i.e. , item Nos. 0001... ",

clearly includes a memory with a program that receives the first

markup document and the second markup document and automatically

combining the first markup document and the second markup

document into a single data set using the tags (e.g. as shown in figure

7).

- **and process that runs the program** (CHEN, col. 5 lines 35-55).

As per claim 27, the rejection of claim 25 further incorporated, CHEN

discloses

- **wherein the markup language is compliant with Extensible**

  Markup language version 1.0, (CHEN, figure 1), clearly CHEN

  teaches xml documents and/or language as shown in figure 1 and

  since markup language compliant with xml version 1.0 was well in

  established in the art at the time of the invention, it would have been

  obvious to one of ordinary skill in the art to include xml version 1.0 for

  purpose of conforming to a standard which renders the markup

  language document portable among different organizations or

  systems.

As per claim 30, the rejection of claim 25 further incorporated, CHEN

discloses

- *further comprising a display, wherein the program instructs the*

  display to display the single data set on a spreadsheet view,

  (CHEN, figure 4), display of markup document as a spreadsheet view

  is clearly shown by figure 4, accordingly includes wherein the program

  instructs the display to display the single data set (e.g. invoice or

  purchase order) on a spreadsheet view

As per claim 40, CHEN discloses

- *A computer-readable medium containing instructions for*

  controlling a data processing system to perform a method

  comprising (CHEN, title, col. 2 lines 29-60) , "Dynamic business

  process automation system using XML documents".

- *receiving a first markup document and a second markup*

  document, (CHEN, figure 5, 6, 7-10 and accompanying text, col. 1

  lines 34-64)), "business process automation system may receive an

  XML message or document and its corresponding Data Type Definition

  (DTD), and generate a return XML message based on a return

  document DTD, with certain fields pre-filled from the first XML

  message", clearly includes receiving a first markup document (e.g. po)

  and a second markup document (e.g. return template as illustrated by

  10A).

Exhibit 1002_0616

- ***both the first mark document and the second markup document***

   including numerical values and tags reflecting characteristics of

   the numerical values(CHEN, figure 1-2, figure 8-10, col. 4 lines 4-67),

   "XML document is depicted for encoding a purchase order (PO), where

   there are two items ordered, i.e. , item Nos. 0001... ", clearly includes

   the first mark document including numerical values (e.g. po) and tags

   reflecting characteristics of the numerical values and furthermore

   discloses the second markup document (e.g. template document as

   shown in figure 10A) and tags reflecting characteristics of numerical

   values. Although CHEN fails to specifically disclose that the second

   mark document includes ***numerical values***, this limitation would have

   been to one of ordinary skill in the art at the time of the invention in

   view CHEN's teaching of the first document including numerical values

   and furthermore it is commonly known in that xml template documents

   may include any type of data (i.e. including numerical values).

   Accordingly, it would have been obvious to one having ordinary skill in

   the art at the time the invention was made to include second markup

   document including *numerical values*, for the purpose of providing

   various different prices quotes (e.g. numerical values) in a returned

   invoice based on a received purchase order.

- ***automatically combining the first markup document and the***

   second markup document into a single data set using the tags,

Exhibit 1002_0617

(CHEN, figure 1-2, figure 8-10 and accompanying text, col. 4 lines 4-

67), "merging algorithm is implemented to merge to merge the

message with the return template... XML document is depicted for

encoding a purchase order (PO), where there are two items ordered,

i.e. , item Nos. 0001... ", clearly includes automatically combining the

first markup document and the second markup document into a single

data set using the tags (e.g. as shown in figure 7).

- *and displaying the single data set* (CHEN, col. 5 lines 10-13, figure

4), "render the XML document to a browser", displaying xml

documents on browser is well known in the art and clearly disclosed by

CHEN as shown in figure 4 (i.e. displaying "purchase order" or

"invoices").

As per claim 41, the rejection of claim 40 further incorporated, CHEN

discloses

- *wherein the automatically combining step further comprises the*

steps of resolving conflicts between the characteristics of the

first markup document and the second markup document, (CHEN,

figure 1-2, figure 8-10 and accompanying text, col. 4 lines 4-67, col. 3

lines 55-66), "XML name tag map table matches relevant name tag of

document fields of a first document to the corresponding name tag of

the second document's (or return document's) fields... higher level

Exhibit 1002_0618

qualifier or names tags maybe need to uniquely identify the specific

name tag for potential ambiguity... merging algorithm is implemented to

merge the message with the return template... XML document is

depicted for encoding a purchase order (PO), where there are two

items ordered, i.e. , item Nos. 0001... ", clearly includes automatically

combining the first markup document and the second markup

document into a single data set (e.g. shown in figure 7) by resolving

conflicts (e.g. higher level qualifier or name tags or name tag tables are

used for mapping tag names in order to resolve conflicts) between the

characteristics of the first markup document and the second markup

document.

***As per claim 42, the rejection of claim 40 further incorporated, CHEN
discloses***

- ***wherein the displaying step further comprises the steps of
manipulating the display of the single data set using the tags
reflecting the characteristics of the numerical value,*** (CHEN, col. 1

lines 56-67), "partial invoice in XML format is transmitted over the

internet and displayed on suppliers browser 203. The supplier can edit

the partial invoice 204", clearly includes and manipulating (e.g. editing)

the display of the single data set using the tags reflecting the

characteristics of the numerical values (e.g. for instance the user can

Exhibit 1002_0619

change prices or change address etc. as well known in the art).

Furthermore as shown in figure 4, the XML document of figure 1 is

shown or rendered in a browser where "rendering" of the XML

document via using XSL or CSS in a browser includes and

manipulating the display of the single data set using the tags reflecting

the characteristics of the numerical values.

As per claim 43, the rejection of claim 40 further incorporated, CHEN

discloses

- *Wherein the characteristics include at least one of magnitude,*

  scale, modifier, units, and measure,(CHEN, figure 1), clearly as

  shown in figure 1 tags" <PONnumer>", "<ItemNO>", "<Unit>",

  "<Quantity>", "<Price>" can all be equated to wherein the

  characteristics include at least one of magnitude, scale, modifier, units,

  and measure.

- *and wherein the steps of manipulating includes the steps of*

  manipulating the display of the single data set using the tags

  reflecting at least one of magnitude, scale, modifier, units, and

  measure characteristics of the numerical values, (CHEN, col. 1

  lines 56-67), "partial invoice in XML format is transmitted over the

  internet and displayed on suppliers browser 203. The supplier can edit

  the partial invoice 204", clearly includes and wherein the steps of

Exhibit 1002_0620

manipulating includes the steps of manipulating the display of the

single data (e.g. editing invoice) set using the tags reflecting at least

one of magnitude, scale, modifier, units, and measure characteristics

of the numerical values (e.g. for instance the user can change prices or

change address or quantities etc. as well known in the art).

Furthermore as shown in figure 4, the XML document of figure 1 is

shown or rendered in a browser where "rendering" of the XML

document via using XSL or CSS in a browser includes and

manipulating the display of the single data set using the tags reflecting

the characteristics of the numerical values.

As per claim 44, the rejection of claim 40 further incorporated, CHEN

discloses

- *wherein the characteristics include magnitude, and wherein the*

  step of manipulating comprises the steps of manipulating the

  display of the single data set using a tag reflecting the magnitude

  of the numerical value, (CHEN, figure 1), clearly as shown in figure 1

  tags" <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>"

  can all be equated to wherein the characteristics include at least one of

  magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

  col. 1 lines 56-67), "partial invoice in XML format is transmitted over

  the internet and displayed on suppliers browser 203. The supplier can

Exhibit 1002_0621

edit the partial invoice 204", clearly includes manipulating (e.g. editing

invoice of po) the display of the single data set using a tag reflecting

the magnitude of the numerical value (e.g. for instance the user can

change prices or change address or quantities etc. as well known in

the art). Furthermore as shown in figure 4, the XML document of figure

1 is shown or rendered in a browser where "rendering" of the XML

document via using XSL or CSS in a browser includes and

manipulating the display of the single data set using the tags reflecting

the characteristics of the numerical values.

As per claim 45, the rejection of claim 40 further incorporated, CHEN

discloses

- **_wherein the characteristics include scale, and wherein the step of_**

     manipulating comprises the step of manipulating the display of

     the single data set using a tag reflecting the scale of the

     numerical values, (CHEN, figure 1), clearly as shown in figure 1 tags"

     <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>" can all

     be equated to wherein the characteristics include at least one of

     magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

     col. 1 lines 56-67), "partial invoice in XML format is transmitted over

     the internet and displayed on suppliers browser 203. The supplier can

     edit the partial invoice 204", clearly includes manipulating (e.g. editing

invoice or purchase order as shown in figure 4) the display of the

single data set using a tag reflecting the scale of the numerical value

(e.g. for instance the user can change prices or change address or

quantities etc. as well known in the art). Furthermore as shown in

figure 4, the XML document of figure 1 is shown or rendered in a

browser where "rendering" of the XML document via using XSL or CSS

in a browser includes and manipulating the display of the single data

set using the tags reflecting the characteristics of the numerical values.

As per claim 46, the rejection of claim 40 further incorporated, CHEN

discloses

- *wherein the characteristics include a modifier, wherein the step of*

   manipulating comprises the steps of manipulating the display of

   the single data set using a tag reflecting the modifier of the

   numerical values, (CHEN, figure 1), clearly as shown in figure 1 tags"

   <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>" can all

   be equated to wherein the characteristics include at least one of

   magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

   col. 1 lines 56-67), "partial invoice in XML format is transmitted over

   the internet and displayed on suppliers browser 203. The supplier can

   edit the partial invoice 204", clearly includes manipulating (e.g. editing

   invoice or purchase order as shown in figure 4) the display of the

single data set using a tag reflecting the modifier of the numerical

value (e.g. for instance the user can change prices or change address

or quantities etc. as well known in the art). Furthermore as shown in

figure 4, the XML document of figure 1 is shown or rendered in a

browser where "rendering" of the XML document via using XSL or CSS

in a browser includes and manipulating the display of the single data

set using the tags reflecting the characteristics of the numerical values.

As per claim 47, the rejection of claim 40 further incorporated, CHEN

discloses

-   **wherein the characteristics include units, and wherein the steps**

    of manipulating comprises the step of manipulating the display of

    the single data set using a tag reflecting the units of the

    numerical values, (CHEN, figure 1), clearly as shown in figure 1 tags"

    <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>" can all

    be equated to wherein the characteristics include at least one of

    magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

    col. 1 lines 56-67), "partial invoice in XML format is transmitted over

    the internet and displayed on suppliers browser 203. The supplier can

    edit the partial invoice 204", clearly includes manipulating (e.g. editing

    invoice or purchase order as shown in figure 4) the display of the

    single data set using a tag reflecting the units of the numerical value

(e.g. for instance the user can change prices or change address or

quantities etc. as well known in the art). Furthermore as shown in

figure 4, the XML document of figure 1 is shown or rendered in a

browser where "rendering" of the XML document via using XSL or CSS

in a browser includes and manipulating the display of the single data

set using the tags reflecting the characteristics of the numerical values.

As per claim 48, the rejection of claim 40 further incorporated, CHEN

discloses

- *Wherein the characteristics include units, and wherein the steps*

    of manipulating comprises the step of manipulating the display of

    the single data set using a tag reflecting the measure of the

    numerical values, (CHEN, figure 1), clearly as shown in figure 1 tags"

    <PONnumer>", "<ItemNO>", "<Unit>", "<Quantity>", "<Price>" can all

    be equated to wherein the characteristics include at least one of

    magnitude, scale, modifier, units, and measure. Furthermore, (CHEN,

    col. 1 lines 56-67), "partial invoice in XML format is transmitted over

    the internet and displayed on suppliers browser 203. The supplier can

    edit the partial invoice 204", clearly includes manipulating (e.g. editing

    invoice or purchase order as shown in figure 4) the display of the

    single data set using a tag reflecting the measure of the numerical

    value (e.g. for instance the user can change prices or change address

or quantities etc. as well known in the art). Furthermore as shown in

figure 4, the XML document of figure 1 is shown or rendered in a

browser where "rendering" of the XML document via using XSL or CSS

in a browser includes and manipulating the display of the single data

set using the tags reflecting the characteristics of the numerical values.

As per claim 51, CHEN discloses,

- **a data processing system, comprising,**(CHEN, title) , "Dynamic

  business process automation system using XML documents"

- **means for receiving a first markup document and a second**

  markup document, (CHEN, figure 5, 6, 7-10 and accompanying text,

  col. 1 lines 34-64)), "business process automation system may receive

  an XML message or document and its corresponding Data Type

  Definition (DTD), and generate a return XML message based on a

  return document DTD, with certain fields pre-filled from the first XML

  message", clearly includes means for receiving a first markup

  document (e.g. po) and a second markup document (e.g. return

  template as illustrated by 10A).

- **both the first mark document and the second markup document**

  including numerical values and tags reflecting characteristics of

  the numerical values(CHEN, figure 1-2, figure 8-10, col. 4 lines 4-67),

  "XML document is depicted for encoding a purchase order (PO), where

Exhibit 1002_0626

there are two items ordered, i.e. , item Nos. 0001... ", clearly includes

the first mark document including numerical values (e.g. po) and tags

reflecting characteristics of the numerical values and furthermore

discloses the second markup document (e.g. template document as

shown in figure 10A) and tags reflecting characteristics of numerical

values. Although CHEN fails to specifically disclose that the second

mark document includes **numerical values**, this limitation would have

been to one of ordinary skill in the art at the time of the invention in

view CHEN's teaching of the first document including numerical values

and furthermore it is commonly known in that xml template documents

may include any type of data (i.e. including numerical values).

Accordingly, it would have been obvious to one having ordinary skill in

the art at the time the invention was made to include second markup

document including *numerical values*, for the purpose of providing

various different prices quotes (e.g. numerical values) in a returned

invoice based on a received purchase order.

- **means for automatically combining the first markup document**

   and the second markup document into a single data set using the

   tags, (CHEN, figure 1-2, figure 8-10 and accompanying text, col. 4

   lines 4-67), "merging algorithm is implemented to merge to merge the

   message with the return template... XML document is depicted for

   encoding a purchase order (PO), where there are two items ordered,

i.e. , item Nos. 0001... ", clearly includes means for automatically

combining the first markup document and the second markup

document into a single data set using the tags (e.g. as shown in figure

7).

- **and means for displaying the single data set** (CHEN, col. 5 lines

    10-13, figure 4), "render the XML document to a browser", displaying

    xml documents on browser is well known in the art and clearly

    disclosed by CHEN as shown in figure 4 (i.e. displaying "purchase

    order" or "invoices").

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et

al. (US 6507856 B1, referred hereinafter as CHEN) further in view of Puri et al. (US

6148330, referred herein after as PURI).

As per claim 26, the rejection of claim 25 further incorporated, CHEN

discloses

- **wherein the non-volatile storage device,** (CHEN, col. 2 lines 29-31).

    "storage device"

CHEN fails to expressly disclose - further includes database, and wherein

at least one of the markup documents is created from information stored in the

database.

PURI teaches the above limitation (PURI, col. 9 lines 58-67-col. 10 lines 1-9),

"automated control system may be configured to generate messages such as text

messages that contain temperature readings and the like and which are to be placed

into the a database.... a database program could then be configured to access the

database management system to generate markup language (e.g. HTML) file".

Accordingly, it would have been obvious to one having ordinary skill in the art at

the time the invention was made to modify the invention, disclosed in CHEN, to include

further includes database, and wherein at least one of the markup documents is created

from information stored in the database., for the purpose of providing automatic updates

via HTML publication of contents from channels without user intervention as disclosed

by PURI.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et

al. (US 6507856 B1, referred hereinafter as CHEN) further in view of Hu et al. (US

5748188, referred herein after as HU).

As per claim 28:

The rejection of claim 25 further incorporated.

CHEN fails to expressly disclose – wherein the program instructs the

display to display the single data set on a chart view.

HU teaches the above limitation (HU, abstract, figures 12-24) clearly teaches

creating chart view as shown by figure 12-24.

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention, disclosed in CHEN, to include *wherein the program instructs the display to display the single data set on a chart view*, for the purpose of providing visualization or graphs without sending complete bit map of the graphical information in order to reduce network bandwidth as disclosed by HU.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6507856 B1, referred hereinafter as CHEN) further in view of Kaczmarski et al. (US 6314424 B1, referred herein after as KACZMARSKI).

As per claim 29:

The rejection of claim 25 further incorporated.

CHEN fails to expressly disclose – wherein the program instructs the display to display the single data set on a tree view.

KACZMARSKI teaches the above limitation (KACZMARSKI, abstract, figures 4a-4b) clearly teaches creating tree view as shown by figure 4a-4b.

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention, disclosed in CHEN, to include *wherein the program instructs the display to display the single data set on a tree view*, for the purpose of providing a tree view of web page where a user can move efficiently between different sets of data using the tree view as disclosed by KACZMARSKI.

Exhibit 1002_0630

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6507856 B1, referred hereinafter as CHEN) further in view of Britton et al. (US 6535896 B2, referred herein after as BRITTON).

As per claim 31:

The rejection of claim 25 further incorporated.

CHEN fails to expressly disclose – wherein the program instructs the display to display the single data set on a footnote view.

BRITTON teaches the above limitation (BRITTON, col. 5 lines 1-13) "XSL can be used to transform an XML document into a bulleted list in one HTML view, and into a footnote in a second html view".

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention, disclosed in CHEN, to include *wherein the program instructs the display to display the single data set on a footnote view,* for the purpose of providing different views of the same data as desired by a user or developer as disclosed by BRITTON.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Exhibit 1002_0631

See form 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MUSTAFA AMIN whose telephone number is (571)270-3181. The examiner can normally be reached on Monday to Thursday, 7:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Hutton can be reached at 571-272-4137. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mustafa Amin/

Examiner, Art Unit 2176

Dated: 08/01/2011

/Laurie Ries/
Primary Examiner

Exhibit 1002_0632

Technology Center 2100
2 August 2011

		Notice of References Cited	Application/Control No. 12/222,752	Applicant(s)/Patent Under Reexamination DAVIS, RUSSELL T.	
			Examiner MUSTAFA AMIN	Art Unit 2176	Page 1 of 2

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,737,739 A	04-1998	Shirley et al.	715/207
*	B	US-5,748,188 A	05-1998	Hu et al.	715/853
*	C	US-5,895,476 A	04-1999	Orr et al.	715/202
*	D	US-6,112,242 A	08-2000	Jois et al.	709/225
*	E	US-6,148,330 A	11-2000	Puri et al.	709/217
*	F	US-6,173,316 B1	01-2001	De Boor et al.	709/218
*	G	US-6,212,494 B1	04-2001	Boguraev, Branimir K.	704/9
*	H	US-6,314,424 B1	11-2001	Kaczmarski et al.	1/1
*	I	US-6,502,101 B1	12-2002	Verprauskus et al.	1/1
*	J	US-6,502,112 B1	12-2002	Baisley, Donald Edward	715/210
*	K	US-6,507,856 B1	01-2003	Chen et al.	715/205
*	L	US-6,535,896 B2	03-2003	Britton et al.	715/239
*	M	US-6,643,633 B2	11-2003	Chau et al.	1/1

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Exhibit 1002_0634

		Application/Control No.	Applicant(s)/Patent Under Reexamination	
Notice of References Cited		12/222,752	DAVIS, RUSSELL T.	
		Examiner	Art Unit	Page 2 of 2
		MUSTAFA AMIN	2176	

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,718,516 B1	04-2004	Claussen et al.	715/234
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
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	Q					
	R					
	S					
	T					

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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12222752	DAVIS, RUSSELL T.
	Examiner	**Art Unit**
	MUSTAFA AMIN	2176

SEARCHED

Class	Subclass	Date	Examiner
715	209	07/26/2011	/M.A./

SEARCH NOTES

Search Notes	Date	Examiner
East/West USPAT, USPGPUB, EPO, JPO, DERWENT, IBM_TDB	07/26/2011	/M.A./
double patenting search	07/26/2011	/M.A./

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

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Index of Claims	Application/Control No. 12222752	Applicant(s)/Patent Under Reexamination DAVIS, RUSSELL T.
‖‖‖ barcode ‖‖‖	Examiner MUSTAFA AMIN	Art Unit 2176

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant   ☐ CPA   ☐ T.D.   ☐ R.1.47

CLAIM		DATE								
Final	Original	08/01/2011								
	1	-								
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	29	✓								
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	34	-								
	35	-								
	36	-								

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12222752	DAVIS, RUSSELL T.
‖‖‖‖‖‖‖‖‖‖ (barcode)	**Examiner**	**Art Unit**
	MUSTAFA AMIN	2176

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant	☐ CPA	☐ T.D.	☐ R.1.47

CLAIM		DATE								
Final	Original	08/01/2011								
	37	-								
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	40	✓								
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12222752 - GAU: 2176

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*			
Sheet	1	of	4

Complete if Known

Div. of Application Number	09/573,778
Filing Date	Concurrently Herewith
First Named Inventor	Russell T. DAVIS
Prior Art Unit	2176
Prior Examiner Name	Mustafa Amin
Attorney Docket Number	07643.0002-02

U.S. PATENTS AND PUBLISHED U.S. PATENT APPLICATIONS

Examiner Initials	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Issue or Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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		US-5,276,776	01/1994	Grady et al.	
		US-5,339,392	08/1994	Risberg et al.	
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IDS Form PTO/SB/08: Substitute for form 1449A/PTO	Complete if Known	
	Div. of Application Number	09/573,778
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Filing Date	Concurrently Herewith
	First Named Inventor	Russell T. DAVIS
	Prior Art Unit	2176
(Use as many sheets as necessary)	Prior Examiner Name	Mustafa Amin
Sheet 2 of 4	Attorney Docket Number	07643.0002-02

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Examiner Initials	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Issue or Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.A./

IDS Form PTO/SB/08: Substitute for form 1449A/PTO				**Complete if Known**	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				*Div. of* Application Number	09/573,778
				Filing Date	Concurrently Herewith
				First Named Inventor	Russell T. DAVIS
				Prior Art Unit	2176
				Prior Examiner Name	Mustafa Amin
Sheet	3	of	4	Attorney Docket Number	07643.0002-02

U.S. PATENTS AND PUBLISHED U.S. PATENT APPLICATIONS

Examiner Initials	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Issue or Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

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Examiner Initials	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Translation[6]

NONPATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation[6]
/M.A./		Copending U.S. Patent Application No. 09/573,780 entitled "Reusable Macro Markup Language", filed May 18, 2000.	
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Exhibit 1002_0641

IDS Form PTO/SB/08: Substitute for form 1449A/PTO	**Complete if Known**	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*	*Div. of Application Number*	09/573,778
	Filing Date	Concurrently Herewith
	First Named Inventor	Russell T. DAVIS
	Prior Art Unit	2176
	Prior Examiner Name	Mustafa Amin

Sheet	4	of	4	*Attorney Docket Number*	07643.0002-02

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Examiner Signature	/Mustafa Amin/	Date Considered	07/27/2011

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.A./

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3043	((generat$4 or produce$4) near2 (xml$1 or mark$1up$2)) same (data$1base$4 or reposit$4 or stora$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 15:49
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S24	88	("20010018687" | "20010020237" | "20010049687" | "20020023141" | "20020052954" | "20020091696" | "20020198985" | "20030041077" | "20030078883" | "20030167213" | "20050086126" | "20050182709" | "20050198042" | "4674043" | "5276776" | "5339392" | "5423032" | "5603021" | "5737592" | "5754939" | "5822587" | "5838906" | "5838965" | "5894311" | "5913214" | "5917485" | "5920828" | "5948113" | "5950196" | "5956737" | "5974413" | "5999944" | "6014661" | "6026388" | "6026397" | "6034676" | "6058385" | "6065026" | "6092036" | "6097888" | "6108662" | "6121924" | "6134563" | "6160549" | "6167409" | "6173284" | "6195676" | "6199046" | "6199080" | "6223189" | "6240407" | "6243698" | "6256030" | "6314562" | "6317750" | "6349307" | "6351755" | "6356920" | "6366915" | "6370537" | "6370549" | "6373504" | "6374274" | "6418433" | "6421656" | "6421822" | "6446048" | "6460059" | "6470349" | "6493717" | "6505246" | "6507856" | "6581068" | "6591272" | "6594653" | "6615258" | "6629094" | "6635089" | "6667747" | "6721736" | "6745384" | "6886005" | "6912293" | "6920608").PN. OR ("7421648").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 14:38
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S26	6	S25 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 14:39
S27	86	US-4674043-$.DID. OR US-5276776-$.DID. OR US-5339392-$.DID. OR US-5423032-$.DID. OR US-5603021-$.DID. OR US-5737592-$.DID. OR US-5754939-$.DID. OR US-5822587-$.DID. OR US-5838906-$.DID. OR US-111998D-$.DID. OR US-5838965-$.DID. OR US-5894311-$.DID. OR US-5913214-$.DID. OR US-5917485-$.DID. OR US-5920828-$.DID. OR US-5948113-$.DID. OR US-5950196-$.DID. OR US-5956737-$.DID. OR US-5974413-$.DID. OR US-5999944-$.DID. OR US-6014661-$.DID. OR US-6026388-$.DID. OR US-6026397-$.DID. OR US-6034676-$.DID. OR US-6058385-$.DID. OR US-6065026-$.DID. OR US-6092036-$.DID. OR US-6097888-$.DID. OR US-6108662-$.DID. OR US-6121924-$.DID. OR US-6134563-$.DID. OR US-6160549-$.DID. OR US-6167409-$.DID. OR US-122000D-$.DID. OR US-6173284-$.DID. OR US-6195676-$.DID. OR US-6199046-	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:03

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S28	175	S27 or S25	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:17
S29	8	S28 and S16	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:17
S30	7	S28 and S17	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:17
S31	1756	(((dynami$4 or automa$4) near2 (genera$4 or produc$4)) same (xml$1 or mark$1up))	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:39
S32	9130	(xml$1 or mark$1up$1) near2 (source$3 or databas$4 or reposito$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:40
S33	397	S32 and S31	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:40
S34	50	S17 and S33	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:40
S35	3373	(((merg$4 or combin$4 or assemb$4 or join$4) near3 (xml$1 or mark$1up$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:41

S36	72	S35 and S33	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:42
S37	2080	(((dynami$4 or automa$4) near3 (genera$4 or produc$4)) same (xml$1 or mark$1up))	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:50
S38	3282	(((dynami$4 or automa$4) near3 (genera$4 or produc$4)) same (xml$1 or mark$1up or html$1 or sgml$3))	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:51
S39	576	S38 and S32	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:51
S40	504	S39 not S36	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:52
S41	172	S40 and @ay<="2002"	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:52
S42	3373	(((merg$4 or combin$4 or assemb$4 or join$4 or aggregat) near3 (xml$1 or mark$1up$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S43	3871	(((merg$4 or combin$4 or assemb$4 or join$4 or aggregat$3) near3 (xml$1 or mark$1up$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S44	3878	(((merg$4 or combin$4 or assemb$4 or join$4 or aggregat$4) near3 (xml$1 or mark$1up$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S45	7	S44 not S43	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S46	505	S44 not S35	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S47	0	S46 and (reslove$4 near2 confli$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 16:00
S48	14	S46 and (resol$4 near2 confli$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 16:01
S49	1	("6507856").PN.	USPAT; USOCR	OR	OFF	2011/07/27 20:10
S50	20	(display$3 near2 (XML or mark$1up)) same (chart$2)	USPAT	OR	OFF	2011/07/28 11:05

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S51	51	((display$3 or show$4 or render$4) near2 (XML or mark$1up)) same (chart$2)	USPAT	OR	OFF	2011/07/28 11:07
S52	376	((display$3 or show$4 or render$4) near2 (XML or mark$1up)) same (chart$2 or graph$4 or spread$1sheet$2)	USPAT	OR	OFF	2011/07/28 11:08
S53	53	((display$3 or show$4 or render$4) near2 (XML or mark$1up)) near3 (chart$2 or graph$4 or spread$1sheet$2)	USPAT	OR	OFF	2011/07/28 11:09
S54	431	((xml$1 or mark$1up$1) near2 (data$4)) same (chart$2 or graph$2)	USPAT	OR	OFF	2011/07/28 11:10
S55	74	((xml$1 or mark$1up$1) near2 (data$4)) near2 (chart$2 or graph$2)	USPAT	OR	OFF	2011/07/28 11:10
S56	168	((xml$1 or mark$1up$1) near2 (data$4)) near2 (chart$2 or graph$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:11
S57	213	((xml$1 or mark$1up$1 or html$1) near2 (data$4)) near2 (chart$2 or graph$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:14
S58	1529	((xml$1 or mark$1up$1 or html$1)) near2 (chart$2 or graph$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:14
S59	1	((xml$1 or mark$1up$1 or html$1)) near2 ((chart$2 or graph$2) and tree and spread$1sheet$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:14
S60	183	((xml$1 or mark$1up$1 or html$1)) same ((chart$2 or graph$2) and tree and spread$1sheet$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:15
S61	19296	((xml$1 or mark$1up$1 or html$1)) same ((chart$2 or graph$2) or spread$1sheet$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:23
S62	10106	(((xml$1 or mark$1up$1 or html$1)) same ((chart$2 or graph$2) or spread$1sheet$2)) same (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:23
S63	1031	(((xml$1 or mark$1up$1 or html$1)) near2 ((chart$2 or graph$2) or spread$1sheet$2)) same (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT;	OR	OFF	2011/07/28 11:24

			IBM_TDB			
S64	217	(((xml$1 or mark$1up$1 or html$1)) near2 ((chart$2 or graph$2) or spread$1sheet$2)) near2 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:24
S65	42	(((xml$1 or mark$1up$1 or html$1)) near2 (spread$1sheet$2)) near2 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:49
S66	754	(((xml$1 or mark$1up$1 or html$1)) near2 (spread$1sheet$2 or table$1 or colum$2)) near2 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:50
S67	403	(((xml$1 or mark$1up$1 or html$1)) near1 (spread$1sheet$2 or table$1 or colum$2)) near2 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:50
S68	224	(((xml$1 or mark$1up$1 or html$1)) near1 (spread$1sheet$2 or table$1 or colum$2)) near1 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:50
S69	106	(((xml$1 or mark$1up$1 or html$1)) near1 (tree)) near1 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:59
S70	43	(((xml$1 or mark$1up$1 or html$1)) near1 (tree$1)) near1 (view$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:01
S71	46	(((xml$1 or mark$1up$1 or html$1)) near1 (tree$1 or dom)) near1 (view$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:02
S72	46	(((xml$1 or mark$1up$1 or html$1)) near1 (tree$1 or dom or (document adj object adj model))) near1 (view$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:02
S73	130	(((xml$1 or mark$1up$1 or html$1)) near1 (tree$1 or dom or (document adj object adj model))) near1 (view$4 or show$4 or display$4 or render)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT;	OR	OFF	2011/07/28 12:02

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				IBM_TDB			
S74	87	S73 not S70	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:02
S75	1381	(xml$1) near1 (tree$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:03
S76	53	S75 and @ay<="2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:03
S77	197	((xml$1) near1 (tree$1)) same (displa$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:05
S78	6	S77 and @ay<="2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:05
S79	1953	(combin$2 near2 (xml$1 or mark$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 14:32
S80	80	S79 and @ay="2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 14:33
S81	799	(combin$2 near2 (xml$1 or mark$1up))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 14:35
S82	35	S81 and @ay="2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 14:35

8/ 1/ 2011 6:59:41 PM
C:\ Users\ mamin\ Documents\ EAST\ Workspaces\ 12222752.wsp

Exhibit 1002_0652

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BIB DATA SHEET

CONFIRMATION NO. 5842

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/222,752	08/15/2008 **RULE**	715	2176	07643.0002-02

APPLICANTS
 Russell T. Davis, Bethesda, MD;

** **CONTINUING DATA** ***************************
 This application is a DIV of 09/573,778 05/18/2000 PAT 7,421,648
  which claims benefit of 60/135,525 05/21/1999
  and claims benefit of 60/183,152 02/17/2000

** **FOREIGN APPLICATIONS** ************************** None /M.A./ 08/01/2011

** **IF REQUIRED, FOREIGN FILING LICENSE GRANTED** **
 09/04/2008

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and /MUSTAFA A AMIN/ Acknowledged Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY MD	SHEETS DRAWINGS 40	TOTAL CLAIMS 27	INDEPENDENT CLAIMS 5

ADDRESS

 FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
 901 NEW YORK AVENUE, NW
 WASHINGTON, DC 20001-4413
 UNITED STATES

TITLE

 Reusable data markup language

FILING FEE RECEIVED 2580	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees
		☐ 1.16 Fees (Filing)
		☐ 1.17 Fees (Processing Ext. of time)
		☐ 1.18 Fees (Issue)
		☐ Other
		☐ Credit

BIB (Rev. 05/07).

Exhibit 1002_0653

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)
	)
Russell T. Davis	) Group Art Unit: 2176
	)
Application No.: 12/222,752	) Examiner: Mustafa A. Amin
	)
Filed: August 15, 2008	) Confirmation No.: 5842
	)
For: REUSABLE DATA MARKUP	) **VIA EFS WEB**
LANGUAGE	)

Mail Stop: Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT

In reply to the Office Action mailed August 5, 2011, the period for response to

which extends through November 7, 2011 (November 5, 2011 being a Saturday),

please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims in this paper.

Remarks follow the Amendments section of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-12. (Canceled)

13. (Currently Amended) A method in a data processing system, comprising the steps of:

receiving a first markup document and a second markup document, both the first markup document and the second markup document including numerical values and tags reflecting characteristics of the numerical values, wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document;

automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format;

~~automatically~~ combining the first markup document and the second markup document into a single data set ~~using the tags~~; and

displaying the single data set.

14. (Currently Amended) The method of claim 13, ~~wherein the automatically combining step~~ further comprising ~~comprises the step of~~:

resolving conflicts between the characteristics of the first markup document and the second markup document.

15.   (Currently Amended) The method of claim 13, wherein the displaying step further comprises_a the step of:

manipulating the display of the single data set using the tags reflecting the characteristics of the numerical values.

16.   (Currently Amended) The method of claim 13, wherein the characteristics include at least one of_a magnitude, scale, modifier, unit units, and measure of the numerical values, and wherein the method further includes step of manipulating includes the step of:

manipulating the display of the single data set using the tags, wherein the tags reflect reflecting at least one of the magnitude, scale, modifier, unit units, and measure characteristics of the numerical values.

17.   (Currently Amended) The method of claim 13, wherein the characteristics include_a magnitude of the numerical values, and wherein the method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the magnitude of the numerical values.

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18. (Currently Amended) The method of claim 13, wherein the characteristics include a scale of the numerical values, and wherein the method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the scale of the numerical values.

19. (Currently Amended) The method of claim 13, wherein the characteristics include a modifier of the numerical values, and wherein the method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the modifier of the numerical values.

20. (Currently Amended) The method of claim 13, wherein the characteristics include a unit of the numerical values units, and wherein the method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the unit units of the numerical values.

21. (Currently Amended) The method of claim 13, wherein the characteristics include a measure of the numerical values, and wherein the method further includes step of manipulating includes the step of:

manipulating the display of the single data set using a tag reflecting the measure of the numerical values.

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22-23. (Canceled)

24.　(Currently Amended)　A method in a data processing system, comprising the steps of:

receiving a request for a numerical value, the request indicating at least one characteristic of the numerical value;

receiving a first markup document and a second markup document, both the first markup document and the second markup document containing numerical values and tags reflecting characteristics of the numerical values, wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document, and wherein at least one of the tags having has the indicated characteristic of the requested numerical value;

automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format;

automatically combining the first markup document and the second markup document into a single data set by resolving conflicts between the characteristics of the first markup document and the second markup document;

displaying the single data set; and

manipulating the display of the single data set using the tags reflecting the characteristics of the numerical values.

25.   (Currently Amended) A data processing system comprising:

a non-volatile storage device with a first markup document and a second markup document, both the first markup document and the second markup document containing numerical values and tags reflecting characteristics of the numerical values, wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document;

a memory with a program that receives the first markup document and the second markup document, that automatically transforms the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format, and that automatically combines the first markup document and the second markup document into a single data set using the tags; and

a processor that runs the program.

26.   (Original) The data processing system of claim 25, wherein the non-volatile storage device further includes a database, and wherein at least one of the markup documents is created from information stored in the database.

27.   (Original) The data processing system of claim 25, wherein the markup language is compliant with Extensible Markup Language version 1.0.

28.   (Original) The data processing system of claim 25, further comprising a display, wherein the program instructs the display to display the single data set on a chart view.

29.   (Original) The data processing system of claim 25, further comprising a display, wherein the program instructs the display to display the single data set on a tree view.

30.   (Original) The data processing system of claim 25, further comprising a display, wherein the program instructs the display to display the single data set on a spreadsheet view.

31.   (Original) The data processing system of claim 25, further comprising a display, wherein the program instructs the display to display the single data set on a footnote view.

32-39. (Canceled)

40.   (Currently Amended) A non-transitory computer-readable medium containing instructions for controlling a data processing system to perform a method comprising:

receiving a first markup document and a second markup document, both the first markup document and the second markup document containing numerical values and tags reflecting characteristics of the numerical values, wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document;

automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format;

~~automatically~~ combining the first markup document and the second markup document into a single data set ~~using the tags~~; and

displaying the single data set.

41.   (Currently Amended) The computer-readable medium of claim 40, ~~wherein the automatically combining step~~ further comprising ~~comprises the step of~~:

resolving conflicts between the characteristics of the first markup document and the second markup document.

42.   (Currently Amended) The computer-readable medium of claim 40, wherein the displaying step further comprises a ~~the~~ step of:

manipulating the display of the single data set using the tags reflecting the characteristics of the numerical values.

43.   (Currently Amended) The computer-readable medium of claim 40, wherein the characteristics include at least one of magnitude, scale, modifier, unit ~~units~~, and measure of the numerical values, and wherein the method further includes ~~step of manipulating comprises the step of~~:

manipulating the display of the single data set using the tags reflecting the magnitude, scale, modifier, unit ~~units~~, and measure characteristics of the numerical values.

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44.   (Currently Amended) The computer-readable medium of claim 40, wherein the characteristics include magnitude of the numerical values, and wherein the method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the magnitude characteristic of the numerical values.

45.   (Currently Amended) The computer-readable medium of claim 40, wherein the characteristics include a scale of the numerical values, and wherein the method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the scale characteristic of the numerical values.

46.   (Currently Amended) The computer-readable medium of claim 40, wherein the characteristics include a modifier of the numerical values, and wherein the method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the modifier characteristic of the numerical values.

47.   (Currently Amended) The computer-readable medium of claim 40, wherein the characteristics include a unit units, and wherein the method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the unit units characteristic of the numerical values.

48.   (Currently Amended) The computer-readable medium of claim 40,

wherein the characteristics include a measure of the numerical values, and wherein the

method further includes step of manipulating comprises the step of:

manipulating the display of the single data set using a tag reflecting the measure

characteristic of the numerical values.

49-50. (Canceled)

51.   (Currently Amended) A data processing system comprising:

means for receiving a first markup document and a second markup document,

both the first markup document and the second markup document containing numerical

values and tags reflecting characteristics of the numerical values, wherein the

characteristics indicate that the numerical values of the first markup document differ in

format from the numerical values of the second markup document;

means for automatically transforming the numerical values of at least one of the

first markup document and the second markup document, so that the numerical values

of the first markup document and the second markup document have a common format;

means for automatically combining the first markup document and the second

markup document into a single data set using the tags; and

means for displaying the single data set.

52-66. (Canceled)

REMARKS

I.   Status of the Claims

In the Office Action of August 5, 2011 ("the Office Action"),[1] the Examiner took

the following actions:

    i)   rejected claims 40-48 under 35 U.S.C. § 101 as being directed to non-statutory subject matter;

    ii)   rejected claims 13-21, 24, 25, 27, 30, 40-48, and 51 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,507,856 to Chen et al. ("*Chen*");

    iii)   rejected claim 26 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of U.S. Patent No. 6,148,330 to Puri et al. ("*Puri*");

    iv)   rejected claim 28 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of U.S. Patent No. 5,748,188 to Hu et al. ("*Hu*");

    v)   rejected claim 29 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of U.S. Patent No. 6,314,424 to Kaczmarski et al. ("*Kaczmarski*"); and

    vi)   rejected claim 31 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of U.S. Patent No. 6,535,896 to Britton et al. ("*Britton*").

By this Amendment, Applicant has amended claims 13-21, 24, 25, 40-48, and 51.

No prohibited new matter has been added. Claims 1-12, 22, 23, 32-39, 49, 50, and 52-

66 were previously cancelled. Upon entry of the above amendments, claims 13-21, 24-

31, 40-48, and 51 will remain pending and under examination. Of these, claims 13, 24,

25, 40, and 51 are the independent claims.

---

[1] The Office Action may contain statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement or characterization in the Office Action.

Applicant respectfully traverses the rejections, and submits that the pending claims are in condition for allowance, for at least the reasons set forth below.

II.   Rejections under 35 U.S.C. § 101

Applicant respectfully traverses the rejection of claims 40-48 under 35 U.S.C. § 101. In the Office Action, the Examiner states that "claim 40 recites 'a computer readable medium.'" *See* Office Action, p. 3. The Examiner also states that "[i]n the specification of the present application, the '*computer readable medium*' is expressly defined as including (spec page 27) '**carrier wave**.'" *Id*. The Examiner notes that "[i]n such embodiments the recited '*computer readable medium*' is a signal per se" and that, accordingly, "the recited '*computer readable medium*' is not a 'process', a 'machine', a 'manufacture', or 'composition of matter.'" *Id*. While not conceding the propriety of the Examiner's allegations, Applicant has further amended independent claim 40 in order to more clearly claim statutory subject matter, namely, a "non-transitory computer-readable medium." As such, Applicant respectfully requests reconsideration and withdrawal of the § 101 rejection of claims 40-48.

III.   Rejections under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejections under 35 U.S.C. § 103(a). A *prima face* case of obviousness has not been established with respect to Applicant's claims, for at least the reasons set forth below.

"The key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. . . . [R]ejections on obviousness cannot be sustained with mere conclusory statements. M.P.E.P. § 2142, 8th Ed., Rev. 8 (July 2010) (internal citation and inner quotation

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Exhibit 1002_0665

omitted). "[T]he framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). . . . The factual inquiries . . . [include determining the scope and content of the prior art and] . . . [a]scertaining the differences between the claimed invention and the prior art." M.P.E.P. § 2141(II). In rejecting a claim, "Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art." M.P.E.P. § 2141(III).

Here, no *prima facie* case of obviousness has been established for at least the reasons that the Examiner has not properly determined the scope and content of the prior art and has not properly ascertained the differences between Applicant's claims and the prior art.

A. Claims 13-21, 24, 25, 27, 30, 40-48, and 51

Applicant respectfully traverses the rejection of claims 13-21, 24, 25, 27, 30, 40-48, and 51 under 35 U.S.C. § 103(a) as being unpatentable over *Chen*. A *prima facie* case of obviousness has not been established.

Amended independent claim 13 recites a combination of elements, including, *inter alia*:

> receiving a first markup document and a second markup document, both the first markup document and the second markup document including numerical values and tags reflecting characteristics of the numerical values, wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document; [and]
>
> automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format.

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Chen does not teach or suggest at least the above subject matter of claim 13.
Chen relates to "[a] system for exchanging and merging messages over a network [that]
includes a server accessible by a plurality of remote browsers for transmitting a
template including fields for information entry and a business system accessible by the
server for generating a return document pursuant to information entered in the template
on the browsers." *See Chen*, Abstract. *Chen* discloses that "[a] merging algorithm is
implemented to merge the document with the return template for providing a return
document to the browser having portions of the return template with data entered
therein." *Id.*

In the Office Action, the Examiner cites column 1, lines 34-64, column 4, lines
4-67, column 5, lines 10-13, and Figures 1, 2, and 4-10 of *Chen* as allegedly teaching
the features of claim 13. Column 1, lines 34-64 of *Chen* discloses that "the information
entered into [a] template is . . . associated with tag names and [that] the means for
merging may include a name tag map for correlating tags names of the template with
tag names of the return template," and that "[t]he first message may be written in an
extensible markup language (XML) and the data type information may be in a
corresponding data type definition format (DTD)." Column 4, lines 4-67 of *Chen*
discloses that "[a] document merging algorithm . . . generates a return XML document,"
that "a sample XML document is . . . for encoding a Purchase Order (PO), where there
are two items ordered, i.e., item Nos. 0001 and 0002," and that "[l]ine item 20 includes
detailed product descriptions, service types, and ship to address, and the line item 25
includes only key information, such as price, quantity and unit." Column 5, lines 10-13

of *Chen* discloses that "[t]he style sheet . . . provides a way to render the XML document . . . to a browser."

The Examiner admits that *Chen* "fails to specifically disclose that the second mark document includes **numerical values**." *See* Office Action, pp. 4, 5. However, the Examiner alleges that "this limitation would have been to one of ordinary skill in the art at the time of the invention in view CHEN's teaching of the first document including numerical values and furthermore it is commonly known in that xml template documents may include any type of data (i.e. including numerical values)." *See* Office Action, p. 5. The Examiner asserts that "it would have been obvious to one having ordinary skill in the art at the time that the invention was made to include second markup document including *numerical values*, for the purpose of providing various different price quotes (e.g. numerical values) in a returned invoice based on a received purchase order." *Id.*

Without conceding the propriety of the Examiner's aforementioned allegations, Applicant has amended claim 13 to even further distinguish over *Chen*. *Chen* does not teach or suggest "receiving a first markup document and a second markup document, both the first markup document and the second markup document including numerical values and tags reflecting characteristics of the numerical values, wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document" and "automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format," as required by claim 13 (emphasis added).

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Accordingly, the scope and content of the prior art have not been properly

determined and the differences between the prior art and the combinations of amended

claim 13 have not been properly ascertained. Thus, no *prima facie* case of obviousness

has been established for independent claim 13 in view of *Chen*, and the rejection of

claim 13 under 35 U.S.C. § 103(a) should be withdrawn. Claim 13, therefore, is

allowable.

Amended independent claims 24, 25, 40, and 51, while different in scope, recite

features similar to those of claim 13 discussed above and should be allowable for

similar reasons.

Dependent claims 14-21, 27, 30, and 41-48 should also be allowable by virtue of

their dependence from allowable base claims.

B.   Claims 26, 28, 29, and 31

Applicant respectfully traverses the rejections of claims 26, 28, 29, and 31 under

35 U.S.C. § 103(a). A *prima facie* case of obviousness has not been established.

Claims 26, 28, 29, and 31 depend from independent claim 25 and therefore

include all recitations therein. As discussed previously, *Chen* fails to teach or suggest

all of the subject matter of independent claim 25, including at least "receiving a first

markup document and a second markup document, both the first markup document and

the second markup document including numerical values and tags reflecting

characteristics of the numerical values, wherein the characteristics indicate that the

numerical values of the first markup document differ in format from the numerical values

of the second markup document" and "automatically transforming the numerical values

of at least one of the first markup document and the second markup document, so that

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the numerical values of the first markup document and the second markup document have a common format," as required by independent claim 13, and as similarly recited in independent claim 25. None of *Puri*, *Hu*, *Kaczmarski*, or *Britton*, alone or in combination, remedy the deficiencies of *Chen*, nor does the Office Action assert that they do.

Accordingly, the scope and content of the prior art have not been properly determined and the differences between the prior art and the combinations of claims 13, 24, 25, 40, and 51 have not been properly ascertained. Thus, no *prima facie* case of obviousness has been established with respect to the independent claims or dependent claims 26, 28, 29, and 31. As a result, the rejection of claims 26, 28, 29, and 31 under 35 U.S.C. § 103(a) should be withdrawn.

CONCLUSION

In view of the foregoing, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Should it be necessary to resolve any additional concerns and expedite the issuance of a Notice of Allowance, the Examiner is invited to contact Applicant's undersigned representative at (202) 408-4000.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: November 7, 2011   By: /Christopher K. Agrawal/_____
                                          Christopher K. Agrawal
                                          Reg. No. 63,482

Electronic Acknowledgement Receipt

EFS ID:	11354167
Application Number:	12222752
International Application Number:	
Confirmation Number:	5842
Title of Invention:	Reusable data markup language
First Named Inventor/Applicant Name:	Russell T. Davis
Customer Number:	22852
Filer:	Christopher K. Agrawal/Margie Harris
Filer Authorized By:	Christopher K. Agrawal
Attorney Docket Number:	07643.0002-02
Receipt Date:	07-NOV-2011
Filing Date:	15-AUG-2008
Time Stamp:	18:31:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Amendment.pdf	637875 df6c3ccc4f5f2da3e897d9b71ce45d3166e6a859	yes	18

Multipart Description/PDF files in .zip description		
Document Description	Start	End
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Claims	2	10
Applicant Arguments/Remarks Made in an Amendment	11	18

Warnings:	
Information:	
Total Files Size (in bytes):	637875

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/222,752	Filing Date 08/15/2008	☐ To be Mailed

APPLICATION AS FILED – PART I

OTHER THAN

	(Column 1)	(Column 2)	SMALL ENTITY ☐	OR	SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =		X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).					
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))						
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL		TOTAL	

APPLICATION AS AMENDED – PART II

OTHER THAN

		(Column 1)	(Column 2)	(Column 3)	SMALL ENTITY	OR	SMALL ENTITY	
AMENDMENT	**11/07/2011**	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($) — ADDITIONAL FEE ($)		RATE ($) — ADDITIONAL FEE ($)	
	Total (37 CFR 1.16(i))	* 27	Minus ** 27	= 0	X $ =	OR	X $60 =	0
	Independent (37 CFR 1.16(h))	* 5	Minus ***5	= 0	X $ =	OR	X $250 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	**0**

		(Column 1)	(Column 2)	(Column 3)	RATE ($) — ADDITIONAL FEE ($)		RATE ($) — ADDITIONAL FEE ($)	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA				
	Total (37 CFR 1.16(i))	*	Minus **	=	X $ =	OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus ***	=	X $ =	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/SHERRY DAVIS/

Exhibit 1002_0674

				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*			Application Number	12/222,752	
			Filing Date	August 15, 2008	
			First Named Inventor	Russell T. Davis	
			Art Unit	2176	
			Examiner Name	Mustafa A. Amin	
Sheet	1	of	2	Attorney Docket Number	07643.0002-02

U.S. PATENTS AND PUBLISHED U.S. PATENT APPLICATIONS					
Examiner Initials[*]	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Issue or Publication Date MM-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-5,983,247	11-1999	Yamanaka et al.	
		US-2003/0140045	07-2003	Heninger et al.	
		US-6,424,980	07-2002	Iizuka et al.	
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		US-5,953,724	09-1999	Lowry, David D.	
		US-5,737,739	04-1998	Shirley et al.	
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		US-6,112,242	08-2000	Jois et al.	
		US-6,173,272	01-2001	Thomas et al.	
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		US-6,192,362	02-2001	Schneck et al.	
		US-6,185,573	02-2001	Angelucci et al.	

					Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*					Application Number	12/222,752
					Filing Date	August 15, 2008
					First Named Inventor	Russell T. Davis
					Art Unit	2176
					Examiner Name	Mustafa A. Amin
Sheet	2	of	2		Attorney Docket Number	07643.0002-02

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		US-6,212,494	04-2001	Boguraev, Branimir K.	
		US-6,249,291	06-2001	Popp et al.	
		US-6,317,783	11-2001	Freishtat et al.	
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		US-2008/0028340	01-2008	Davis, Russell T.	
		US-2008/0282139	11-2008	Davis, Russell T.	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

FOREIGN PATENT DOCUMENTS

Examiner Initials[*]	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Translation[6]

NONPATENT LITERATURE DOCUMENTS

Examiner Initials[*]	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation[6]
		"ProQuest Information and Learning – 0789717298 – Special Edition Using Microsoft® Excel 2000." 1/23/2008 http://proquest.safaribooksonline.com/0789717298	

Examiner Signature		Date Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

PTO Notes regarding this form:

[1] Applicant's unique citation designation number (optional).
[2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04.
[3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).
[4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible.
[6] Applicant is to place a check mark here if English language Translation is attached.
This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Electronic Patent Application Fee Transmittal

Application Number:	12222752
Filing Date:	15-Aug-2008
Title of Invention:	Reusable data markup language
First Named Inventor/Applicant Name:	Russell T. Davis
Filer:	Michael Patrick Van Handel/Donna Beckford-Harris
Attorney Docket Number:	07643.0002-02

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD ($)				**180**

Exhibit 1002_0679

Electronic Acknowledgement Receipt

EFS ID:	11633313
Application Number:	12222752
International Application Number:	
Confirmation Number:	5842
Title of Invention:	Reusable data markup language
First Named Inventor/Applicant Name:	Russell T. Davis
Customer Number:	22852
Filer:	Michael Patrick Van Handel/Donna Beckford-Harris
Filer Authorized By:	Michael Patrick Van Handel
Attorney Docket Number:	07643.0002-02
Receipt Date:	15-DEC-2011
Filing Date:	15-AUG-2008
Time Stamp:	18:37:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$180
RAM confirmation Number	6396
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

Exhibit 1002_0680

| 1 | | IDS_PTOSB08_PROQUEST_REF. pdf | 300022 | yes | 8 |
| | | | 4caba7e347a0245080b43190567009716fd 9b251 | | |

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Transmittal Letter	1	2
Information Disclosure Statement (IDS) Form (SB08)	3	5
Non Patent Literature	6	8

Warnings:

Information:

| 2 | Fee Worksheet (SB06) | fee-info.pdf | 30150 | no | 2 |
| | | | 4ad1aabc1b5702680bf113db042b955108c 93171 | | |

Warnings:

Information:

	Total Files Size (in bytes):	330172

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)
	)
Russell T. Davis	) Group Art Unit: 2176
	)
Application No.: 12/222,752	) Examiner: Mustafa A. Amin
	)
Filed: August 15, 2008	) Confirmation No. 5842
	)
For: REUSABLE DATA MARKUP LANGUAGE	)
	)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(c)

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(c), Applicant brings to the attention of the Examiner the documents on the attached listing. This Information Disclosure Statement is being filed after the events recited in Section 1.97(b) but, to the undersigned's knowledge, before the mailing date of either a Final action, Quayle action, or a Notice of Allowance. Under the provisions of 37 C.F.R. § 1.97(c), this Information Disclosure Statement is accompanied by a fee of $180.00 as specified by Section 1.17(p).

A copy of the listed non-patent literature document is attached. Copies of the U.S. patent publications are not enclosed.

Applicant respectfully requests that the Examiner consider the listed documents and indicate that they were considered by making appropriate notations on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that the listed documents are material or constitute "prior art." If the Examiner applies any of the documents as prior art against any claims in the application and Applicant determines that the cited documents do not constitute "prior art" under United States law, Applicant reserves the right to present to the office the relevant facts and law regarding the appropriate status of such documents.

Applicant further reserves the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should any of the documents be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement, please charge the fee to Deposit Account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: December 15, 2011   By: /Michael P. Van Handel/
Michael P. Van Handel
Reg. No. 68,292

Examiner-Initiated Interview Summary	Application No. 12/222,752	Applicant(s) DAVIS, RUSSELL T.
	Examiner MUSTAFA AMIN	Art Unit 2176

All participants (applicant, applicant's representative, PTO personnel):

(1) _MUSTAFA AMIN (USPTO Rep.)_.　　　　　(3)_____.

(2) _Michael Van Handel (Applicant Rep.)_.　　(4)_____.

　　Date of Interview: _27 January 2012_.

　　Type:　　☒ Telephonic　☐ Video Conference
　　　　　　☐ Personal [copy given to: ☐ applicant　☐ applicant's representative]

Exhibit shown or demonstration conducted:　☐ Yes　☐ No.
　　If Yes, brief description: _____.

Issues Discussed　☐101　☐112　☐102　☐103　☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: _17-24 and 40-48_.

Identification of prior art discussed: _none_.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Applicant agreed to proposed examiner amendment.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/Mustafa Amin/ Art Unit 2176 01/27/2012	

Exhibit 1002_0684

UNITED STATES PATENT AND TRADEMARK OFFICE

NOTICE OF ALLOWANCE AND FEE(S) DUE

	EXAMINER
	AMIN, MUSTAFA A

ART UNIT	PAPER NUMBER
2176	

22852   7590   02/02/2012
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

DATE MAILED: 02/02/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/222,752	08/15/2008	Russell T. Davis	07643.0002-02	5842

TITLE OF INVENTION: REUSABLE DATA MARKUP LANGUAGE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1740	$300	$0	$2040	05/02/2012

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

Page 1 of 3

PTOL-85 (Rev. 02/11)

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: <u>Mail</u> Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or <u>Fax</u> (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

22852   7590   02/02/2012

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/222,752	08/15/2008	Russell T. Davis	07643.0002-02	5842

TITLE OF INVENTION: REUSABLE DATA MARKUP LANGUAGE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1740	$300	$0	$2040	05/02/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
AMIN, MUSTAFA A	2176	715-209000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE   (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.   ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____   Date _____

Typed or printed name _____   Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PTOL-85 (Rev. 02/11) Approved for use through 08/31/2013.   OMB 0651-0033   U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Exhibit 1002_0686

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/222,752	08/15/2008	Russell T. Davis	07643.0002-02	5842

22852 7590 02/02/2012	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP	AMIN, MUSTAFA A	
901 NEW YORK AVENUE, NW	ART UNIT	PAPER NUMBER
WASHINGTON, DC 20001-4413	2176	

DATE MAILED: 02/02/2012

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 619 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 619 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 02/11)

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

	Application No.	Applicant(s)
Notice of Allowability	12/222,752	DAVIS, RUSSELL T.
	Examiner	**Art Unit**	
	MUSTAFA AMIN	2176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *11/07/2011*.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are *13-21,24-31,40-48 and 51*.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   - a) ☐ All b) ☐ Some* c) ☐ None of the:
     - 1. ☐ Certified copies of the priority documents have been received.
     - 2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
     - 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
   - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
     - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)
1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 12/15/2011
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *01/27/2012* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Mustafa Amin/	/Laurie Ries/
Art Unit 2176	Primary Examiner
01/27/2012	Technology Center 2100
	29 January 2012

Applicant's Response

In Applicant's response dated 11/07/2011, applicant amended claims 13-21, 24-25, 40-48 and 51. Applicant argued against all rejection previously set forth in the office action mailed on 08/05/2011.

In light of applicant's amendments/remarks, all rejections under 35 U.S.C. 101 previously set forth are withdrawn.

In light of applicant's amendments/remarks, all prior art rejections previously set forth are withdrawn.

Information Disclosure Statement

The information disclosure statement filed on 12/15/2011 does not fully comply with the requirements of 37 CFR 1.98(b) because the at least one of the listed publications identified as "non-patent literature documents" fails to identify and/or incorrectly identifies at least one of the following, as required in 37 CFR 1.98(b)(5):

1. publisher;

2. author (if any);

3. title;

4. **relevant pages of the publication;**

5. publication date; and

6. place of publication.

For instance, the listing "ProQuest Information and Learning" fails to identify the number of pages.

Exhibit 1002_0690

Since the submission appears to be *bona fide*, applicant is given **ONE (1) MONTH** from

the date of this notice to supply the above mentioned omissions or corrections in the information

disclosure statement. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER

EITHER 37 CFR 1.136(a) OR (b). Failure to timely comply with this notice will result in the

above mentioned information disclosure statement being placed in the application file with the

noncomplying information **not** being considered. See 37 CFR 1.97(i).

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

Michael Van Handel on 01/27/2012.

Please amend the application as follows:

In the title of the Invention:

> ➢ *Replace the title of the Invention with following:*

Combining Reusable Data Markup Language Documents

In the Abstract:

> *Replace the abstract with the following:*

Methods and systems provide a computer markup language, referred to as Reusable Data Markup Language ("RDML"), and a data viewer for retrieving, manipulating and viewing documents and files in the RDML format that may be stored locally or over a network (e.g., the Internet). Generally, RDML permits the browsing and manipulation of numbers, as opposed to text and images like in HTML, and does so by including attributes describing the meaning of the numbers to be attached to the numbers. Documents compliant with the markup language encapsulate machine-readable documentation with numbers and data, and permit the data viewer to act as a combination web browser and spreadsheet to automatically read, interpret and manipulate the numbers and data. Furthermore, the methods and systems merge or combine RDML documents that have different data formats to produce a single data set for display.

In the specification:

> *Amend on page 2 lines 11-13 "U.S. Patent Application No. 09/573,780 entitled "Reusable Macro Markup Language", filed on the same herewith." with the following:*

Exhibit 1002_0692

U.S. Patent Application No. 09/573,780 <u>(now U.S. Patent No. 7,650,355)</u>

entitled "Reusable Macro Markup Language", filed on the same herewith.

> ➤ *Amend page 14 lines 8-9 with the following:*

Figures 12A-<u>12</u>C depict<u>s</u> X-Y plots and tree views in accordance with

methods and systems consistent with the present invention;

> ➤ *Amend page 14 lines 11-12 with the following:*

Figures 14A-<u>14</u>F depict a chart view and tree view of the RDML data viewer

as depicted in Figure 7A in accordance with methods and systems consistent

with the present invention;

> ➤ *Amend page 14 lines 13-15 with the following:*

Figures 15A-<u>15</u>C depict flowcharts of the steps performed by a graphical

user interface, chart manager and chart data object for adding a line item to a

chart view upon selection of the line item in a tree view in accordance with

methods and systems consistent with the present invention;

> ➤ *Amend page 14 lines 22-23 with the following:*

Figures 19A-<u>19</u>C depict RMML document handling, an RMML graphical

interface, and an RMML macro interpreter, respectively, in accordance with the

present invention;

➢ *Amend page 15 lines 1-2 with the following:*

Figures 20A-20D illustrates screen shots of RMML macro panels in accordance with the present invention.

➢ *Amend page 15 lines 5-6 with the following:*

Figures 22A-22D depicts exemplary screen shots of the tagging of spreadsheet information tagging to create a document in accordance with the present invention.

In the Claims:

➢ amend Claims 17-21, 25, and 41-48 in the following manner:

17. (Currently Amended) The method of claim 13, wherein the characteristics include a magnitude of the numerical values, and wherein the method further includes:

manipulating the display of the single data set using a **one of the tags, the** tag reflecting the magnitude of the numerical values.

18. (Currently Amended) The method of claim 13, wherein the characteristics include a scale of the numerical values, and wherein the method further includes:

Exhibit 1002_0694

manipulating the display of the single data set using ~~a~~ **one of the tags, the** tag

reflecting the scale of the numerical values.

19. (Currently Amended) The method of claim 13, wherein the characteristics include a

modifier of the numerical values, and wherein the method further includes:

manipulating the display of the single data set using ~~a~~ **one of the tags, the** tag

reflecting the modifier of the numerical values.

20. (Currently Amended) The method of claim 13, wherein the characteristics include a

unit of the numerical values, and wherein the method further includes:

manipulating the display of the single data set using ~~a~~ **one of the tags, the** tag

reflecting the unit of the numerical values.

21. (Currently Amended) The method of claim 13, wherein the characteristics include a

measure of the numerical values, and wherein the method further includes:

manipulating the display of the single data set using ~~a~~ **one of the tags, the** tag

reflecting the measure of the numerical values.

25. (Currently Amended) A data processing system comprising:

a non-volatile storage device ~~with~~ **storing** a first markup document and a second

markup document, both the first markup document and the second markup document

containing numerical values and tags reflecting characteristics of the numerical values,

Exhibit 1002_0695

wherein the characteristics indicate that the numerical values of the first markup

document differ in format from the numerical values of the second markup document;

a memory ~~with~~ **storing** a program that receives the first markup document and

the second markup document, that automatically transforms the numerical values of at

least one of the first markup document and the second markup document [[,]] so that

the numerical values of the first markup document and the second markup document

have a common format, and that automatically combines the first markup document and

the second markup document into a single data set; and

a processor that runs the program.

41. (Currently Amended) The **non-transitory** computer-readable medium of claim 40,

further comprising:

resolving conflicts between the characteristics of the first markup document and

the second markup document.

42. (Currently Amended) The **non-transitory** computer-readable medium of claim 40,

wherein the displaying step further comprises a step of:

manipulating the display of the single data set using the tags reflecting the

characteristics of the numerical values.

Exhibit 1002_0696

43. (Currently Amended) The **non-transitory** computer-readable medium of claim 40, wherein the characteristics include at least one of magnitude, scale, modifier, unit, and measure of the numerical values, and wherein the method further includes:

manipulating the display of the single data set using the tags reflecting the magnitude, scale, modifier, unit, and measure characteristics of the numerical values.

44. (Currently Amended) The **non-transitory** computer-readable medium of claim 40, wherein the characteristics include magnitude of the numerical values, and wherein the method further includes:

manipulating the display of the single data set using a **one of the tags, the** tag reflecting the magnitude characteristic of the numerical values.

45. (Currently Amended) The **non-transitory** computer-readable medium of claim 40, wherein the characteristics include a scale of the numerical values, and wherein the method further includes:

manipulating the display of the single data set using a **one of the tags, the** tag reflecting the scale characteristic of the numerical values.

46. (Currently Amended) The **non-transitory** computer-readable medium of claim 40, wherein the characteristics include a modifier of the numerical values, and wherein the method further includes:

Exhibit 1002_0697

manipulating the display of the single data set using a **one of the tags, the** tag

reflecting the modifier characteristic of the numerical values.

47. (Currently Amended) The **non-transitory** computer-readable medium of claim 40,

wherein the characteristics include a unit, and wherein the method further includes:

manipulating the display of the single data set using a **one of the tags, the** tag

reflecting the unit characteristic of the numerical values.

48. (Currently Amended) The **non-transitory** computer-readable medium of claim 40,

wherein the characteristics include a measure of the numerical values, and wherein the

method includes:

manipulating the display of the single data set using a **one of the tags, the** tag

reflecting the measure characteristic of the numerical values.

Allowable Subject Matter

The present application has been thoroughly reviewed. Upon searching a variety

of databases, the examiner respectfully submits that claims 13-21, 24-31, 40-48 and 51

are allowable in light of the prior art made of record.

Accordingly, claims are 13-21, 24-31, 40-48 and 51 allowed.

Reasons for Allowance

Exhibit 1002_0698

The following is an examiner's statement of reason for allowance:

The present invention is directed to a method/system/non-transitory computer readable medium for "*receiving a first markup document and a second markup document, both the first markup document and the second markup document including numerical values and tags reflecting characteristics of the numerical values, wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document; automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format; combining the first markup document and the second markup document into a single data set; and displaying the single data set*" as recited in claim 13 and similarly recited in independent claims 24, 25, 48 and 51.

Closest prior Chen et al. (US 6507856 B1, referred herein after as CHEN) in view Puri et al. (US 6148330, referred herein after as PURI) in view of Hu et al. (US 5748188, referred herein after as HU) in view of Kaczmarski et al. (US 6314424 B1, referred herein after Kazczmarski) in view of Britton et al. (US 6535896, referred herein after as Britton) and further in view of Heinzle et al. (US 6199046, referred herein after as Heinzle) fail to disclose or render obvious singularly or in combination the following limitations in combination with above cited limitations as recited in the independent claims:

Exhibit 1002_0699

- *wherein the characteristics indicate that the numerical values of the first markup document differ in format from the numerical values of the second markup document; automatically transforming the numerical values of at least one of the first markup document and the second markup document, so that the numerical values of the first markup document and the second markup document have a common format.*

Additional reasons for allowance can be found the applicant response dated 11/07/2011 pages 13-15 and.

Accordingly, claims are 13-21, 24-31, 40-48 allowed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See form 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MUSTAFA AMIN whose telephone number is (571)270-3181. The examiner can normally be reached on Monday to Thursday, 7:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Doug Hutton can be reached at 571-272-4137. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mustafa Amin/

Art Unite 2176

01/27/2012

/Laurie Ries/
Primary Examiner
Technology Center 2100
29 January 2012

Exhibit 1002_0701

<table>
<tr><td rowspan="3">Notice of References Cited</td><td>Application/Control No.

12/222,752</td><td>Applicant(s)/Patent Under Reexamination
DAVIS, RUSSELL T.</td><td></td></tr>
<tr><td rowspan="2">Examiner

MUSTAFA AMIN</td><td>Art Unit

2176</td><td rowspan="2">Page 1 of 1</td></tr>
</table>

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,626,957	09-2003	Lippert et al.	715/234
*	B	US-6,006,242	12-1999	Poole et al.	715/209
*	C	US-5,881,381	03-1999	Yamashita et al.	715/209
*	D	US-5,530,794	06-1996	Luebbert, David L.	715/210
*	E	US-5,706,502	01-1998	Foley et al.	717/120
*	F	US-6,009,436	12-1999	Motoyama et al.	1/1
*	G	US-6,484,149	11-2002	Jammes et al.	705/26.62
*	H	US-6,345,292	02-2002	Daugherty et al.	709/214
*	I	US-6,295,530	09-2001	Ritchie et al.	1/1
*	J	US-5,893,109	04-1999	DeRose et al.	1/1
*	K	US-7,340,534	03-2008	Cameron et al.	709/246
*	L	US-6,356,961	03-2002	Oprescu-Surcobe, Valentin	710/20
*	M	US-6,513,043	01-2003	Chan et al.	707/802

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)   **Notice of References Cited**   Part of Paper No. 20120126

Exhibit 1002_0702

Patent Search Results

13/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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Extensible mark-up language document comparison method involves comparing hashed extensible mark-up language document to determine difference report
Patent Assignee: SUN MICROSYSTEMS INC (SUNM)
Inventor: LOU E G

Patent Family (2 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20030177442	A1	20030918	US 2002100721	A	20020318	200370	B
US 7096421	B2	20060822	US 2002100721	A	20020318	200656	E

Claims:
1. A computer implemented method of comparing a first XML document and a second XML document comprising: hashing a first XML document, wherein the first **XML** document includes a **plurality** of first tags, and hashing the first **XML** document includes hashing each **one** of the **plurality** of first tags including: **selecting one** of the **plurality of** first tags from **the** first **XML** document, wherein the selected first **tag** includes a corresponding description **value** and a corresponding results value; andhashing the corresponding description value of the selected first tag to identify a corresponding unique location in a hash... ... the description value in the identified corresponding unique location in the hash table for each one of the plurality of first tags;hashing a second **XML** document, wherein the second **XML** document **includes** a **plurality** of second tags, wherein the plurality of first tags has a corresponding first order and the plurality of second tags has a corresponding second order, the first order is not equal to the second order, **including** hashing the corresponding **second** description value from a corresponding description tag included in the selected second tag wherein the hashed second description value identifies a corresponding unique second location... ... the corresponding unique second identified location in the hash table; andwherein if the corresponding unique second identified location in the hash table does not **include** a stored **value**, then **outputting** the **selected second tag** as a new tag;**comparing** the first hashed XML document and the second hashed XML document; and outputting a difference report.

13/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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Relational data conversion for distributed object application, involves merging tuple stream with construction portion of executable query to generate structured document capable of defining nesting depth
Patent Assignee: AT & T CORP (AMTT)
Inventor: FERNANDEZ M F; SUCIU D; TAN W

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6604100	B1	20030805	US 2000181400	P	20000209	200368	B
			US 2001778749	A	20010208		

Abstract:
method for **converting** relational **data** to XML (Extensible Markup Language) is provided. The method, sometimes referred to as SilkRoute, provides a general, **dynamic** and efficient tool for viewing and querying relational **data** in **XML**. SilkRoute can express **mappings** of relational **data** in **XML** that conforms to arbitrary public document **type** definitions... ... above code includes the supplier's name and a list of available products. Each product **element** includes an item name, a

category name, a brief description, a retail **price**, an optional sale **price**, and zero or more trouble reports. The content of a retail or sale **element** typically is a **currency value**... ... table contains tuples with a product id (the table's key), an **item** name, **category** name, item description, **price**, and **cost**. The SalePrice table contains sale **prices** and has key field pid and the Problem table contains trouble codes of products and their reports. The above code shows a third-normal form relational **schema**, designed for the supplier's particular business needs. The **schema** can be proprietary. For example, the supplier may not want to reveal the **attribute cost** in Clothing. The supplier's task is to **convert** its relational **data** into a valid **XML** view conforming to the DTD and make the **XML** view available to resellers... Basic Derwent Week: 200368

13/3,K/3 (Item 3 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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Data processing method for use in data browser, manipulator, involves receiving and adding indications of numerical value characteristic into document as tags
Patent Assignee: E-NUMERATE SOLUTIONS INC (ENUM-N)
Inventor: DAVIS R T

Patent Family (15 patents, 92 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2000072197	A2	20001130	WO 2000US13745	A	20000519	200141	B
AU 200051439	A	20001212	AU 200051439	A	20000519	200141	E
JP 2004506955	W	20040304	JP 2000620518	A	20000519	200417	E
			WO 2000US13745	A	20000519		
EP 1397755	A2	20040317	EP 2000936072	A	20000519	200420	E
			WO 2000US13745	A	20000519		
MX 2001011925	A1	20030901	WO 2000US13745	A	20000519	200465	E
			MX 200111925	A	20011121		
CN 1535429	A	20041006	CN 2000810054	A	20000519	200506	E
US 6920608	B1	20050719	US 1999135525	P	19990521	200547	E
			US 2000183152	P	20000217		
			US 2000573413	A	20000518		
US 7249328	B1	20070724	US 1999135525	P	19990521	200749	E
			US 2000183152	P	20000217		
			US 2000573419	A	20000518		
US 20080028340	A1	20080131	US 1999135525	P	19990521	200810	E
			US 2000183152	P	20000217		
			US 2000573419	A	20000518		
			US 2007819126	A	20070625		
US 7421648	B1	20080902	US 1999135525	P	19990521	200859	E
			US 2000183152	P	20000217		
			US 2000573778	A	20000518		
US 20080282139	A1	20081113	US 1999135525	P	19990521	200903	E
			US 2000183152	P	20000217		
			US 2000573419	A	20000518		
			US 2007819125	A	20070625		

US 20090083613	A1	20090326	US 1999135525	P	19990521	200926	E
			US 2000183152	P	20000217		
			US 2000573778	A	20000518		
			US 2008222750	A	20080815		
US 20090083619	A1	20090326	US 1999135525	P	19990521	200926	E
			US 2000183152	P	20000217		
			US 2000573778	A	20000518		
			US 2008222751	A	20080815		
US 20090089657	A1	20090402	US 1999135525	P	19990521	200929	E
			US 2000183152	P	20000217		
			US 2000573778	A	20000518		
			US 2008222752	A	20080815		
US 7650355	B1	20100119	US 1999135525	P	19990521	201007	E
			US 2000183152	P	20000217		
			US 2000573780	A	20000518		

Abstract:

the meaning of the data. The tree view uses the attributes of the **numbers** to, for example, facilitate the simultaneous display of **different** series of **numbers** of **different types** on a single display. It automatically displays the relationship between **series** of **numbers** while displaying appropriate **labels**, titles, **number** precision, etc. A tree view may... ... method in a data processing system is provided that receives a **markup document** having a **set** of **numerical values** and **tags** indicating characteristics of the **numerical values** and determines a **transformation** for the **set** of **numerical values** to reflect new characteristics. The method then accesses a plurality of the **tags** of the **set** of **numerical values**, the plurality of the **tags** indicating magnitude, scale, modifier, **units**, measure, adjustment and aggregation. Furthermore, the method determines **conversion** factors for the magnitude, scale, modifier, **units**, measure, adjustment and aggregation **tags** to accomplish the **transformation** to the new characteristics and multiplies the set of **numerical values** by the determined **conversion** factors to **transform** the **set** of **numerical values** to reflect the new characteristics... ...

Claims:

for the numerical values based on at least one of the tags; anddisplaying an axis label on the chart;receiving an indication of a **transformation** of the first series of **numerical** values;automatically determining a new axis label in response to the indicated transformation; anddisplaying the new axis label... ... markup document by prompting the selection of tags that contain information regarding a data table of data points stored in a first database; receiving the **markup document** having a **set** of numerical values and tags indicating characteristics of the numerical **values**, the characteristics including magnitude, scale, **modifier**, units, or measure; determining a **transformation** for the set of **numerical values** to reflect new characteristics; accessing a plurality of the tags of the set of **numerical values**; determining **conversion** factors based on the new characteristics to accomplish the transformation to the new characteristics; **converting** the set of **numerical values** to a base unit of values; and multiplying the base unit of **values** by the determined **conversion** factors to **transform** the set of **numerical values** to reflect the new characteristics, wherein the information contained in the tags is maintained in a separate data table in a second database... ... receiving a macro defined to perform an operation on the series of numerical values; performing an operation defined by the macro on the series of **numerical values** to **transform** the series of **numerical values** into a new representation of the series of numerical values based on the tags; generating at least one second title corresponding to results of the...

17/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350: Derwent WPIX

Automatic on-line form filling in method for Internet transactional environment
Patent Assignee: AMAZON.COM INC (AMAZ-N); JUNGLEE CORP (JUNG-N); MATHUR R (MATH-I); PHILIPPE Y (PHIL-I); RAJARAMAN A (RAJA-I)
Inventor: GUPTA A; MATHUR R; PHILIPPE Y; RAJARAMAN A

Patent Family (7 patents, 82 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1999046701	A1	19990916	WO 1999US4489	A	19990301	199946	B
AU 199927994	A	19990927	AU 199927994	A	19990301	200006	E
US 6199079	B1	20010306	US 199877322	P	19980309	200115	E
			US 199877655	P	19980311		
			US 199866523	A	19980320		
US 20010016828	A1	20010823	US 199866739	A	19980320	200151	E
US 6643624	B2	20031104	US 199877322	P	19980309	200374	E
			US 199877655	P	19980311		
			US 199866739	A	19980320		
US 20040098316	A1	20040520	US 199877322	P	19980309	200434	E
			US 199877655	P	19980311		
			US 199866739	A	19980320		
			US 2003602479	A	20030623		
US 6882981	B2	20050419	US 199877322	P	19980309	200527	E
			US 199877655	P	19980311		
			US 199866739	A	19980320		
			US 2003602479	A	20030623		

Abstract:
by web pages in an internet transactional environment by determining (350) based upon selectable criteria a form identifier corresponding to a particular on-line form, **and thereupon**, for each form so identified, indentifying (352) **one** or many corresponding match patterns (354) with which a page containing a target on-line form is parsed (358) to obtain a plurality of attributes... ...

Claims:
of vendors;determining matching patterns using the order entry form identifiers, wherein the matching patterns are stored in a database;matching the matching patterns to **web pages** of the **set** of vendors, wherein the **web pages** are associated with order entry forms;**for one** of the **web pages** that matches **one** of the matching patterns, parsing the order **entry** form for that **web page** to obtain attributes, wherein the attributes are fields in the order entry form to be filled in;identifying properties required to fill in the order entry form, the properties corresponding to user related information stored in a database;transforming data formats of the properties to yield values **that match** data **formats of** the attributes **using a transformation** function, wherein the **values** are user related information in the data formats of **the** attributes;automatically **filling the** order entry **form** by entering the values into the attributes; andsubmitting the order **entry form** to **one** of the set of vendors.1. A method **for** effecting transactions across **a** plurality of vendors in an internet environment, wherein a user purchases a plurality of items the user finds independent of the vendors, comprising:displaying theBasic Derwent Week: 199946

Webpage data indexing, searching and displaying method, involves locating universal resource locators having indirect relationship to identified webpage
Patent Assignee: CANNON S (CANN-I); EGGER D (EGGE-I); SAUERS R D (SAUE-I); SOFTWARE RIGHTS ARCHIVE LLC (SOFT-N)
Inventor: CANNON S; EGGER D; SAUERS R D

Patent Family (2 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20060242564	A1	20061026	US 199376658	A	19930614	200705	B
			US 1996649304	A	19960517		
			US 199871120	A	19980504		
			US 2001854577	A	20010515		
			US 2006404824	A	20060417		
US 7840524	B2	20101123	US 199376658	A	19930614	201077	E
			US 1996649304	A	19960517		
			US 199871120	A	19980504		
			US 2001854577	A	20010515		
			US 2006404824	A	20060417		

Claims:
analyzing further comprises cluster analyzing the Universal Resource Locators for indirect relationships; and,wherein the located Universal Resource Locators are used to identify at least **one web page**.... ... to be indexed and to collect information about the direct non-semantic relationships, wherein Universal Resource Locators that either point to or point away from **one** or more of the **web pages** are crawled; defining the set of objects to be indexed, wherein each object in the set of objects has an identification and wherein a plurality... ... semantic relationships with other objects in the set of objects, wherein a.) some of the indirect non-semantic relationships contribute greater value to the scalar **value** than others, b.) a plurality of **different types** of indirect relationships, when present, contribute to the scalar value, and c.) quantifying said object's indirect non-semantic relationships includes accounting for at least... Basic Derwent Week: 200705...

22/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350: Derwent WPIX

System for managing network protocol headers known as cookies for providing information about a user to web site operated by an Internet content provider
Patent Assignee: PITNEY BOWES INC (PITB)
Inventor: DOEBERL T M; MACDONALD M F; MARTIN J A; PORTER P W; PRAKASH S; REICHMAN R; SANSONE R P

Patent Family (7 patents, 26 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
EP 1020804	A2	20000719	EP 2000100190	A	20000113	200056	B
CA 2295274	A1	20000713	CA 2295274	A	20000112	200056	E
US 6237033	B1	20010522	US 1999231358	A	19990113	200130	E
CA 2295274	C	20020326	CA 2295274	A	20000112	200230	E
EP 1020804	B1	20041117	EP 2000100190	A	20000113	200476	E
DE 60015821	E	20041223	DE 60015821	A	20000113	200501	E
			EP 2000100190	A	20000113		

Exhibit 1002_0707

DE 60015821	T2	20051110	DE 60015821	A	20000113	200574	E
			EP 2000100190	A	20000113		

Abstract:

universal cookie dictionary; and a site-specific cookie dictionary maintained by a third party so as to contain updated entries for interpreting cookies used by **websites** on the Internet. **In one** aspect of the **invention**, a user can periodically update the local cookie, using a local cookie dictionary, to include changes to the site-specific and universal cookie dictionaries... ... on the userprimes computer; the interpretation is made by an interpreter referring to a local cookie dictionary, on the userprimes computer, having entries corresponding to **different types** of cookies. In **various alternative** embodiments, the managing also includes changing the **values** set by the websites, and fabricating cookies of types not necessarily used by a website in order to express to the website preferences a user... ...

22/3,K/3 (Item 3 from file: 350)
DIALOG(R)File 350: Derwent WPIX

Query processing method for Internet searching text documents, involves retrieving information in an initial markup language and presenting it in any other markup language
Patent Assignee: VIGNETTE CORP (VIGN-N)
Inventor: NASR R I; WEBBER N

Patent Family (1 patents, 1 countries)							
Patent Number	**Kind**	**Date**	**Application Number**	**Kind**	**Date**	**Update**	**Type**
US 6263332	B1	20010717	US 1998134263	A	19980814	200153	B

Abstract:

method of retrieving information in a first **markup language** through a **query** engine and presenting the information in any required **markup language**. A user inputs a **query** and may invoke a **number** of **transformative** sequences. These sequences contain a **markup language** pattern and an action, which may include **transforming** the **tags** in the first **markup language** to **tags** in a **different markup language**. The appropriate **transformative** sequence is selected and the pattern from the **transformative** sequence is compiled. The compiled pattern is used to perform rapid and efficient searches of **documents** in the **database**. A predicate check using the binary coding of the node as well as ancestor information confirms the node. The leaf information associated with a confirmed node is then stored. If necessary, the action from the **transformative** sequence is applied to change the **markup language** of the leaf information to that of the user... Basic Derwent Week: 200153

22/3,K/4 (Item 4 from file: 350)
DIALOG(R)File 350: Derwent WPIX

Network attached computer system for displaying price information, has logic for establishing amount and currency interpreting parameters stored in document
Patent Assignee: ADSURA PTY LTD (ADSU-N)
Inventor: HEINZLE E S; VON BEHRENS R

Patent Family (1 patents, 1 countries)							
Patent Number	**Kind**	**Date**	**Application Number**	**Kind**	**Date**	**Update**	**Type**
US 6199046	B1	20010306	US 1997902293	A	19970729	200147	B

Abstract:

NOVELTY - Single software object (2) displaying one or more **prices**, has logic for establishing amount and current interpreting parameters stored in document that specify default **currency**. Networking

Exhibit 1002_0708

logic retrieves exchange rate to perform conversion of desired **currency** selection logic allows use of display to select desired **currency** during display by reading operation system information indicating desired **currency**. ... Method of performing **currency** conversion; **Currency** conversion **program** ... ... USE - For displaying prize information in **currencies** in network environment e.g. Internet.... ... ADVANTAGE - Eliminates need for consumer to undertake calculations to convert **price** to local **currency**. Uncertainty about timeliness and **accuracy** of exchange **rate** information and need for customer to retrieve exchange rate information is eliminated. Reduces necessary bandwidth necessary to access exchange rate information and **currency** converters, saving time and money... ... method which accepts the **parameters** of the default **currency**, the **price** or **prices** to be displayed in the default **currency**, and in a preferred implementation, accepts cosmetic **parameters** which allow the **price** to be displayed seamlessly within the **document** or environment, such as, but not limited to, the color of the **price**, the font size of the **price**, and the **price** text's background color. The form of the **parameters** can be, but is not limited to, **parameters** embedded within a Hypertext **Markup Language (HTML) document**, or **parameters** in a file separate from the **document**, environment, or operating system in which the **prices** are displayed.

Claims:
A computer system attached to a network, the computer system including an attached display for displaying **price** information **and** a computer program comprising:(a) a single software object for displaying one or more **prices**, including logic for **establishing** an amount and a **currency** and which interprets **parameters** stored in a document or environment that specify a default **currency** to be displayed;(b) display logic for displaying the **price** in the appropriate **currency** by **reading** operating system information **indicative** of a desired **currency**;(c) networking logic that retrieves **from** a source an exchange rate required to perform a conversion to the desired **currency**; and(d) selection logic for allowing use **of** the display to select the desired **currency** during the display of one or more of the **prices** on the display.Basic Derwent Week: 200147

22/3,K/5 (Item 5 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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Web page content tailoring method for use in the displaying of web pages, converts the web page from HTML into XML, before tailoring it to suit a specific client display and then converting it back to HTML
Patent Assignee: BRITTON K H (BRIT-I); IBM CORP (IBMC); IMS S D (IMSS-I); INT BUSINESS MACHINES CORP (IBMC); TOPOL B B (TOPO-I)
Inventor: BRITTON K H; IMS S D; TOPOL B B

Patent Family (10 patents, 5 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
GB 2346238	A	20000802	GB 199929939	A	19991220	200050	B
CA 2292336	A1	20000729	CA 2292336	A	19991216	200051	E
JP 2000222275	A	20000811	JP 200017102	A	20000126	200053	E
KR 2000053638	A	20000825	KR 20003971	A	20000127	200121	E
US 20020059344	A1	20020516	US 1999239935	A	19990129	200237	E
KR 346616	B	20020726	KR 20003971	A	20000127	200309	E
US 6535896	B2	20030318	US 1999239935	A	19990129	200322	E
GB 2346238	B	20030604				200345	E
JP 3503555	B2	20040308	JP 200017102	A	20000126	200418	E
CA 2292336	C	20070109	CA 2292336	A	19991216	200707	E

Abstract:
methods and computer program products are provided for utilizing **XML**-based **tools** to tailor **HTML**-based **Web page** content for **display** within various client devices. Content portions of a requested

Web page are converted to an XML format and then modified using an XML content-tailoring tool. Other content portions of the Web page are masked so as to be "hidden" and are, thus, not converted to XML format. The masked portions of the Web page are then unmasked, combined with the modified content portions, and transmitted to a client device for display therewithin... ... PHONENUM> tag could indicate that the data following the tag is a phone number. This means that an XML file can be processed purely as data by a program or it can be stored with similar data on another computer or, like an HTML file, that it can be displayed. For example, depending on how the application program in the receiving computer wanted to handle the phone number, it could be stored, displayed, or dialed. XML is "extensible" because, unlike HTML, XML markup tags can be unlimited and can be self-defining ... Basic Derwent Week: 200050

22/3,K/6 (Item 6 from file: 350)
DIALOG(R)File 350: Derwent WPIX

Computerized connectivity representation for locating link information between Web pages, involves indexing stored array elements for Web pages in memory, by preset identification to locate connected pages
Patent Assignee: ALTA VISTA CO (ALTA-N)
Inventor: BRODER A Z; BURROWS M; GHEMAWAT S; HENZINGER M H; KUMAR P; VENKATASUBRAMANIAN S

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6073135	A	20000606	US 199837350	A	19980310	200039	B

Abstract:
as check points in memory. Each delta encoded names and check points has unique identification which are sorted twice. Then, an array of elements with **one** array element for each **Web page** is stored. The array is indexed by a specific identification to locate connected Web pages. ... pages. Each identification pair includes a first identification for producing an in-list and a second identification for producing an outlist. Each array element of **Web page** includes a first pointer to **one** of the check points, a second pointer for related in-list of Web page and third pointer for outlist of Web page. INDEPENDENT CLAIMS are... ... ADVANTAGE - Provides accurate linkage information for Web, for large **number** of clients demanding **different types** of connectivity information. Enables **dynamic** updating of connectivity **information so** as to update linkage information... and second according to the second identification of each pair to produce an outlist. An array of elements is stored in the memory, there is **one** array element for each **Web page.** Each element includes a first pointer to **one** of the checkpoints, a second pointer to an associated inlist of the Web page, and a third pointer to an associated outlist of the Web... ...

Claims:
inlist, and second according to the second identification of each pair to produce an outlist; storing an array of elements in the memory, there being **one** array element for each **Web page**, each element including **a** first pointer to **one of the** checkpoints, a second pointer to an associated **inlist** of the **Web page**, and a third pointer to an associated outlist of the Web page; and indexing the array by a particular identification to locate connected Web pages. Basic Derwent Week: 200039

22/3,K/7 (Item 7 from file: 350)
DIALOG(R)File 350: Derwent WPIX

HTML encoded web page e.g. for network based classification information systems - automatically creates databases containing industry, service, product and subject classification data, contact data, geographic location data and links to web pages from HTML, XML or SGML encode web pages posted on computer networks

Exhibit 1002_0710

Patent Assignee: MILLS D J (MILL-I)
Inventor: MILLS D J

Patent Family (5 patents, 2 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
AU 199853031	A	19980827	AU 199853031	A	19980210	199846	B
US 20010021935	A1	20010913	US 199821832	A	19980211	200155	E
			US 2001768158	A	20010124		
AU 740007	B	20011025	AU 199853031	A	19980210	200173	E
US 6397219	B2	20020528	US 199821832	A	19980211	200243	NCE
			US 2001768158	A	20010124		
US 6466940	B1	20021015	US 199821832	A	19980211	200271	E

Abstract:
The CCG databases are searched for references to **web pages** by use of enquiries which reference **one** or more of the items of the CCG data. Enquiries referencing the CCG data in the databases may supply contact without web page references. Data... modified by using simple text editors, HTML, XML or SGML editors or purpose built editors. The CCG databases may be searched for references (URLs) to **web pages** by use **of enquiries** which reference **one** or more of **the** items of the CCG-data. Alternatively, enquiries referencing the CCG-data in the databases may supply contact data without web page references. Data duplication and... ...

Claims:
What I claim is:1. An HTML encoded web page embodied on a computer-readable **medium**, said **web page** comprising at least **one HTML** encoded CCG **phrase, each** CCG phrase comprising:**a**) **HTML** code indicative of the start of a CCG phrase,b) **at** least **one** CCG-data attribute, andc) **HTML** code indicative of the end of **a** CCG phrase.... ... An HTML encoded web page embodied on a computer-readable medium, said **web page** comprising at least **one HTML** encoded CCG phrase, **each** CCG **phrase comprising**:a) HTML code indicative of the start **of a** CCG phrase,b) **at least one** CCG-data attribute, andc) **HTML** code indicative of the end of a CCG phrase.... ... is:1. A computer implemented method of building a database which comprises sets of associated property values wherein each set includes at least two property **values** of **different types**, the property **values** being any of classification **values**, contact values, geographic location values, hereinafter collectively referred to as CCG-data, the method comprising the steps of:a) retrieving successive web pages from a computer **network**, each **web page** being identified **by** a URL,b) searching **each** web page for a **CCG** phrase that includes a plurality of **different types** of CCG-data attributes,c) extracting a plurality of said attributes from said phrase,d) from each extracted attribute, deriving an attribute name and a related attribute value,e) determining the type of said extracted attribute and said attribute **value by reference** to said attribute name,f) relating said type of attribute value so determined to a corresponding type of database property value,g) relating the URLBasic Derwent Week: 199846

22/3,K/8 (Item 8 from file: 350)
DIALOG(R)File 350: Derwent WPIX

Database definition language program generator - includes processor processing objects record statements in structured document file to generate DDLs for specific DBMS
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: GILLESPIE H L; POWERS M M

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5732262	A	19980324	US 1994189450	A	19940131	199819	B
			US 1996611553	A	19960306		

Exhibit 1002_0711

Abstract:
The DDL program generator includes a source of user defined datasets. A structured document file storing a database design, is composed of a **number** of object records, including statements of **different** data **types**. The **structured** document file includes default database management system parameters including tablespace name, table name, table and index information... ...A unit reads the **structured document** file **one** object record at a time...

Claims:
types, wherein said structured document file includes default database management system parameters including tablespace name, table name, table and index information; means for reading said **structured document** file **one** object record at a **time**; **processing** means **responsive** to said means for reading, for processing each object record statement according to its data type, said processing means identifying said data type to generate... Basic Derwent Week: 199819

27/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350: Derwent WPIX

Web object conversion method e.g. for table, check box of web document, involves creating array of string variables corresponding to each row and inserting parameters corresponding to each web object into values of variables
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: DUNSMOIR J W; JACOBS S H; REECH C D

Patent Family (1 patents, 1 countries)							
Patent Number	**Kind**	**Date**	**Application Number**	**Kind**	**Date**	**Update**	**Type**
US 6671854	B1	20031230	US 1999435006	A	19991105	200408	B

Abstract:
The **tags** are extracted and array of string variables corresponding to each row is created. The parameters corresponding to tags are inserted in string variable **values** which are **converted** into variable count, such that the tags may append to web document for distribution and display by a web browser. The disclosed method, system and computer program product converts static, fixed-count multi-row web objects **in web pages**, such as **HTML** tables and lists, **to** dynamic, variable-count **multi**-row web objects by first copying one of the row **formats** from the original static web object into a plurality of string variables which are... ... based upon the final contents of the string variables. This process of creating a variable row-count web object using an array of string variables **supports** dynamic **web page** content generation **needs of many** web server systems.

Claims:
What is claimed is:1. A method for converting fixed-count multi-row web objects in a **web document** to variable-count **multi**-row **web objects** in a **web document** for distribution to and display on a web browser computer, each row of said web object having a row format definition and row content definition; said method comprising the steps of:scanning one or more lines of a web object for a row **format** definition which **matches** a definition in a system **dictionary**;extracting a **matching** row **format** definition from a fixed-count multi-row web **object**;storing **said** extracted row format definition into the values of a plurality of string variables embodied in a computer readable media;inserting content definition into each row format definition in each string variable **value**; and**converting** the **values** of the string variables into a variable-count multi-row **web** object in a **computer** readable **medium** such that said variable-count multi-row web object may be included or appended to a web document for distribution to and display by a... Basic Derwent Week: 200408

27/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350: Derwent WPIX

Exhibit 1002_0712

Mail application program interface format content conversion method in network, involves wrapping mapped contents in accordance with extensible markup language format and prescribed transport protocol
Patent Assignee: MICROSOFT CORP (MICT)
Inventor: LIPPERT L M; SINCLAIR A

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6626957	B1	20030930	US 1999410652	A	19991001	200378	B

Abstract:
DESCRIPTION OF DRAWINGS - The figure shows the flowchart explaining the **MAPI** format content **conversion** process. **Markup language** content and **content mapping** is disclosed. On **one** embodiment, content is **received** according to a first predetermined format, such as MAPI. The content is mapped from this format to a second **predetermined format** which is **consistent with** a predetermined **markup** language, such as **XML**. The second **format** may also be **consistent** with a predetermined **extension** of the **markup language**, such as the WebDAV extensions to **XML**. Once **mapped**, the content is output in the **second format**. Basic Derwent Week: 200378

27/3,K/3 (Item 3 from file: 350)
DIALOG(R)File 350: Derwent WPIX

Messages exchanging and merging system in Internet, includes XML and DDT parsers to receive message including characteristic information and return template which are merged using name tag map
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: CHEN S; CHUNG J; COHEN M A; FU S S; GOTTEMUKKALA V

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6507856	B1	20030114	US 1999225814	A	19990105	200336	B

Abstract:
exchanging and merging messages over a network includes a server accessible by a plurality of remote **browsers** for transmitting a **template** including **fields** for information entry and a business system accessible by the server for **generating** a return **document** pursuant to information entered in the **template** on the **browsers**. The business system includes a first parser for receiving a document from a **browser**, the **document** including information about data **characteristics** of information entered into the **template**, and a second parser for receiving information about data **characteristics** to provide a return **template**. A **merging** algorithm is implemented to **merge** the **document** with the return **template** for providing a return **document** to the **browser** having portions of the return **template** with **data** entered therein.... ... **document merge** algorithm to prepare the return **XML document**. The DTD parser **transforms** the DTD with repeatable and optional **fields** into a **template** in tree structure or serialized array with special markers around loop header nodes or name tags. Optional **fields** may include a second business address or phone **number**, for example... ...ADVANTAGE - Enables to exchange and merge **XML** documents dynamically and efficiently by using name **tag** map... ...DESCRIPTION OF DRAWINGS - The **figure** shows a flowchart explaining the procedure in dynamic **XML** document exchange system... ...

Claims:
parser for receiving a first message from a browser, the first message including information about data characteristics of information entered into the template and name **tags**;a second parser for receiving information about data characteristics to provide a **return** template, the return template including name **tags**; andmeans for merging the first message with the return template for providing the **return** message to the browser, the return message having portions of the return template with data entered therein corresponding to at least some of the information entered into the first message,

wherein the means for merging includes a name **tag** map for correlating the **tag** names of the first message with the **tag** names of the **return** template.Basic Derwent Week: 200336

27/3,K/4 (Item 4 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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SGML formatted source document conversion method in Internet, involves converting source document into multiple consistent documents having HTML, binary code formats
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: CROMARTY V C; GORDON J L

Patent Family (1 patents, 1 countries)							
Patent Number	**Kind**	**Date**	**Application Number**	**Kind**	**Date**	**Update**	**Type**
US 6393442	B1	20020521	US 199874784	A	19980508	200254	B

Abstract:
NOVELTY - A document type definition (DTD) is provided to a source document. The document is converted into several **consistent** documents having specific **formats** such as **HTML format**, postscript format and binary code format based on OmniMark, Xyvision transforms. The binary code formatted version is stored in an operating... ... ADVANTAGE - Enables maintaining consistency between documents having unique **formats and** versions by using binary code format document... ... DESCRIPTION OF DRAWINGS - The figure shows the flow diagram explaining **the** procedure for **converting** the source document into several documents...

Claims:
the plurality of documents being created by filtering out all the versions except the corresponding version, wherein at least one of the plurality of documents **is** a Hypertext **Markup Language (HTML)** formatted version for **on-line help**, at least **one** of the plurality of documents is a printable book in a postscript format, and at least one of the plurality of documents is a binary... Basic Derwent Week: 200254

27/3,K/5 (Item 5 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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Internal search system for tracking and ranking selected records from previous searches, has browser for bookmaking selected web sites and database for storing uniform resource locators of selected sites
Patent Assignee: MINDCROSSING INC (MIND-N); POWERCAST MEDIA INC (POWE-N)
Inventor: BOSARGE J W; CRANDALL A C; HERNANDEZ L

Patent Family (2 patents, 89 countries)							
Patent Number	**Kind**	**Date**	**Application Number**	**Kind**	**Date**	**Update**	**Type**
WO 2001016807	A1	20010308	WO 2000US24286	A	20000831	200149	B
AU 200071117	A	20010326	AU 200071117	A	20000831	200149	E

Abstract:
DESCRIPTION OF DRAWINGS - The **figure** illustrates how the search engine **converts** a single search query into three different queries ... to a search query. When an Internet user submits a search query (400), the system creates three distinct but related queries for searching all accessible **web sites**, a **collection database (512)** and **a** rank database (514). The collection database includes a list of collections, i.e., records that other users deem relevant to a search topic and that are selected from result sets derived with earlier search queries; the collection is organized in a folder/file based hierarchical format. The rank database **includes Uniform** Resource Locators (URLs) for identifying

web sites that are bookmarked by other users. Each record in the collection and rank databases has an associated score...

27/3,K/6 (Item 6 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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Compression method for computer readable files, involves creating look-up table to facilitate recognition and replacement of control codes, during subsequent expansion of compression string
Patent Assignee: EURONET UK LTD (EURO-N); MIDDLETON G (MIDD-I)
Inventor: MIDDLETON G

Patent Family (5 patents, 86 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2000070770	A1	20001123	WO 2000GB1794	A	20000510	200141	B
AU 200045954	A	20001205	AU 200045954	A	20000510	200141	E
GB 2363496	A	20011219	WO 2000GB1794	A	20000510	200203	E
			GB 200123110	A	20010926		
US 20020073116	A1	20020613	US 2001683042	A	20011112	200243	E
GB 2363496	B	20030806	WO 2000GB1794	A	20000510	200353	E
			GB 200123110	A	20010926		

Abstract:
with the original source HTML code on which the compression according to the invention was conducted, and several examples of code used for the compression **of** conventional **Web Pages**... pages. The invention disclosed relates to a method of compressing web pages by replacing the most commonly used elements within the web page text files, **known** as **tags**, with a simple control code and simultaneously creating a look-up table string containing the control codes and the corresponding tags. The result is a... ...

Claims:
and/or executable by a browser program for display therein, said technique comprising the steps of analyzing the file for the number of instances of **particular** segments of text, **replacing** the most commonly occurring segments with control codes specific to that matter being replaced to create a compression string of uncompressed textual matter and control...

27/3,K/8 (Item 8 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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Modular system for processing network based transaction, has tracking module for customer affinities as a function affinity attributes assigned to units of content presented to customer
Patent Assignee: ONESOFT CORP (ONES-N)
Inventor: COCKERILL A; DAVIDSON B; FORDHAM B

Patent Family (2 patents, 87 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2000046720	A2	20000810	WO 2000US2922	A	20000203	200067	B
AU 200033562	A	20000825	AU 200033562	A	20000203	200067	E

Abstract:
includes a tracking module for customer affinities as a function of affinity attributes assigned to units

of content presented to customer. The tracking module is **adapted** for assigning an identification **value** to **one** unit of content within **web page**... and how the data objects, functional objects and presentation objects should be applied to the data as part of the transaction. The system utilizes a **standardized**, extensible data **structure for** transferring the **data** between components or objects which allows the objects to be used as interchangeable building blocks of a comprehensive and flexible system architecture... ...

27/3,K/9 (Item 9 from file: 350)
DIALOG(R)File 350: Derwent WPIX
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Multi-currency production ledger converting method for unifying currencies (e.g. to Euro) by populating target currency corps record within target master file with the corresponding rounded target currency equivalent amounts
Patent Assignee: JOHNSON INC ANDREW (JOHN-N)
Inventor: JOHNSON A P

Patent Family (4 patents, 79 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2000055788	A2	20000921	WO 2000US6722	A	20000314	200059	B
AU 200037455	A	20001004	AU 200037455	A	20000314	200101	E
US 6477510	B1	20021105	US 1999268592	A	19990315	200276	E
WO 2000055788	A8	20080619				200843	E

Abstract:
NOVELTY - A target **currency**, a time period and a **currency** master file identical to old **currency** master file is created. The converted and rounded Euro corps (1351) are migrated back to the production region via the millennium tool DNR (1460) creating... ...is also included for a program for automatically correcting intra-record accumulation of rounding errors during the conversion of a booking ledger from a participating **currency** to a target **currency**. ... ...USE - For unifying **currencies** (e.g. to Euro... ... This invention relates generally to multi-**currency** production ledgers, and more particularly to methods of converting multi-**currency** production ledgers to accommodate the unification of several national **currencies** by respective participating states into a single **currency**. In particular the invention relates to a method for use with a computer for converting an ongoing old corp production ledger processing with a participating **currency**, to an ongoing production ledger processing with a target **currency**, the old corp production ledger comprising an old master file including a plurality of old master file records, each old master file record comprising a key identifying the record, data fields and **amount** fields, wherein the conversion is accomplished by selecting a target **currency**, selecting a particular time period, creating a target **currency** master file that is substantially identical to the old **currency** master file, by creating a target **currency** corp record corresponding to each old **currency** master file corp record within the old **currency** master file except that the target **currency** corp records within the target master file hold zero balances and all participating transaction **currency** records and their book one equivalents within one old master file key are replaced by a single target transaction record and its book one equivalent, converting the **amounts** of all transaction **currency** records and their book one equivalents for the selected time period into their corresponding target **currency** equivalent **amounts**, rounding the target **currency** equivalent **amounts**, and populating the target **currency** corp records within the target master file with the corresponding rounded target **currency** equivalent **amounts**. ... ...

Claims:
I claim: 1. A method for use with a computer for converting an ongoing old corp production ledger processing with a participating **currency**, to an ongoing production ledger processing with a target **currency**, said old corp production ledger comprising an old master file including a plurality of old master file records, each old master file record comprising a key identifying the record, data fields and **amount** fields, said method comprising the steps of: a. selecting a target **currency**, b. selecting a particular time period, c. providing a target **currency** master file that is substantially identical to the

old **currency** master file, by creating a target **currency** corp record corresponding to each old **currency** master file corp record within the old **currency** master file except that the target **currency** corp records within the target master file hold zero balances and all participating transaction **currency** records and their book one equivalents within one old master file key are replaced by a single target transaction record and its book one equivalent, d. converting the **amounts** of all transaction **currency** records and their book one equivalents for the selected time period into their corresponding target **currency** equivalent **amounts**, e. rounding said target **currency** equivalent **amounts**, wherein the step of rounding the target **currency** equivalent **amounts** comprises the steps of: i. creating second dimensional rounding entries for year-to-date balances through each accounting period within each target **currency** transaction **currency** records and book one equivalents within said target master file, and ii. creating a master file maintenance audit trail report, and f. populating the target **currency** corp records within the target master file with the corresponding rounded target **currency** equivalent **amounts.**

DIALOG(R)File 348: EUROPEAN PATENTS
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18/3K/1 (Item 1 from file: 348)

Client-server application development and deployment system and methods

Patent Assignee:

- **DuFresne, Fred B.** (100112847)
  16 Bullard Street; Sharon, MA 02067 (US)
  (Applicant designated States: all)

Inventor:

- **DuFresne, Fred B.**
  16 Bullard Street; Sharon, MA 02067; (US)

Legal Representative:

- **Williams, David John (100042261)**
  Page White & Farrer Bedford House John Street; LondonWC1N 2BF; (GB)

	Country	Number	Kind	Date	
Patent	EP	2293207	A1	20110309	(Basic)
Application	EP	10184785		19970502	
Priorities	US	642426		19960503	

Specification:
present invention is HTML tag extensions which allow dynamic Web page processing and "stateful" Web sessions. In a preferred embodiment, the tag extensions are a **set** of HTML-like tags that extend the functionality of HTML. The tag extensions operate as variables, which, upon processing by the server of the present invention, become **replaced** by the associated **values**. The preferred extension syntax is **similar** to an HTML **tag** in that both are enclosed in angle brackets "<>". The preferred extensions of the present invention are distinguished by preceding each extension with a pound sign "#" inside the brackets. Similar to the **HTML** tags, the extensions may also have **one** or more modifiers. A preferred tag extension has the following syntax: <#tag modifier1 modifier2> Since a tag extension results in a substitution of some kind...

18/3K/6 (Item 6 from file: 349)

METHOD FOR AFFORDING A MARKET SPACE INTERFACE BETWEEN A PLURALITY OF MANUFACTURERS AND SERVICE PROVIDERS AND INSTALLATION MANAGEMENT VIA A MARKET SPACE INTERFACE

Patent Applicant/Patent Assignee:

- **ACCENTURE LLP**
  1661 Page Mill Road, Palo Alto, CA 94304; US; US(Residence); US(Nationality)

Inventor(s):

- **MIKURAK Michael G**
  108 Englewood Blvd., Hamilton, NJ 08610; US

Legal Representative:

- **HICKMAN Paul L(et al)(agent)**
  Oppenheimer Wolff & Donnelly LLP, 1400 Page Mill Road, Palo Alto, CA 94304; US

	Country	Number	Kind	Date
Patent	WO	200139028	A2	20010531
Application	WO	2000US32308		20001122
Priorities	US	99444773		19991122
	US	99444798		19991122

Detailed Description:
related to ceramic pistons. Different kinds of piston engines have different characteristics, but may have the same underlying functions associated with it (e.g., how **many** pistons in the engine, ignition sequences, lubrication, etc.). To access each of these functions in any piston engine object, a programmer With the concepts of...

18/3K/7 (Item 7 from file: 349)

SYSTEM AND METHOD FOR DISPLAYING INFORMATION AND MONITORING COMMUNICATIONS OVER THE INTERNET

Patent Applicant/Patent Assignee:

- **VAYU WEB INC**

Inventor(s):

- **LENZ Frederick P**

	Country	Number	Kind	Date

	Country	Number	Kind	Date
Patent	WO	9820434	A2	19980514
Application	WO	97US19719		19971030
Priorities	US	96745899		19961107
	US	96762289		19961209

Detailed Description:
or stopping web page execution by selecting control panel button 1414. An alternate (preferred) embodiment of the present invention is described below with reference to **Figures** 15 This **alternate** embodiment includes a **standard structure** and iiavigation for the menus (pages containing buttons) and menu items (buttons), allowing the user 5 a set of options at each **web page. One** benefit of using the standard structure is to make the web site easier to use by the end user and to offer the web site...

Electronic book with embedded links to internal and external resources

Patent Assignee:

- **DISCOVERY COMMUNICATIONS, INC.** (1818010)
  7700 Wisconsin Avenue,; Bethesda, MD 20814-3522 (US)
  (Applicant designated States: all)

Inventor:

- **Hendricks, John S.**
  8723 Persimmon Tree Road; Potomac, MD 20854; (US)
- **Asmussen, Michael L.**
  2627 Meadow Hall Drive; Herndon, VA 20171; (US)

Legal Representative:

- **Strehl Schubel-Hopf & Partner (100941)**
  Maximilianstrasse 54; 80538 Munchen; (DE)

	Country	Number	Kind	Date	
Patent	EP	1172739	A2	20020116	(Basic)
Patent	EP	1172739	A3	20030528	
Application	EP	2001121918		20000127	
Priorities	US	237828		19990127	

Specification:
textual material from outside sources 282 such as publishers, newspapers, and on-line services. Alternately, the outside sources may maintain electronic books at the Internet **web site** 279. The outside sources 282 may convert textual and graphical material to digital format, or may contract with another vendor to provide this service. The operations center 250 may receive the textual and graphical material in various **digital** formats and may **convert** the textual material to a **standard**

Exhibit 1002_0719

compressed **format** for storage. In so doing, the operations center 250 may create a pool of textual material that is available to be delivered to the home...

METHOD FOR VIRTUAL ON-DEMAND ELECTRONIC BOOK

Patent Assignee:

- **DISCOVERY COMMUNICATIONS, INC.** (1818010)
  7700 Wisconsin Avenue,; Bethesda, MD 20814-3522 (US)
  (Proprietor designated states: all)

Inventor:

- **HENDRICKS, John, S.**
  8723 Persimmon Tree Road; Potomac, MD 20854; (US)
- **MCCOSKEY, John, S.**
  4692 N. Nariat Drive; Castle Rock, CO 80104; (US)

Legal Representative:

- **Strehl Schubel-Hopf & Partner (100941)**
  Maximilianstrasse 54; 80538 Munchen; (DE)

	Country	Number	Kind	Date	
Patent	EP	1330728	A2	20030730	(Basic)
Patent	EP	1330728	B1	20060104	
	WO	2001031491		20010503	
Application	EP	2000974006		20001027	
	WO	2000US29813		20001027	
Priorities	US	427939		19991027	

Specification:
sources, or content providers 282, such as publishers, newspapers, and on-line services. Alternately, the outside sources 282 may maintain electronic books at the Internet **web site** 279. The outside sources 282 may convert textual and graphical material to digital formats, or may contract with another vendor to provide this service. The operations center 250 may receive the textual and graphical material in various **digital** formats and may **convert** the textual material to a **standard** compressed **format** for storage. In so doing, the operations center 250 may create a pool of textual material that is available to be delivered to the home...transaction. The connection 270 may also be used as a means for receiving the electronic books from the operations center 250 or from an Internet **web site**, by-passing the distribution system 208. The **phone** connection 270 may be a **separate unit** as shown in **Figure** 6b. iv. Library Processing
Figure 9 shows an example of some basic processing performed by the microprocessor 628 of the library 262 on the data...

23/3K/9 (Item 9 from file: 348)

Method and apparatus for implementing a tag-based display language utilizing a procedural instruction language

Patent Assignee:

- **Phone.Com Inc.** (2766840)
  800 Chesapeake Drive; Redwood City, CA 94063 (US)
  (Applicant designated States: all)

Inventor:

- **Martin, Bruce K., Jr.**
  604 Wellsbury Court; Palo Alto, CA 94306; (US)

Legal Representative:

- **Ablett, Graham Keith et al (53082)**
  Ablett & Stebbing, Caparo House, 101-103 Baker Street; London W1M 1FD; (GB)

	Country	Number	Kind	Date	
Patent	EP	965914	A2	19991222	(Basic)
Patent	EP	965914	A3	20010725	
Application	EP	99303350		19990429	
Priorities	US	71326		19980430	

Specification:
a file, and display the document elements based on the markup language tags. The browser software application is typically dedicated to the task of displaying **markup language** tag-based documents, and more than **one** browser program may be required if a user wishes to view documents in **different** markup language **tag** -based languages. **Figure** 1 illustrates a block diagram of a computer system adapted to operate with documents in a tag-based markup language according to known procedures. A...

DIALOG(R)File 348: EUROPEAN PATENTS
23/3K/10 (Item 10 from file: 348)

Embedded HTML documents

Patent Assignee:

- **International Business Machines Corporation** (200120)
  Old Orchard Road; Armonk, N.Y. 10504 (US)
  (Proprietor designated states: all)

Inventor:

- **Renshaw, David Seager**
  14 Andover Road North; Winchester, Hampshire, SO22 6NN; (GB)

Legal Representative:

- **Davies, Simon Robert (75451)**
  I B M UK Intellectual Property Department Hursley Park; Winchester, Hampshire SO21 2JN; (GB)

	Country	Number	Kind	Date	
Patent	EP	818742	A1	19980114	(Basic)
Patent	EP	818742	B1	20021016	
Application	EP	97304742		19970701	
Priorities	GB	9614570		19960711	

Specification:
be constructed by having different data types processed and rendered by respective HTML documents (although of course the different HTML components do not necessarily contain **different** data **types**). Referring to **figure** 3 there is shown schematically the result of rendering the multi-levelled HTML document illustrated in Examples 1-3. The work space reserved for use... ...applet has been depicted by a dotted line for the purpose of illustration only. Normally, the dotted lines would not be present, to allow seamless **integration** of **one html** document within another. Referring to figures 4A to 4C, there is shown a schematic flow diagram

---

Structured documents on the WWW

Patent Assignee:

- **SUN MICROSYSTEMS, INC.** (1392730)
  2550 Garcia Avenue; Mountain View, CA 94043 (US)
  (Proprietor designated states: all)

Inventor:

- **Nielsen, Jakob**
  38 Walnut Avenue; Atherton, California 94027; (US)

Legal Representative:

- **Hogg, Jeffery Keith et al (31905)**
  Withers & Rogers, Goldings House, 2 Hays Lane; London SE1 2HW; (GB)

	Country	Number	Kind	Date	
Patent	EP	802491	A2	19971022	(Basic)
Patent	EP	802491	A3	19990616	
Patent	EP	802491	B1	20050316	

	Country	Number	Kind	Date
Application	EP	97302483		19970411
Priorities	US	633915		19960415

Specification:
it has no parents. The children of a page may be indicated as <)-- META NAME="child"
VALUE="filenamel.html" ->, <)-- META NAME="child" **VALUE**="filename2.html" -->, with each
tag listed on a **separate** line.
Fig. 4 is a flowchart describing steps of identifying a parent of a selected page of a **structured
document** in accordance with **one** embodiment of the present invention. At step 402, the document
structure database is checked to see if the parent is identified there. If the parent...

23/3K/12 (Item 12 from file: 349)
DIALOG(R)File 349: PCT FULLTEXT
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SYSTEM AND METHOD FOR ENHANCING OPERATION OF A WEB SERVER CLUSTER

Patent Applicant/ Patent Assignee:

- **WARP SOLUTIONS INC**
  12th Floor, 627 Greenwich St., New York, NY 10014; US; US(Residence); US(Nationality)

Inventor(s):

- **PRIMAK Leonard**
  284 Mott Street #20, New York, NY 10020; US
- **GNIP John**
  62-42 Woodhaven Blvd., Rego Park, NY 11374; US
- **VOLOVICH Gene R**
  176 1/2 Hamilton Avenue, Greenwich, CT 06830; US

Legal Representative:

- **IM C Andrew (agent)**
  Fulbright & Jaworski L.L.P., 666 Fifth Avenue, New York, NY 10103; US

	Country	Number	Kind	Date
Patent	WO	200140903	A2-A3	20010607
Application	WO	2000US42480		20001201
Priorities	US	99169196		19991206
	US	2000201810		20000504
	US	2000565259		20000505
	US	2000202329		20000505

Detailed Description:
identical content. That is, each group of servers in a cluster stores different content. Heterogeneous
server clusters are particularly useful for storing content in a **number** of **different** content **formats**,
such as HTML, CGI, streaming audio or video, etc. Since each content fortnat has different storage
and transmission characteristics and requirements, it is inefficient for **web site** owners and/or

operators to employ a **single** server to provide data in various different formats to clients. When io diverse content in a variety of data formats is required, it is desirable...

23/3K/17 (Item 17 from file: 349)
DIALOG(R)File 349: PCT FULLTEXT
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METHOD, APPARATUS, AND SYSTEM FOR ENABLING CREATION AND MAINTENANCE OF REMOTE CGI SCRIPTS ON THE INTERNET

Patent Applicant/Patent Assignee:

- **INSTANTIS INC**
  913 Hermosa Court, Sunnyvale, CA 94085; US; US(Residence); US(Nationality)

Inventor(s):

- **RAJE Prasad**
  34336 Dunhill Drive, Fremont, CA 94555; US

Legal Representative:

- **MALLIE Michael J(et al)(agent)**
  Blakely, Sokoloff, Taylor & Zafman LLP, 12400 Wilshire Boulevard, 7th Floor, Los Angeles, CA 90025; US

	Country	Number	Kind	Date
Patent	WO	200124093	A1	20010405
Application	WO	2000US26883		20000929
Priorities	US	99157350		19990930
	US	2000669594		20000926

Detailed Description:
in the configuration structure. If the current instance and the previous instance of the form elements are different, indicate that the form and the configuration **structure** are **no** longer **consistent**. **Figure** 3 illustrates a system configuration according to the teachings of the present invention. As shown in Figure 3, in this configuration, it is assumed that a form F is authored by an author A using any **HTML** authoring environment on some computer C. In **one** embodiment, there should be no constraints imposed on the number, nature, names of the fields or surrounding HTML text and tags in F. It is...

23/3K/21 (Item 21 from file: 349)
DIALOG(R)File 349: PCT FULLTEXT
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A SYSTEM, METHOD, AND ARTICLE OF MANUFACTURE FOR PROVIDING COMMERCE-RELATED WEB APPLICATION SERVICES

Patent Applicant/Patent Assignee:

- **ACCENTURE LLP**
  100 South Wacker Drive, Chicago, IL 60606; US; US(Residence); US(Nationality)

Inventor(s):

- **GUHEEN Michael F**
  2218 Mar East Street, Tiburon, CA 94920; US
- **MITCHELL James D**
  3004 Alma, Manhattan Beach, CA 90266; US
- **BARRESE James J**
  757 Pine Avenue, San Jose, CA 95125; US

Legal Representative:

- **BRUESS Steven C (agent)**
  Merchant & Gould P.C., P.O. Box 2903, Minneapolis, MN 55402-0903; US

	Country	Number	Kind	Date
Patent	WO	200073957	A2-A3	20001207
Application	WO	2000US14420		20000525
Priorities	US	99321492		19990527

Detailed Description:
applications and provides access control and security features. Java Web Server provides session tracking that provides a mechanism to track how people use and navigate **websites**. It also provides remote administration and logging features. Director Servias A multi-protocol, scalable global directory for storing @6 information such as user definitions, user... ...Commerce Framework (JECF) is Business I's new initiative to create a standard, secure framework within which to conduct business transactions using any combination of **currencies** tr4jamm and payment instruments such as credit and debit cards, electronic cash and checks, and smart cards. The initial component of the JECIF... ...the Java environment. JavaWallet will allow users of any Java-enabled web browser or operating system to purchase goods and services from JECF-compliant merchant **websites**. JavaWallet provides a **single** user interface for electronic transactions, secure from tampering. When a consumer uses a Java enabled browser to navigate an online mall, selects goods and services...to enforce consistency across multiple screens and can accelerate development. This feature is not available in low-end presentation design tools, such as MS PowerPoint. **One** means of ensuring reuse is for the tool to support a central library of predefined widgets or screen elements. This library should be extendible and... ...to create new widget/element definitions or to enhance existing ones.
n) Is multi- language support a consideration?
Special characters, differences in field lengths, and **differences** in **number formats** are some of the things that contribute to the complexity of a multi-language application. Window and report design are among the areas affected by...

REUSABLE DATA MARKUP LANGUAGE

Patent Applicant/ Patent Assignee:

- **E-NUMERATE SOLUTIONS INC**
  8201 Greensboro Drive, McLean, VA 22102; US; US(Residence); US(Nationality)

Inventor(s):

- **DAVIS Russell T**
  6006 Woodacres Drive, Bethesda, MD 20816; US

Legal Representative:

- **GARRETT Arthur S(et al)(agent)**
  Finnegan, Henderson, Farrabow, Garrett & Dunner, L.L.P., 1300 I Street, N.W., Washington, DC 20005-3315; US

	Country	Number	Kind	Date
Patent	WO	200072197	A2	20001130
Application	WO	2000US13745		20000519
Priorities	US	99135525		19990521
	US	2000183152		20000217

Detailed Description:
thread and has methods for checking the RDML document 102 type (Time Series, Category, XY) and handling errors. The RDML Reader 704 then calls the **XML** parser 706 which parses the text (step 804). The RDML processor 708 receives the parsed text from the text. (step 806). The RDML processor 708... ...manipulates the fields (x-values) of the data so that it may be displayed and stored coherently and simultaneously with other active objects of the **same type** (step 808). The X-**value transformer** 710 makes sure that the data values to be graphed against the x-axis are in common units. For example, if document A is an...

23/3K/31 (Item 31 from file: 349)
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AN AUTOMATED COMMUNICATIONS SYSTEM AND METHOD FOR TRANSFERRING INFORMATIONS BETWEEN DATABASES IN ORDER TO CONTROL AND PROCESS COMMUNICATIONS

Patent Applicant/ Patent Assignee:

- **INTERMIND CORPORATION**

Inventor(s):

- **REED Drummond Shattuck**
- **HEYMANN Peter Earnshaw**
- **MUSHERO Steven Mark**
- **JONES Kevin Benard**
- **OBERLANDER Jeffrey Todd**
- **BANAY Dan**

	Country	Number	Kind	Date
Patent	WO	9732251	A1	**19970904**
Application	WO	97US3205		19970228
Priorities	US	96609115		19960229
	US	96722314		19960927

Detailed Description:
text string embedded by the author of the page informing the consumer of the nature of the change. However, Smart Bookmarks' capability is limited to **single** text strings on **single web pages**. Therefore the consumer must locate and bookmark every Web page of interest. Smart Bookmarks does not provide a way for the consumer to filter the update messages, nor does it provide the consumer with any mechanism for exchanging structured infon-nation or managing a conununications relationship with the provider. A **different type** of Web monitoring solution is provided by Revnet Systems Inc. With its GroupMaster software, Web providers can create and insert special hyperlinks representing interest topics...

DIALOG(R)File 348: EUROPEAN PATENTS
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28/3K/3 (Item 3 from file: 348)

TAILORING DATA AND TRANSMISSION PROTOCOL FOR EFFICIENT INTERACTIVE DATA TRANSACTIONS OVER WIDE-AREA NETWORKS

Patent Assignee:

- **Inpro Licensing Sarl** (4359850)
  9 rue Schiller; 2519 Luxembourg (LU)
  (Proprietor designated states: all)

Inventor:

- **KIKINIS, Dan**
  20264 Ljepava Drive; Saratoga, CA 95070; (US)

Legal Representative:

- **White, Duncan Rohan (86304)**
  Marks & Clerk 90 Long Acre; London WC2E 9RA; (GB)

	Country	Number	Kind	Date	
Patent	EP	1076867	A1	20010221	(Basic)
Patent	EP	1076867	B1	20080723	
	WO	1999057657		19991111	
Application	EP	99921591		19990430	
	WO	99US9568		19990430	
Priorities	US	73019		19980504	

Specification:
this invention are standardized mini-applications adapted to translate standard WEB pages into content-reduced WEB pages adapted for a specific client and/or application (**WEBsite/set** of **WEBsites**). A finite number of default data templates are provided for translating the most **common types** of WEB pages for the most **common types** of clients. These default templates are stored at enabled proxy servers and WEB servers adapted to transmit SFHTP. In the implementation of such templates, in some cases, a single WEB page may be translated for a particular client as a single simplified **WEB page**. In other cases **one WEB page** may be **translated** to a **number** of pages to be separately displayed on a client device. In an embodiment of the invention clients are adapted via software to make new templates ...

Exhibit 1002_0727

Retrieval of image information from an image server via an interfacing device to a communication terminal, wherein user guidance is based on control information stored in the image server

Patent Assignee:

- **NIPPON TELEGRAPH AND TELEPHONE CORPORATION** (686333)
  19-2, Nishi-Shinjuku 3-chome, Shinjuku-ku; Tokyo 160 (JP)
  (Proprietor designated states: all)

Inventor:

- **Hamano, Teruo**
  NTT Shataku 9-405, 9-2, Sugita, Isogo-ku; Yokohama-shi, Kanagawa-ken; (JP)
- **Sasaki, Tsutomu**
  1-79-1, Maruyama-cho, Chikusa-ku; Nagoya-shi, Aichi-ken; (JP)
- **Kajii, Ken**
  1B509, 9-2-12, Sugita, Isogo-ku; Yokohama-shi, Kanagawa-ken; (JP)
- **Sonehara, Noboru**
  NTT Shataku 304, 5-2-1, Shinjuku; Zushi-shi, Kanagawa-ken; (JP)

Legal Representative:

- **Dealtry, Brian et al (42911)**
  Eric Potter Clarkson, Park View House, 58 The Ropewalk; Nottingham NG1 5DD; (GB)

	Country	Number	Kind	Date	
Patent	EP	837597	A2	19980422	(Basic)
Patent	EP	837597	A3	19991229	
Patent	EP	837597	B1	20040630	
Application	EP	97308199		19971016	
Priorities	JP	96277732		19961021	
	JP	96289676		19961031	
	JP	96330961		19961211	
	JP	96330962		19961211	
	JP	96330963		19961211	
	JP	9746173		19970228	

Specification:
separately at an optional time. A specific example of this embodiment will now be described in detail with reference to FIG. 23. FIG. 23 shows **a structure** of a facsimile terminal utilizing **type** WWW **retrieving** device 602 having a script interpreting and executing function according to this embodiment. The system shown in FIG. 23 comprises; a facsimile terminal 1, a... ...to) 604-L with servers 604-1 (equivalent to) 604-L in which HTTP demon section 604-1-1 (equivalent to) 604-L-1 are **initialized, and** HTML file storing sections 604-1-2 (equivalent to) 604-L-2 storing a **plurality** of

HTML files built therein. The facsimile terminal utilizing type WWW retrieving device 602 having a script interpreting and executing function has therein; a telephone line control...

28/3K/10 (Item 10 from file: 349)
DIALOG(R)File 349: PCT FULLTEXT
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SYSTEM AND METHOD FOR INTERACTIVE ELECTRONIC MEDIA EXTRACTION FOR WEB PAGE GENERATION SYSTEM AND METHOD FOR INTERACTIVE ELECTRONIC MEDIA EXTRACTION FOR WEB PAGE GENERATION

Patent Applicant/Patent Assignee:

- **LOCKHEED MARTIN CORPORATION**
  6801 Rockledge Drive, Bethesda, MD 20817; US; US(Residence); US(Nationality)

Inventor(s):

- **PEEL James W Jr**
  1400 Peartree Lane, Bowie, MD 20716; US
- **LANGSTON Melanie**
  10036 Field Court, Manassas, VA 20110; US

Legal Representative:

- **WHITHAM Michael E (agent)**
  McGuireWoods, LLP, 1750 Tysons Boulevard, Suite 1800, McLean, VA 22102; US

	Country	Number	Kind	Date
Patent	WO	200077663	A2-A3	20001221
Application	WO	2000US15895		20000612
Priorities	US	99139129		19990614
	US	99158129		19991008
	US	2000494743		20000131

Detailed Description:
recursively extracted in block 1048. Otherwise, if there was no decision then the processing for this node is complete Utilizing the database generated auto-increment **numerical** fields, the Extract process **converts** the hierarchical data properties from the relational database into relative addressing for presentation in a Web browser. Links and relationships and between the IETM nodes are retained utilizing a common and **consistent** data storage **structure**. The numerical directories utilized for data storage and naming do not hinder data maintenance. All data is intended to be maintained in the relational database. Each IETM data type is represented by **one HTML** page except in the case of the procedure data type. The IETM data is structured hierarchically in a tree, starting with menu items that are...

28/3K/13 (Item 13 from file: 349)
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STRUCTURED FOCUSED HYPERTEXT DATA STRUCTURE

Patent Applicant/ Patent Assignee:

- HYPERMED LTD
- OREN Avraham
- OLCHA Lev
- KOWALSKI Nahum
- MARGULYAN Rita

Inventor(s):

- OREN Avraham
- OLCHA Lev
- KOWALSKI Nahum
- MARGULYAN Rita

	Country	Number	Kind	Date
Patent	WO	9717666	A2	19970515
Application	WO	96IL131		19961023
Priorities	US	95551929		19951023

Detailed Description:
based software products and help files available from Microsoft Corporation of Redmond, Washington, and in the World Wide Web through the Internet which utilizes Hypertext **Markup Language**, or accessi HTNEL. The manner i which hy used in these and many other currently in pertext 1 software products generally i the diagram I 0 shown i Fig. aval is represented . in I in I. Each circle 12 in this diagram represents a document or page of information, **commonly** referred to as a "node," which contains one or more hypertext links to other pages, as shown by the lines 14 connecting the nodes. The...

/M.A./
01/27/2012

US

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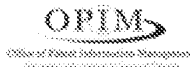
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▦ 4.**A System and Method to Accelerate Industry
   Exchange**

Exhibit 1002_0731

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Bartleby.com (Reference) ⓘ
Bartleby.com (Verse) ⓘ
BioMedCentral ⓘ
BioOne.1 (3)
Blackwell-Synergy ⓘ
BRENDA ⓘ
Britannica Online Academic Edition (0)
Business Source Complete (0)

CiteSeer.IST (1550)
Computer Source: Consumer Edition (0)
Computers & Applied Sciences Complete (0)
CRCNetBASE (357)
Credo Reference (Xreferplus) ⓘ
Credo Reference: Dictionaries ⓘ
Credo Reference: Encyclopedias ⓘ
Dialog Datastar Ei Compendex ⓘ
Dialog Datastar INSPEC ⓘ
DOE Information Bridge (68)
DTIC STINET ⓘ
eFunda ⓘ
Encarta Thesaurus ⓘ
Encyclopedia Americana ⓘ
ERIC ⓘ
Foresight Nanotech Institute ⓘ
GRIN (Germplasm Resources Information Network) ⓘ
Grolier Multimedia Encyclopedia ⓘ
HeinOnline (124)
HighWire Press ⓘ
Historical Chicago Tribune (0)
Historical Los Angeles Times (0)

Historical New York Times (2)
Historical Wall Street Journal (2)

2010-06-07.
Source: IP.com
Show Abstract | Show In Clusters

5.Wind Generation on Winnebago Tribal Lands
Multiple.
2009 Sep 30.
Source: DOE Information Bridge
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6.Presence Authorization Rules (RFC5025)
2007-12-01.
Source: IP.com
Show Abstract | Show In Clusters

7.DB2 9: pureXML Overview and Fast Start
2006-07-13.
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8.IBM Workplace Client Technology Productivit
Lotus Workplace Documents 2.0.1
2004-12-22.
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Show Abstract | Show In Clusters

9.IBM WebFountain and WebFountain Applianc
2004-10-25.
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10.An Extensible Approach for Isolating Transla
Resources of a Preexisting XML Documents in
specific Sub-documents (Files)
2003-05-05.
Source: IP.com
Show Abstract | Show In Clusters

11.Request for Comments Summary RFC Numb
(RFC3199)
2003-02-01.
Source: IP.com
Show Abstract | Show In Clusters

12.Logical structure analysis and generation fo
documents: a syntactic approach
Kyong-Ho Lee; Yoon-Chul Choy; Sung-Bae Cho.
**Knowledge and Data Engineering, IEEE Transac
-4347)**
2003. Vol.15,Iss.5;p.1277-1294
Source: IEEE Electronic Library Online
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Historical Washington Post (0)

Hoover's Company
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IEEE Electronic Library
Online (742)
Infoplease ⓘ
**Information Science &
Technology Abstracts (0)**
IngentaConnect (0)
Institute of Physics ⓘ
**Internet and Personal Computing
Abstracts (0)**
IP.com (136)
**Journals@Ovid Ovid Full
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JSTOR (11)
**Kirk-Othmer Encyclopedia of
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Knovel Library ⓘ
**MEDLINE Plus Health
Information** ⓘ
Merck Manuals ⓘ
**Merriam-Webster Dictionary
Search** ⓘ
**Merriam-Webster Thesaurus
Search** ⓘ
MeSH ⓘ
Nature Journals Online ⓘ
NCBI Bookshelf ⓘ
NetLibrary eBooks ⓘ
NTIS ⓘ
OpticsInfoBase ⓘ
Oxford English Dictionary (0)
Oxford Journals Online (25)
Pharmaceutical News Index (293)

ProQuest Career and Technical
Education (295)
ProQuest Central (Legacy
Platform) (293)
ProQuest Computing (295)
ProQuest Dissertations and
Theses (1108)
ProQuest Historical
Newspapers (2)
ProQuest
Telecommunications (295)
PubMed (0)
Regional Business News (0)
ScienceDirect Journals (243)
**Society of Petroleum
Engineers** ⓘ
SPIE Digital Library (0)

STIC Full Text Retrieval Options

☐ 13. Canonical XML Version 1.0 (RFC3076)
2001-03-01.
Source: IP.com
Show Abstract | Show In Clusters

☐ 14. Request for Comments Summary RFC Numb
(RFC2699)
2000-05-01.
Source: IP.com
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☐ 15. Digest Values for DOM (DOMHASH) (RFC280
2000-04-01.
Source: IP.com
Show Abstract | Show In Clusters

☐ 16. A Process for the Optimized Application of X
for Use With Partially Static XML Data Streams
2000-04-01.
Source: IP.com
Show Abstract | Show In Clusters

☐ 17. MIME Encapsulation of Aggregate Documen
HTML (MHTML) (RFC2557)
1999-03-01.
Source: IP.com
Hide Abstract | Show In Clusters

> HTML [RFC 1866] defines a powerful means of
> multimedia documents. These multimedia docume
> text/html root resource (object) and other subsidia
> (image, video clip, applet, etc. objects) referenced
> Resource Identifiers (URIs) within the text/html ro
> When an HTML multimedia document is retrieved
> each of these component resources is individually
> real time from a location, and using a protocol, sp
> URI. Document Language: en_US

☐ 18. Requirements for a Distributed Authoring an
Protocol for the World Wide Web (RFC2291)
1998-02-01.
Source: IP.com
Hide Abstract | Show In Clusters

> Current World Wide Web (WWW or Web) stand
> simple support for applications which allow remote
> typed data. In practice, the existing capabilities of
> proven inadequate to support efficient, scalable re
> free of overwriting conflicts. This document preser
> features in the form of requirements for a Web Dis
> Authoring and Versioning protocol which, if impler
> improve the efficiency of common remote editing

SpringerLink Contemporary (1997 - Present) (905)
TechWeb ⓘ
Thesaurus.com ⓘ
ThomasNet (Industrial Web) ⓘ
ThomasNet (Company Name) (15)
Webster's Third New International Dictionary ⓘ
Wiley Encyclopedia of Electrical and Electronics Engineering ⓘ
Wiley InterScience ⓘ
Wiley InterScience Online Books (0)

provide a locking mechanism to prevent overwrite
improve link management support between non-H
types, provide a simple attribute-value metadata fi
for the creation and reading of container data type
versioning into the WWW. Document Language: e

19.Extended Hyper Text Markup Language Syn
Complex Data Structures
1998-01-01.
Source: IP.com
Hide Abstract | Show In Clusters

Hyper Text Markup Language (HTML), as a deri
Standard Generalized Markup Language, is effeci
describing document layouts up to a certain comp
HTML syntax does support the notion of embeds i
images. It does not, however, currently support th
generation of complex data structures, such as tai
size. Many Web-based applications need the flexi
generate responses to the Hyper Text Transfer Pi
clients by merging static canvases with dynamic b
variable size. Document Language: en_US

20.HTML Tables (RFC1942)
1996-05-01.
Source: IP.com
Show Abstract | Show In Clusters

21.Relative Uniform Resource Locators (RFC18
1995-06-01.
Source: IP.com
Show Abstract | Show In Clusters

22.Developi ng with Adobe ™ Acrobat ™
1994-09-01.
Source: IP.com
Show Abstract | Show In Clusters

1

Possible References

Web page content tailoring method for use in the displaying of web pages, converts the web page from HTML into XML, before tailoring it to suit a specific client display and then converting it back to HTML

Patent Assignee: BRITTON K H (BRIT-I); IBM CORP (IBMC); IMS S D (IMSS-I); INT BUSINESS MACHINES CORP (IBMC); TOPOL B B (TOPO-I)

Inventor: BRITTON K H; IMS S D; TOPOL B B

Patent Family (10 patents, 5 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
GB 2346238	A	20000802	GB 199929939	A	19991220	200050	B
CA 2292336	A1	20000729	CA 2292336	A	19991216	200051	E
JP 2000222275	A	20000811	JP 200017102	A	20000126	200053	E
KR 2000053638	A	20000825	KR 20003971	A	20000127	200121	E
US 20020059344	A1	20020516	US 1999239935	A	19990129	200237	E
KR 346616	B	20020726	KR 20003971	A	20000127	200309	E
US 6535896	B2	20030318	US 1999239935	A	19990129	200322	E
GB 2346238	B	20030604				200345	E
JP 3503555	B2	20040308	JP 200017102	A	20000126	200418	E
CA 2292336	C	20070109	CA 2292336	A	19991216	200707	E

Abstract:
methods and computer program products are provided for utilizing XML-based tools to tailor HTML-based Web page content for display within various client devices. Content portions of a requested Web page are converted to an XML format and then modified using an XML content-tailoring tool. Other content portions of the Web page are masked so as to be "hidden" and are, thus, not converted to XML format. The masked portions of the Web page are then unmasked, combined with the modified content portions, and transmitted to a client device for display therewithin... ... PHONENUM> tag could indicate that the data following the tag is a phone number. This means that an XML file can be processed purely as data by a program or it can be stored with similar data on another computer or, like an HTML file, that it can be displayed. For example, depending on how the application program in the receiving computer wanted to handle the phone number, it could be stored, displayed, or dialed. XML is "extensible" because, unlike HTML, XML markup tags can be unlimited and can be self-defining ... Basic Derwent Week: 200050

Network attached computer system for displaying price information, has logic for establishing amount and currency interpreting parameters stored in document
Patent Assignee: ADSURA PTY LTD (ADSU-N)
Inventor: HEINZLE E S; VON BEHRENS R

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6199046	B1	20010306	US 1997902293	A	19970729	200147	B

Abstract:
NOVELTY - Single software object (2) displaying one or more **prices**, has logic for establishing amount and current interpreting parameters stored in document that specify default **currency**. Networking logic retrieves exchange rate to perform conversion of desired **currency** selection logic allows use of display to select desired **currency** during display by reading operation system information indicating desired **currency**. ... Method of performing **currency** conversion; **Currency** conversion **program** ...
... USE - For displaying prize information in **currencies** in network environment e.g. Internet.... ...
ADVANTAGE - Eliminates need for consumer to undertake calculations to convert **price** to local **currency**. Uncertainty about timeliness and **accuracy** of exchange **rate** information and need for customer to retrieve exchange rate information is eliminated. Reduces necessary bandwidth necessary to access exchange rate information and **currency** converters, saving time and money... ... method which accepts the **parameters** of the default **currency**, the **price** or **prices** to be displayed in the default **currency**, and in a preferred implementation, accepts cosmetic **parameters** which allow the **price** to be displayed seamlessly within the **document** or environment, such as, but not limited to, the color of the **price**, the font size of the **price**, and the **price** text's background color. The form of the **parameters** can be, but is not limited to, **parameters** embedded within a Hypertext **Markup Language (HTML) document**, or **parameters** in a file separate from the **document**, environment, or operating system in which the **prices** are displayed.

Claims:
A computer system attached to a network, the computer system including an attached display for displaying **price** information **and** a computer program comprising:(a) a single software object for displaying one or more **prices**, including logic for **establishing** an amount and a **currency** and which interprets **parameters** stored in a document or environment that specify a default **currency** to be displayed;(**b**) display logic for displaying the **price** in the appropriate **currency** by **reading** operating system information **indicative** of a desired **currency**;(c) networking logic that retrieves **from** a source an exchange rate required to perform a conversion to the desired **currency**; and(d) selection logic for allowing use **of** the display to select the desired **currency** during the display of one or more of the **prices** on the display.Basic Derwent Week: 200147

Query processing method for Internet searching text documents, involves retrieving information in an initial markup language and presenting it in any other markup language
Patent Assignee: VIGNETTE CORP (VIGN-N)
Inventor: NASR R I; WEBBER N

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6263332	B1	20010717	US 1998134263	A	19980814	200153	B

Abstract:

method of retrieving information in a first **markup language** through a **query** engine and presenting the information in any required **markup language**. A user inputs a **query** and may invoke a **number** of **transformative** sequences. These sequences contain a **markup language** pattern and an action, which may include **transforming the tags** in the first **markup language** to **tags in a different markup language**. The appropriate **transformative** sequence is selected and the pattern from the **transformative** sequence is compiled. The compiled pattern is used to perform rapid and efficient searches of **documents** in the **database**. A predicate check using the binary coding of the node as well as ancestor information confirms the node. The leaf information associated with a confirmed node is then stored. If necessary, the action from the **transformative** sequence is applied to change the **markup language** of the leaf information to that of the user... Basic Derwent Week: 200153

Messages exchanging and merging system in Internet, includes XML and DDT parsers to receive message including characteristic information and return template which are merged using name tag map

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)

Inventor: CHEN S; CHUNG J; COHEN M A; FU S S; GOTTEMUKKALA V

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6507856	B1	20030114	US 1999225814	A	19990105	200336	B

Abstract:

exchanging and merging messages over a network includes a server accessible by a plurality of remote browsers for transmitting a template including fields for information entry and a business system accessible by the server for generating a return document pursuant to information entered in the template on the browsers. The business system includes a first parser for receiving a document from a browser, the document including information about data characteristics of information entered into the template, and a second parser for receiving information about data characteristics to provide a return template. A merging algorithm is implemented to merge the document with the return template for providing a return document to the browser having portions of the return template with data entered therein... ... document merge algorithm to prepare the return XML document. The DTD parser transforms the DTD with repeatable and optional fields into a template in tree structure or serialized array with special markers around loop header nodes or name tags. Optional fields may include a second business address or phone number, for example... ...ADVANTAGE - Enables to exchange and merge XML documents dynamically and efficiently by using name tag map... ...DESCRIPTION OF DRAWINGS - The figure shows a flowchart explaining the procedure in dynamic XML document exchange system... ...

Claims:

parser for receiving a first message from a browser, the first message including information about data characteristics of information entered into the template and name tags; a second parser for receiving information about data characteristics to provide a return template, the return template including name tags; andmeans for merging the first message with the return template for providing the return message to the browser, the return message having portions of the return template with data entered therein corresponding to at least some of the information entered into the first message, wherein the means for merging includes a name tag map for correlating the tag names of the first message with the tag names of the return template.Basic Derwent Week: 200336

/M.A./
01/27/2012

EAST Search History

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S233	1369	(first near2 (mark$1up or xml$1 html$1)).clm.	US-PGPUB; USPAT; UPAD	OR	OFF	2012/01/25 17:39
S234	222	((merg$4 or combin$4) near3 (xml$1 or mark$1up$2 or html$1)).clm.	US-PGPUB; USPAT; UPAD	OR	OFF	2012/01/25 17:40
S235	1033	((numerica$4 or number$4 or digit$4 or value$4) near3 (xml$1 or mark$1up$2 or html$1)).clm.	US-PGPUB; USPAT; UPAD	OR	OFF	2012/01/25 17:41
S236	5	S235 and S234 and S233	US-PGPUB; USPAT; UPAD	OR	OFF	2012/01/25 17:41

1/27/2012 6:21:53 PM
C:\Users\mamin\Documents\EAST\Workspaces\12222752.wsp

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01/27/2012

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Preferences English Help

Inspec®

Advanced Search

Look Up Citation

				Thesaurus	Field codes	Tips

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AND	combine	in	All fields + text	
AND	merge	in	All fields + text	

Add a row   Remove a row   Preview result counts   Search   Clear form

	Set	Search	Databases	Results	Actions
	S9	markup AND combine AND merge Limits applied Databases: Inspec® Limited by: Date: From 1990 to 2000	Inspec®	0*	Actions
	S8	markup AND combine AND merge Limits applied Databases: Inspec® Limited by: Date: From 1990 to 2000	Inspec®	0*	Actions
	S7	markup AND combine AND merge Limits applied Databases: Inspec® Limited by: Date: From 1990 to 2000	Inspec®	0*	Actions
	S6	citationBodyTagsxml AND combine AND merge Limits applied Databases: Inspec® Limited by: Date: From 1990 to 2000	Inspec®	0*	Actions
	S5	citationBodyTagsxml AND combine AND merge Limits applied Databases: Inspec® Limited by: Date: From 1990 to 2000	Inspec®	0*	Actions
	S4	(markup document) AND combine AND (numerical values) Limits applied Databases: Inspec® Limited by: Date: From 1990 to 2000	Inspec®	0*	Actions
	S3	merge AND (markup document) AND (transform numerical values) Databases: Inspec®	Inspec®	0*	Actions
	S2	merge AND (markup document) AND (transform numerical values) Databases: Inspec®	Inspec®	0*	Actions
	S1	merge AND (markup document) AND (transform numerical values) Databases: Inspec®	Inspec®	0*	Actions

* approximate result count without duplicates

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EAST Search Syntax Conversion Guide

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DIGITAL LIBRARY

◆IEEE
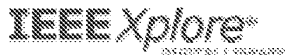
Semantic modeling and knowledge representation in multimedia databases

Al-Khatib, W.; Day, Y.F.; Ghafoor, A.; Berra, P.B.;
Knowledge and Data Engineering, IEEE Transactions on
Volume: 11 , Issue: 1
Digital Object Identifier: 10.1109/69.755616
Publication Year: 1999 , Page(s): 64 - 80
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Li, V.O.K.; Wanjiun Liao;
Proceedings of the IEEE
Volume: 85 , Issue: 7
Digital Object Identifier: 10.1109/5.611116
Publication Year: 1997 , Page(s): 1063 - 1108
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Volume: 3 , Issue: 2
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Aidong Zhang; Chang, W.; Sheikholeslami, G.; Syeda-
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The document spectrum for page layout analysis

O'Gorman, L.;
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Volume: 15 , Issue: 11
Digital Object Identifier: 10.1109/34.244677
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Volume: 19 , Issue: 1
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Volume: 6 , Issue: 3
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Zhigang Fan; Fu Li;
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Volume: 80 , Issue: 7
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Set      Items    Description
S1       93537    HTML OR XML OR SGML OR (MARKUP OR MARK()UP OR WEB OR STRUC-
                  TURED)()DOCUMENT? ? OR (MARKUP OR MARK()UP)()LANGUAGE? OR WEB-
                  PAGE? ? OR WEBSITE? ? OR WEB()(PAGE? ? OR SITE? ?)
S2       12775    S1(3N)(PLURAL??? OR MULTI OR MULTIPLE OR MULTIPLICITY OR M-
                  ULTITUD? OR MORE(1N)ONE OR MANY OR SEVERAL? OR NUMEROUS? OR V-
                  ARIOUS? OR SET OR SETS OR SERIES? OR COLLECTION? OR GROUP????
                  OR ARRAY? ?)
S3       9505540  NUMBER? ? OR NUMERAL? ? OR NUMERICAL? OR DIGIT? ? OR DENOM-
                  INATION? OR FIGURE? ? OR VALUE? ? OR MONEY OR MONIES OR CURRE-
                  NC??? OR AMOUNT? ?
S4       12344336 FORMAT? OR BASIS? OR TYPE? ? OR CURRENC??? OR TAG OR TAGS -
                  OR METADATA? OR META()DATA OR LABEL? ? OR UNIT? ? OR STRUCTUR-
                  E? ?
S5       489726   S4(3N)(DIFFER? OR SEPARAT? OR DISTINCT? OR DISCRETE? OR IN-
                  DIVIDUAL? OR DISSIMILAR? OR DIVERS? OR UNLIKE? OR UNEQUAL? OR
                  INCONSISTEN? OR (NON OR "NOT" OR T OR NO OR WITHOUT)(1N)(SAME
                  OR EQUAL? OR EQUIVALEN? OR LIKE OR SIMILAR? OR UNIFORM? OR ST-
                  ANDARD? OR CONSISTEN?))
S6       32649    S3(7N)S5
S7       61       S2 AND S6
S8       770503   S3(5N)(CONVERT? OR CONVERSION? OR TRANSFORM? OR TRANSLAT? -
                  OR CHANG? OR ALTER? OR AMEND? OR ADJUST? OR ADAPT? OR SWITCH?-
                  ?? OR MODIF? OR REPLAC? OR SUBSTITUT?)
S9       711821   S4(3N)(COMMON? OR SHAR??? OR SAME OR EQUAL? OR EQUIVALEN? -
                  OR ALIKE OR SIMILAR? OR UNIFORM? OR UNITE? ? OR UNITING? OR U-
                  NIFY??? OR UNIFIE? ? OR JOINT? OR MUTUAL? OR COLLECTIV? OR CO-
                  MMUNAL? OR IDENTICAL? OR MATCH??? OR CONSISTEN? OR CONSTANT? -
                  OR STANDARD? OR (NON OR "NOT" OR T OR NO OR WITHOUT)(1N)(DIFF-
                  ER? OR SEPARAT? OR DISTINCT? OR DISCRETE?))
S10      2855     S8(7N)S9
S11      14840    S1(7N)(MERG? OR COMBIN? OR CONSOLIDAT? OR AMALGAM? OR UNIT-
                  E? ? OR UNITING? OR UNIFY??? OR UNIFIE? ? OR JOIN??? OR FUSE?
                  ? OR FUSING? OR FUSION? OR INTEGRAT? OR ONE OR SINGLE? OR SIN-
                  GULAR? OR LONE)
S12      9        S10 AND S11
S13      3        S7 AND S12
S14      9        S2 AND S10
S15      15       S12 OR S14
S16      12       S15 NOT S13
S17      1        (S16 AND PY=1963:1999) OR (S16 AND AY=1963:1999 AND AC=US)
S18      55       S6 AND S11
S19      37       S10 AND S1
S20      77       S18:S19 NOT (S13 OR S15)
S21      8        (S20 AND PY=1963:1999) OR (S20 AND AY=1963:1999 AND AC=US)
S22      8        IDPAT S21 (sorted in duplicate/non-duplicate order)
S23      111      S8 AND S9 AND S11
S24      112      S8 AND S9 AND S2
S25      153      S23:S24 NOT (S13 OR S15 OR S18:S19)
S26      9        (S25 AND PY=1963:1999) OR (S25 AND AY=1963:1999 AND AC=US)
S27      9        IDPAT S26 (sorted in duplicate/non-duplicate order)
```

```
File 348:EUROPEAN PATENTS 1978-201201
        (c) 2012 European Patent Office
File 349:PCT FULLTEXT 1979-2012/UB=20120119|UT=20120112
        (c) 2012 WIPO/Thomson

Set     Items   Description
S1      128990    HTML OR XML OR SGML OR (MARKUP OR MARK()UP OR WEB OR STRUC-
                TURED)()DOCUMENT? ? OR (MARKUP OR MARK()UP)()LANGUAGE? OR WEB-
                PAGE? ? OR WEBSITE? ? OR WEB()(PAGE? ? OR SITE? ?)
S2       23026    S1(3N)(PLURAL??? OR MULTI OR MULTIPLE OR MULTIPLICITY OR M-
                ULTITUD? OR MORE(1N)ONE OR MANY OR SEVERAL? OR NUMEROUS? OR V-
                ARIOUS? OR SET OR SETS OR SERIES? OR COLLECTION? OR GROUP????
                OR ARRAY? ?)
S3     2978802    NUMBER? ? OR NUMERAL? ? OR NUMERICAL? OR DIGIT? ? OR DENOM-
                INATION? OR FIGURE? ? OR VALUE? ? OR MONEY OR MONIES OR CURRE-
                NC??? OR AMOUNT? ?
S4     3093882    FORMAT? OR BASIS? OR TYPE? ? OR CURRENC??? OR TAG OR TAGS -
                OR METADATA? OR META()DATA OR LABEL? ? OR UNIT? ? OR STRUCTUR-
                E? ?
S5      736547    S4(3N)(DIFFER? OR SEPARAT? OR DISTINCT? OR DISCRETE? OR IN-
                DIVIDUAL? OR DISSIMILAR? OR DIVERS? OR UNLIKE? OR UNEQUAL? OR
                INCONSISTEN? OR (NON OR "NOT" OR T OR NO OR WITHOUT)(1N)(SAME
                OR EQUAL? OR EQUIVALEN? OR LIKE OR SIMILAR? OR UNIFORM? OR ST-
                ANDARD? OR CONSISTEN?))
S6       96333    S3(7N)S5
S7          76    S2(50N)S6
S8      998982    S3(5N)(CONVERT? OR CONVERSION? OR TRANSFORM? OR TRANSLAT? -
                OR CHANG? OR ALTER? OR AMEND? OR ADJUST? OR ADAPT? OR SWITCH?-
                ?? OR MODIF? OR REPLAC? OR SUBSTITUT?)
S9      968301    S4(3N)(COMMON? OR SHAR??? OR SAME OR EQUAL? OR EQUIVALEN? -
                OR ALIKE OR SIMILAR? OR UNIFORM? OR UNITE? ? OR UNITING? OR U-
                NIFY??? OR UNIFIE? ? OR JOINT? OR MUTUAL? OR COLLECTIV? OR CO-
                MMUNAL? OR IDENTICAL? OR MATCH??? OR CONSISTEN? OR CONSTANT? -
                OR STANDARD? OR (NON OR "NOT" OR T OR NO OR WITHOUT)(1N)(DIFF-
                ER? OR SEPARAT? OR DISTINCT? OR DISCRETE?))
S10       6623    S8(7N)S9
S11      30146    S1(7N)(MERG? OR COMBIN? OR CONSOLIDAT? OR AMALGAM? OR UNIT-
                E? ? OR UNITING? OR UNIFY??? OR UNIFIE? ? OR JOIN??? OR FUSE?
                ? OR FUSING? OR FUSION? OR INTEGRAT? OR ONE OR SINGLE? OR SIN-
                GULAR? OR LONE)
S12         23    S10(50N)S11
S13          3    S7(100N)S12
S14         18    S2(100N)S10
S15         27    S12 OR S14
S16         24    S15 NOT S13
S17          8    (S16 AND PY=1978:1999) OR (S16 AND AY=1978:1999 AND AC=US)
S18          8    IDPAT S17 (sorted in duplicate/non-duplicate order)
S19        194    S6(100N)S11
S20        114    S10(100N)S1
S21        263    S19:S20 NOT (S13 OR S15)
S22         33    (S21 AND PY=1978:1999) OR (S21 AND AY=1978:1999 AND AC=US)
S23         33    IDPAT S22 (sorted in duplicate/non-duplicate order)
S24        101    S8(50N)S9(50N)S11
S25         61    S8(50N)S9(50N)S2
S26         69    S24:S25 NOT (S13 OR S15 OR S19:S20)
S27         13    (S26 AND PY=1978:1999) OR (S26 AND AY=1978:1999 AND AC=US)
S28         13    IDPAT S27 (sorted in duplicate/non-duplicate order)
```

```
File    8:Ei Compendex(R) 1884-2012/Jan W4
           (c) 2012 Elsevier Eng. Info. Inc.
File   35:Dissertation Abs Online 1861-2011/Dec
           (c) 2012 ProQuest Info&Learning
File   65:Inside Conferences 1993-2012/Jan 26
           (c) 2012 BLDSC all rts. reserv.
File    2:INSPEC 1898-2012/Jan W3
           (c) 2012 The IET
File    6:NTIS 1964-2012/Jan W3
           (c) 2012 NTIS, Intl Cpyrght All Rights Res
File  144:Pascal 1973-2012/Jan W4
           (c) 2012 INIST/CNRS
File  434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
           (c) 2006 The Thomson Corp
File   34:SciSearch(R) Cited Ref Sci 1990-2012/Jan W4
           (c) 2012 The Thomson Corp
File   99:Wilson Appl. Sci & Tech Abs 1983-2011/Nov
           (c) 2011 The HW Wilson Co.
File  266:FEDRIP 2012/Dec
           Comp & dist by NTIS, Intl Copyright All Rights Res
File   95:TEME-Technology & Management 1989-2010/Oct W3
           (c) 2010 FIZ TECHNIK
File   56:Computer and Information Systems Abstracts 1966-2011/Dec
           (c) 2011 CSA.
File   60:ANTE: Abstracts in New Tech & Engineer 1966-2012/Jan
           (c) 2012 CSA.
File  438:Library Lit. & Info. Science 1984-2011/Nov
           (c) 2011 The HW Wilson Co


Set     Items    Description
S1      251174    HTML OR XML OR SGML OR (MARKUP OR MARK()UP OR WEB OR STRUC-
                  TURED)()DOCUMENT? ? OR (MARKUP OR MARK()UP)()LANGUAGE? OR WEB-
                  PAGE? ? OR WEBSITE? ? OR WEB()(PAGE? ? OR SITE? ?)
S2       18974    S1(3N)(PLURAL??? OR MULTI OR MULTIPLE OR MULTIPLICITY OR M-
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                  ARIOUS? OR SET OR SETS OR SERIES? OR COLLECTION? OR GROUP????
                  OR ARRAY? ?)
S3     15876557   NUMBER? ? OR NUMERAL? ? OR NUMERICAL? OR DIGIT? ? OR DENOM-
                  INATION? OR FIGURE? ? OR VALUE? ? OR MONEY OR MONIES OR CURRE-
                  NC??? OR AMOUNT? ?
S4     23732037   FORMAT? OR BASIS? OR TYPE? ? OR CURRENC??? OR TAG OR TAGS -
                  OR METADATA? OR META()DATA OR LABEL? ? OR UNIT? ? OR STRUCTUR-
                  E? ?
S5      1353820   S4(3N)(DIFFER? OR SEPARAT? OR DISTINCT? OR DISCRETE? OR IN-
                  DIVIDUAL? OR DISSIMILAR? OR DIVERS? OR UNLIKE? OR UNEQUAL? OR
                  INCONSISTEN? OR (NON OR "NOT" OR T OR NO OR WITHOUT)(1N)(SAME
                  OR EQUAL? OR EQUIVALEN? OR LIKE OR SIMILAR? OR UNIFORM? OR ST-
                  ANDARD? OR CONSISTEN?))
S6       52282    S3(7N)S5
S7          18    S2 AND S6
S8      745247    S3(5N)(CONVERT? OR CONVERSION? OR TRANSFORM? OR TRANSLAT? -
                  OR CHANG? OR ALTER? OR AMEND? OR ADJUST? OR ADAPT? OR SWITCH?-
                  ?? OR MODIF? OR REPLAC? OR SUBSTITUT?)
S9      1072308   S4(3N)(COMMON? OR SHAR??? OR SAME OR EQUAL? OR EQUIVALEN? -
                  OR ALIKE OR SIMILAR? OR UNIFORM? OR UNITE? ? OR UNITING? OR U-
                  NIFY??? OR UNIFIE? ? OR JOINT? OR MUTUAL? OR COLLECTIV? OR CO-
                  MMUNAL? OR IDENTICAL? OR MATCH??? OR CONSISTEN? OR CONSTANT? -
                  OR STANDARD? OR (NON OR "NOT" OR T OR NO OR WITHOUT)(1N)(DIFF-
                  ER? OR SEPARAT? OR DISTINCT? OR DISCRETE?))
S10       1502    S8(7N)S9
S11      22639    S1(7N)(MERG? OR COMBIN? OR CONSOLIDAT? OR AMALGAM? OR UNIT-
                  E? ? OR UNITING? OR UNIFY??? OR UNIFIE? ? OR JOIN??? OR FUSE?
                  ? OR FUSING? OR FUSION? OR INTEGRAT? OR ONE OR SINGLE? OR SIN-
                  GULAR? OR LONE)
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S12          1     S10 AND S11
S13          1     S2 AND S10
S14         18     S6 AND S11
S15          1     S10 AND S1
S16         11     S8 AND S9 AND S11
S17         13     S8 AND S9 AND S2
S18         50     S7 OR S12:S17
S19          6     S18 NOT PY>1999
S20          5     RD S19 (unique items)
```

```
File 275:Gale Group Computer DB(TM) 1983-2012/Jan 26
         (c) 2012 Gale/Cengage
File 621:Gale Group New Prod.Annou.(R) 1985-2012/Jan 25
         (c) 2012 Gale/Cengage
File 636:Gale Group Newsletter DB(TM) 1987-2012/Jan 24
         (c) 2012 Gale/Cengage
File  16:Gale Group PROMT(R) 1990-2012/Jan 20
         (c) 2012 Gale/Cengage
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 148:Gale Group Trade & Industry DB 1976-2012/Jan 23
         (c) 2012 Gale/Cengage
File 624:McGraw-Hill Publications 1985-2012/Jan 26
         (c) 2012 McGraw-Hill Co. Inc
File  15:ABI/Inform(R) 1971-2012/Jan 26
         (c) 2012 ProQuest Info&Learning
File 647:UBM Computer Fulltext 1988-2012/Jan W4
         (c) 2012 UBM, LLC
File 674:Computer News Fulltext 1989-2006/Sep W1
         (c) 2006 IDG Communications
File 696:DIALOG Telecom  Newsletters 1995-2012/Jan 26
         (c) 2012 Dialog
File 369:NEW SCIENTIST 1994-2010/JAN W5
         (c) 2010 REED BUSINESS INFORMATION LTD.
File 810:Business Wire 1986-1999/Feb 28
         (c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30
         (c) 1999 PR Newswire Association Inc
File 610:Business Wire 1999-2012/Jan 26
         (c) 2012 Business Wire.
File 613:PR Newswire 1999-2012/Jan 25
         (c) 2012 PR Newswire Association Inc

Set     Items    Description
S1    13783000    HTML OR XML OR SGML OR (MARKUP OR MARK()UP OR WEB OR STRUC-
                  TURED)()DOCUMENT? ? OR (MARKUP OR MARK()UP)()LANGUAGE? OR WEB-
                  PAGE? ? OR WEBSITE? ? OR WEB()(PAGE? ? OR SITE? ?)
S2     357080    S1(3N)(PLURAL??? OR MULTI OR MULTIPLE OR MULTIPLICITY OR M-
                  ULTITUD? OR MORE(1N)ONE OR MANY OR SEVERAL? OR NUMEROUS? OR V-
                  ARIOUS? OR SET OR SETS OR SERIES? OR COLLECTION? OR GROUP????
                  OR ARRAY? ?)
S3    28148769    NUMBER? ? OR NUMERAL? ? OR NUMERICAL? OR DIGIT? ? OR DENOM-
                  INATION? OR FIGURE? ? OR VALUE? ? OR MONEY OR MONIES OR CURRE-
                  NC??? OR AMOUNT? ?
S4    34270128    FORMAT? OR BASIS? OR TYPE? ? OR CURRENC??? OR TAG OR TAGS -
                  OR METADATA? OR META()DATA OR LABEL? ? OR UNIT? ? OR STRUCTUR-
                  E? ?
S5     881824    S4(3N)(DIFFER? OR SEPARAT? OR DISTINCT? OR DISCRETE? OR IN-
                  DIVIDUAL? OR DISSIMILAR? OR DIVERS? OR UNLIKE? OR UNEQUAL? OR
                  INCONSISTEN? OR (NON OR "NOT" OR T OR NO OR WITHOUT)(1N)(SAME
                  OR EQUAL? OR EQUIVALEN? OR LIKE OR SIMILAR? OR UNIFORM? OR ST-
                  ANDARD? OR CONSISTEN?))
S6      68354    S3(7N)S5
S7         65    S2(50N)S6
S8    1576149    S3(5N)(CONVERT? OR CONVERSION? OR TRANSFORM? OR TRANSLAT? -
                  OR CHANG? OR ALTER? OR AMEND? OR ADJUST? OR ADAPT? OR SWITCH?-
                  ?? OR MODIF? OR REPLAC? OR SUBSTITUT?)
S9    1736206    S4(3N)(COMMON? OR SHAR??? OR SAME OR EQUAL? OR EQUIVALEN? -
                  OR ALIKE OR SIMILAR? OR UNIFORM? OR UNITE? ? OR UNITING? OR U-
                  NIFY??? OR UNIFIE? ? OR JOINT? OR MUTUAL? OR COLLECTIV? OR CO-
                  MMUNAL? OR IDENTICAL? OR MATCH??? OR CONSISTEN? OR CONSTANT? -
                  OR STANDARD? OR (NON OR "NOT" OR T OR NO OR WITHOUT)(1N)(DIFF-
                  ER? OR SEPARAT? OR DISTINCT? OR DISCRETE?))
S10     19849    S8(7N)S9
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S11    653478   S1(7N)(MERG? OR COMBIN? OR CONSOLIDAT? OR AMALGAM? OR UNIT-
                E? ? OR UNITING? OR UNIFY??? OR UNIFIE? ? OR JOIN??? OR FUSE?
                ? OR FUSING? OR FUSION? OR INTEGRAT? OR ONE OR SINGLE? OR SIN-
                GULAR? OR LONE)
S12        2   S10(50N)S11
S13       20   S2(100N)S10
S14       87   S7 OR S12 OR S13
S15       10   S14 NOT PY>1999
S16        7   RD S15  (unique items)
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
‖‖‖‖‖‖‖ (barcode)	12222752	DAVIS, RUSSELL T.
	Examiner	Art Unit
	MUSTAFA AMIN	2176

ORIGINAL		INTERNATIONAL CLASSIFICATION						
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED	
715	209	G	0	6	F	17 / 00 (2006.01.01)		

CROSS REFERENCE(S)

CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					
715	234					

☐ Claims renumbered in the same order as presented by applicant   ☐ CPA   ☐ T.D.   ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1	5	17		33		49	65							
	2	6	18		34		50	66							
	3	7	19		35	26	51								
	4	8	20		36		52								
	5	9	21		37		53								
	6		22		38		54								
	7		23		39		55								
	8	27	24	17	40		56								
	9	10	25	18	41		57								
	10	11	26	19	42		58								
	11	12	27	20	43		59								
	12	13	28	21	44		60								
1	13	14	29	22	45		61								
2	14	15	30	23	46		62								
3	15	16	31	24	47		63								
4	16		32	25	48		64								

/MUSTAFA AMIN/ Examiner.Art Unit 2176 (Assistant Examiner)	01/27/2012 (Date)	**Total Claims Allowed:** 27	
/Laurie Ries/ Primary Examiner (Primary Examiner)	1/29/2012 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 10

U.S. Patent and Trademark Office   Part of Paper No. 20120126

Exhibit 1002_0751

Search Notes	**Application/Control No.** 12222752	**Applicant(s)/Patent Under Reexamination** DAVIS, RUSSELL T.
‖‖‖‖‖‖‖‖‖‖‖	**Examiner** MUSTAFA AMIN	**Art Unit** 2176

SEARCHED

Class	Subclass	Date	Examiner
715	209	07/26/2011	/M.A./
715	234 (with keyword]	01/27/2012	/M.A./

SEARCH NOTES

Search Notes	Date	Examiner
East/West USPAT, USPGPUB, EPO, JPO, DERWENT, IBM_TDB	07/26/2011	/M.A./
double patenting search	07/26/2011	/M.A./
East/West USPAT, USPGPUB, EPO, JPO, DERWENT, IBM_TDB	01/27/2012	/M.A./
ACM NPL search	01/25/2012	/M.A./
Bing NPL search	01/25/2012	/M.A./
Google NPL search	01/27/2012	/M.A./
Google Scholar search	01/25/2012	/M.A./
IEEE NPL search	01/25/2012	/M.A./
Multi NPL databases STIC search	01/26/2012	/M.A./
ProQuest NPL search	01/25/2012	/M.A./
Dialog NPL search	01/25/2012	/M.A./
EIC search considered	01/27/2012	/M.A./
Primary Examiner consultatoin [Laurie Ries]	01/25/2012	/M.A./
SPE consultation [Doug Hutton]	01/26/2012	/M.A./

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner
	keyword search with ".clm." limitation	01/25/2012	/M.A./

/MUSTAFA AMIN/ Examiner.Art Unit 2176	

/M.A./
01/27/2012

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   Publication Year: 1995 ... 2000

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Results 21 - 40 of 48

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Result page: <<   previous   1   **2**   3   next

21   Requirements for distributed authoring and versioning on the World Wide Web
J. A. Slein, F. Vitali, E. J. Whitehead, Jr., D. G. Durand
March 1997   **StandardView** , Volume 5 Issue 1
Publisher: ACM 🔍 Request Permissions
Full text available: 📄 Pdf (96.62 KB)
Bibliometrics: Downloads (6 Weeks): 2,   Downloads (12 Months): 8,   Downloads (Overall): 285,   Citation Count: 5

22   The Future of Enterprise System-Enabled Organizations
Thomas H. Davenport
August 2000   **Information Systems Frontiers** , Volume 2 Issue 2
Publisher: Kluwer Academic Publishers
Full text available: 📄 Publisher Site
Bibliometrics: Downloads (6 Weeks): n/a,   Downloads (12 Months): n/a,   Downloads (Overall): n/a,   Citation Count

Companies are beginning to expect to gain strategic value from the implementation and operation of enterpris systems (ES). Currently dominating trends in business are sense-and-respond business models, globalization, corporate realignment, virtual organizations ...

Keywords: business trends, enterprise resource planning, information systems evolution, management, management information systems, management support systems, transaction processing systems

23   Designing hypertext support for computational applications
Michael Bieber, Charles Kacmar
August 1995   **Communications of the ACM** , Volume 38 Issue 8
Publisher: ACM 🔍 Request Permissions
Full text available: 📄 Pdf (320.73 KB)
Bibliometrics: Downloads (6 Weeks): 4,   Downloads (12 Months): 29,   Downloads (Overall): 435,   Citation Count: 1

24   Language Resources in Cross-Language Text Retrieval: A CLEF Perspective
Julio Gonzalo
September 2000 **CLEF '00:** Revised Papers from the Workshop of Cross-Language Evaluation Forum on Cross-Language Information Retrieval and Evaluation
Publisher: Springer-Verlag
Bibliometrics: Downloads (6 Weeks): n/a,   Downloads (12 Months): n/a,   Downloads (Overall): n/a,   Citation Count

Language resources such as machine dictionaries and lexical databases, aligned parallel corpora or even comp machine translation systems are essential in Cross-Language Text Retrieval (CLTR), although not standard toc for the Information Retrieval ...

25   Proceedings of the 2000 ACM/IEEE conference on Supercomputing (CDROM)
Jed Donnelley
November 2000 **Supercomputing '00:** Proceedings of the 2000 ACM/IEEE conference on Supercomputing (CDRC
Publisher: IEEE Computer Society
Bibliometrics: Downloads (6 Weeks): n/a,   Downloads (12 Months): n/a,   Downloads (Overall): n/a,   Citation Count

26   Conference on Data Systems Languages (CODASYL) interview: May 27-28, 1969
Charlie Bachman, Dan Fogal, Jack Jones, Dick Kerr, Chuck Greenberger, David Black, Mary Hollis, Greg Dillon, Jin Sweeney, Steve Wright, Bob Bemer, Grace Murray Hopper, Bill Randall, Brian Reynolds, Danny, Bill Olle, John Young, Warren Simmons, Bob Grace, Howard Bramberg, Marty Greenville, Stan Epwood, Anaheim Bushed, Tax

Metaxides, Bill McGee, John Gosden, Marty Greenfield, Jonas Raven, George Mann, Goodrich Hubert, Ron Hamm, Jim Manner, Herb Beta, Bill Keating, Peg Harper, Dick Schubert, Herb Manative
August 1999   Computer Oral History Collection
Publisher: Smithsonian Institution Press
Full text available: Publisher Site

Bibliometrics: Downloads (6 Weeks): n/a,   Downloads (12 Months): n/a,   Downloads (Overall): n/a,   Citation Count

27   Request for Comments Summary RFC Numbers 2600-2699
     S. Ginoza
     May 2000   Request for Comments Summary RFC Numbers 2600-2699
     Publisher: RFC Editor
     Full text available: Txt (42.46 KB)

     Bibliometrics: Downloads (6 Weeks): ,   Downloads (12 Months): 0,   Downloads (Overall): 3,   Citation Count: 0

28   SERFing the web: The Re-Web approach for web re-structuring
     Li Chen, Kajal T. Claypool, Elke A. Rundensteiner
     March 2000   **World Wide Web** , Volume 3 Issue 2
     Publisher: Kluwer Academic Publishers
     Full text available: Publisher Site

     Bibliometrics: Downloads (6 Weeks): n/a,   Downloads (12 Months): n/a,   Downloads (Overall): n/a,   Citation Count

     In our emerging digital paper-less society, massive amount of information is being maintained in on-line
     repositories and diverse web site representations of this information must be served over the Internet to differ
     user groups. E-commerce ...

29   Web-based development of complex information products
     Roy T. Fielding, E. James Whitehead, Jr., Kenneth M. Anderson, Gregory A. Bolcer, Peyman Oreizy, Richard N. Ta
   August 1998   **Communications of the ACM** , Volume 41 Issue 8
     Publisher: ACM Request Permissions
     Full text available: Pdf (200.01 KB)
     Bibliometrics: Downloads (6 Weeks): 2,   Downloads (12 Months): 47,   Downloads (Overall): 1007,   Citation Count:

30   Requirements for a Distributed Authoring and Versioning Protocol for the World Wide Web
     J. Slein, F. Vitali, E. Whitehead, D. Durand
     February 1998   Requirements for a Distributed Authoring and Versioning Protocol for the World Wide W
     Publisher: RFC Editor
     Full text available: Txt (44.04 KB)

     Bibliometrics: Downloads (6 Weeks): 2,   Downloads (12 Months): 2,   Downloads (Overall): 9,   Citation Count: 1

     Current World Wide Web (WWW or Web) standards provide simple support for applications which allow remote
     editing of typed data. In practice, the existing capabilities of the WWW have proven inadequate to support
     efficient, scalable remote editing free ...

31   HTTP Extensions for Distributed Authoring -- WEBDAV
     Y. Goland, E. Whitehead, A. Faizi, S. Carter, D. Jensen
     February 1999   HTTP Extensions for Distributed Authoring -- WEBDAV
     Publisher: RFC Editor
     Full text available: Txt (202.83 KB)

     Bibliometrics: Downloads (6 Weeks): ,   Downloads (12 Months): 2,   Downloads (Overall): 22,   Citation Count: 25

     This document specifies a set of methods, headers, and content-types ancillary to HTTP/1.1 for the managem
     of resource properties, creation and management of resource collections, namespace manipulation, and resou
     locking (collision avoidance).

32   World Wide Web distributed authoring and versioning (WebDAV): an introduction
     E. James Whitehead, Jr.
     March 1997   **StandardView** , Volume 5 Issue 1
     Publisher: ACM Request Permissions
     Full text available: Pdf (81.76 KB)
     Bibliometrics: Downloads (6 Weeks): 4,   Downloads (12 Months): 26,   Downloads (Overall): 541,   Citation Count: 1

33 Natural language dialogue for personalized interaction
Wlodek Zadrozny, M. Budzikowska, J. Chai, N. Kambhatla, S. Levesque, N. Nicolov
August 2000   **Communications of the ACM** , Volume 43 Issue 8
Publisher: ACM Request Permissions
Full text available: Html (24.39 KB), Pdf (87.13 KB)
Bibliometrics: Downloads (6 Weeks): 1, Downloads (12 Months): 31, Downloads (Overall): 821, Citation Count: 4

34 Kawa: compiling dynamic languages to the Java VM
Per Bothner
June 1998   **ATEC '98:** Proceedings of the annual conference on USENIX Annual Technical Conference
Publisher: USENIX Association

Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count

Many are interested in Java for its portable bytecodes and extensive libraries, but prefer a different language, especially for scripting. People have implemented other languages using an interpreter (which is slow), or by translating into Java source ...

35 Interacting in chaos
Dan R. Olsen, Jr.
September 1999   **interactions** , Volume 6 Issue 5
Publisher: ACM Request Permissions
Full text available: Html (50.47 KB), Pdf (587.03 KB)
Bibliometrics: Downloads (6 Weeks): 7, Downloads (12 Months): 42, Downloads (Overall): 679, Citation Count: 6

36 Issues of current CSCW systems and possible solutions
Jonathan D. Fouss, Kai H. Chang
April 1999   **ACM-SE 37:** Proceedings of the 37th annual Southeast regional conference (CD-ROM)
Publisher: ACM Request Permissions
Full text available: Pdf (19.55 KB)
Bibliometrics: Downloads (6 Weeks): 1, Downloads (12 Months): 6, Downloads (Overall): 232, Citation Count: 0

37 Semantic information brokering: how can a multi-agent approach help?
Amit Sheth, Vipul Kashyap, Tarcisio Lima
July 1999   **CIA'99:** Proceedings of the 3rd international conference on Cooperative information agents III
Publisher: Springer-Verlag
Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count

The challenge of information overload in dealing with ever increasing variety and size of digital data on the We is now receiving serious attention of the researchers. The information brokering architecture provides one approach to addressing issues ...

38 An analysis and approach to using existing ontological systems for applications in manufacturing
Craig Schlenoff, Peter Denno, Rob Ivester, Don Libes, Simon Szykman
September 2000   **Artificial Intelligence for Engineering Design, Analysis and Manufacturing** , Vo
                                         14 Issue 4
Publisher: Cambridge University Press
Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count

This paper reports on the results of an analysis of existing ontological systems to determine which is most appropriate for the manufacturing domain. In particular, this involved the exploration of efforts that are study both the uses of ontologies ...

Keywords: Analysis, Inferencing, Manufacturing Ontology, Ontological Systems, Taxonomy

39 Design and Architecture of Distributed Sound Processing and Database Systems for Web-Based Computer Music Applications
Rolf Wöhrmann, Guillaume Ballet
September 1999   **Computer Music Journal** , Volume 23 Issue 3
Publisher: MIT Press
Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count

40 Some Notes on The Proper Place of Men and Machines in Language Translation

Alan Melby
January 1998   **Machine Translation** , Volume 12 Issue 1/2
Publisher: Kluwer Academic Publishers
Full text available: Publisher Site

**Bibliometrics**: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count

Result page: << previous 1 **2** 3 next

/M.A./
01/27/2012

Search History

Database Details

Set	Term Searched	Items	
S1	(XML?? OR HTML??? OR MARK?UP?? OR SGML?) (4N) (MERG??? OR COMBI???? OR ASSEMB???)	2094	Display
S2	(XML?? OR HTML??? OR MARK?UP?? OR SGML?) (5N) (MERG??? OR COMBI???? OR ASSEMB??? OR JOIN??? OR FUS??? OR AGGREGA????)	4099	Display
S3	(TRANSFORM??? OR TRANSLAT???? OR CONVERT???) (4N)(NUMBER??? OR VALUE??? OR NUMERICA???? OR DIGIT? OR NUMERAL???)	235700	Display
S4	(NUMBER??? OR NUMERAL??? OR VALUE??? OR DIGIT??) (4N)(FORMAT??? OR STYL??? OR DESIGN??? OR TAG? OR META?DATA)	310218	Display
S5	S1 AND S2 AND S3 AND S4	3	Display
S6	(XML?? OR HTML??? OR MARK?UP?? OR SGML?) (4N) (MERG??? OR COMBI???? OR ASSEMB??? OR WEB? DOCUMENT OR WEB?PAGE?)	2237	Display
S7	(XML?? OR HTML??? OR MARK?UP?? OR SGML?) (5N) (MERG??? OR COMBI???? OR ASSEMB??? OR JOIN??? OR FUS??? OR AGGREGA????)	4099	Display
S8	(XML?? OR HTML??? OR MARK?UP?? OR SGML? OR WEB?DOCUMENT OR WEB?PAGE) (5N) (MERG??? OR COMBI???? OR ASSEMB??? OR JOIN??? OR FUS??? OR AGGREGA????)	4114	Display
S9	S8 AND S4 AND S3	6	Display

Format
Free
Number of
Records
10

Show Database Details for:
2: Inspec (1898-present)

Bluesheets   Rates

Fields   Formats   Sorts   Limits   Tags

Exhibit 1002_0757

Computers, Electronics, and Telecommunications

To search the database index, select two or more databases and enter your search terms

[_____]   [Search]

[✓ Select All]   [✗ Clear Selections]   [Begin Databases]

☑   2:Inspec (1898-present)
☑   6:NTIS - National Technical Information Service
☑   8:Ei Compendex®
☑   34:SciSearch® - a Cited Reference Science Database - 1990-
☑   35:Dissertation Abstracts Online
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☑   144:PASCAL
☑   275:Gale Group Computer Database(TM)
☑   434:SciSearch® - a Cited Reference Science Database - 1974-1989
☑   647:UBM Computer Fulltext
☑   674:Computer News Fulltext
☑   696:DIALOG Telecommunications Newsletters

Back to Research and Development
Back to All categories
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Exhibit 1002_0758

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	280	(xbrl) or (extensi$4 adj busin$5 adj repor$4 adj langua$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:02
L2	0	l1 and @ay<"2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:02
L3	6	l1 and @ay<"2002"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:02
L4	1159	(715/209).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/27 17:40
L5	6236	(715/234).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/27 17:40
L6	31	(l4 and l5) and @ay<"2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:41
L7	1790	(l4 or l5) and @ay<"2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:41
L8	888	(merg$4 or combin$4) and l7	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:41
L9	650	(transfor$4 or translat$4 or conver$4) and l8	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:41
L10	355	((transfor$4 or translat$4 or conver$4) same (numbe$4 or curren$4 or value$4	US-PGPUB; USPAT;	OR	OFF	2012/01/27 17:42

Exhibit 1002_0759

		or numera$4)) and I8	FPRS; EPO; JPO; DERWENT; IBM_TDB			
L11	73	((transfor$4 or translat$4 or conver$4) near2 (numbe$4 or curren$4 or value$4 or numera$4)) and I8	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:42
L12	31	(xml$1 or mark$1up$2 or html$1 or sgml$1) and I11	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/27 17:43
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L14	1	("6626957").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/27 17:56
S1	800	(715/209).CCLS.	USPAT; USOCR	OR	OFF	2011/07/26 20:06
S2	3	(("5956737") or ("5838906") or ("6199046")).PN.	USPAT; USOCR	OR	OFF	2011/07/26 20:07
S3	422	((merg$4 or combin$4) near2 (xml$1 or mark$1up$1))	USPAT	OR	OFF	2011/07/26 20:08
S4	3587	(xml$1 or mark$1up) near2 (tag$1)	USPAT	OR	OFF	2011/07/26 20:09
S5	150	S4 and S3	USPAT	OR	OFF	2011/07/26 20:09
S6	1278	((merg$4 or combin$4) near2 (xml$1 or mark$1up$1))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/26 20:09
S7	10837	(xml$1 or mark$1up$1) near2 (tag$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/26 20:10
S8	392	S7 and S6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/26 20:10
S9	83	((master$4) near2 (xml$1 or mark$1up$)) same (document$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/26 20:11
S10	1	S9 and S8	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/26 20:11
S11	227	("5835712" | "6108673" | "6112242" |	US-PGPUB;	OR	OFF	2011/07/27

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S12	1241	(((merg$4 or combin$4 or assemb$4 or join$4) near3 (xml$1 or mark$1up$1))) same (document$2 or pag$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 11:45
S13	205	S12 and @ay<="2001"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 11:47
S14	1915	(merg$3 or combin$4 or assemb$2 or join$4) near2 (tags$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 11:50
S15	3	S14 and S13	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 11:50
S16	14809	(resol$4) near2 (conflic$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 14:27
S17	1241	(((merg$4 or combin$4 or assemb$4 or join$4) near3 (xml$1 or mark$1up$1))) same (document$2 or pag$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 14:27
S18	205	S17 and @ay<="2001"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 14:27
S19	6	S16 and S18	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 14:27
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S23	67	("20020091696" | "20020198985" | "20030167213" | "20050182709" | "5276776" | "5423032" | "5603021" | "5737592" | "5838965" | "5894311" | "5999944" | "6014661" | "6026397" | "6058385" | "6097888" | "6206388" | "6240407" | "6256030" | "6314562" | "6317750" | "6349307" | "6356920" | "6366915" | "6370537" | "6370549" | "6373504" | "6421656" | "6460059" | "6470349" | "6493717" | "6505246" | "6507856" | "6591272" | "6594653" | "6615258" | "6629094" | "6635089" | "6745384" | "6912293").PN. OR ("7249328").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 14:38
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S26	6	S25 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 14:39
S27	86	US-4674043-$.DID. OR US-5276776-$.DID. OR US-5339392-$.DID. OR US-5423032-$.DID. OR US-5603021-$.DID. OR US-5737592-$.DID. OR US-5754939-$.DID. OR US-5822587-$.DID. OR US-5838906-$.DID. OR US-111998D-$.DID. OR US-5838965-$.DID. OR US-5894311-$.DID. OR US-5913214-$.DID. OR US-5917485-$.DID. OR US-5920828-$.DID. OR US-5948113-$.DID. OR US-5950196-$.DID. OR US-5956737-$.DID. OR US-5974413-$.DID. OR US-5999944-$.DID. OR US-6014661-$.DID. OR US-6026388-$.DID. OR US-6026397-$.DID. OR US-6034676-$.DID. OR US-6058385-$.DID. OR US-6065026-$.DID. OR US-6092036-$.DID. OR US-6097888-$.DID. OR US-6108662-$.DID. OR US-6121924-$.DID. OR US-6134563-$.DID. OR US-6160549-$.DID. OR US-6167409-$.DID. OR US-122000D-$.DID. OR US-6173284-$.DID. OR US-6195676-$.DID. OR US-6199046-$.DID. OR US-6199080-$.DID. OR US-6206388-$.DID. OR US-6223189-$.DID. OR US-6240407-$.DID. OR US-6243698-$.DID. OR US-6256030-$.DID. OR US-6317750-$.DID. OR US-6314562-$.DID. OR US-6349307-$.DID. OR US-6351755-$.DID. OR US-6356920-$.DID. OR US-6366915-$.DID. OR US-6370549-$.DID. OR US-6370537-$.DID. OR US-6373504-$.DID. OR US-6374274-$.DID. OR US-6418433-$.DID. OR US-6421656-$.DID. OR US-6421822-$.DID. OR US-6460059-$.DID. OR US-1012002-$.DID. OR US-6470349-$.DID. OR US-6493717-$.DID. OR US-6505246-$.DID. OR US-6507856-$.DID. OR US-6581068-$.DID. OR US-6591272-$.DID. OR US-6594653-$.DID. OR US-6615258-$.DID. OR US-6629094-$.DID. OR US-6635089-$.DID. OR US-6667747-$.DID. OR US-	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:03

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S29	8	S28 and S16	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:17
S30	7	S28 and S17	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:17
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S32	9130	(xml$1 or mark$1up$1) near2 (source$3 or databas$4 or reposito$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:40
S33	397	S32 and S31	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:40
S34	50	S17 and S33	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:40
S35	3373	(((merg$4 or combin$4 or assemb$4 or join$4) near3 (xml$1 or mark$1up$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:41
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S37	2080	(((dynami$4 or automa$4) near3 (genera$4 or produc$4)) same (xml$1 or mark$1up))	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:50
S38	3282	(((dynami$4 or automa$4) near3 (genera$4 or produc$4)) same (xml$1 or mark$1up or html$1 or sgml$3))	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:51
S39	576	S38 and S32	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:51
S40	504	S39 not S36	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:52

S41	172	S40 and @ay<="2002"	US-PGPUB; USPAT; USOCR	OR	OFF	2011/07/27 15:52
S42	3373	(((merg$4 or combin$4 or assemb$4 or join$4 or aggregat) near3 (xml$1 or mark$1up$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S43	3871	(((merg$4 or combin$4 or assemb$4 or join$4 or aggregat$3) near3 (xml$1 or mark$1up$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S44	3878	(((merg$4 or combin$4 or assemb$4 or join$4 or aggregat$4) near3 (xml$1 or mark$1up$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S45	7	S44 not S43	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S46	505	S44 not S35	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 15:59
S47	0	S46 and (reslove$4 near2 confli$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 16:00
S48	14	S46 and (resol$4 near2 confli$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/27 16:01
S49	1	("6507856").PN.	USPAT; USOCR	OR	OFF	2011/07/27 20:10
S50	20	(display$3 near2 (XML or mark$1up)) same (chart$2)	USPAT	OR	OFF	2011/07/28 11:05
S51	51	((display$3 or show$4 or render$4) near2 (XML or mark$1up)) same (chart$2)	USPAT	OR	OFF	2011/07/28 11:07
S52	376	((display$3 or show$4 or render$4) near2 (XML or mark$1up)) same (chart$2 or graph$4 or spread$1sheet$2)	USPAT	OR	OFF	2011/07/28 11:08
S53	53	((display$3 or show$4 or render$4) near2 (XML or mark$1up)) near3 (chart$2 or graph$4 or spread$1sheet$2)	USPAT	OR	OFF	2011/07/28 11:09
S54	431	((xml$1 or mark$1up$1) near2 (data$4)) same (chart$2 or graph$2)	USPAT	OR	OFF	2011/07/28 11:10
S55	74	((xml$1 or mark$1up$1) near2 (data$4)) near2 (chart$2 or graph$2)	USPAT	OR	OFF	2011/07/28 11:10
S56	168	((xml$1 or mark$1up$1) near2	US-PGPUB;	OR	OFF	2011/07/28

		(data$4)) near2 (chart$2 or graph$2)	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB			11:11
S57	213	(((xml$1 or mark$1up$1 or html$1) near2 (data$4)) near2 (chart$2 or graph$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:14
S58	1529	((xml$1 or mark$1up$1 or html$1)) near2 (chart$2 or graph$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:14
S59	1	((xml$1 or mark$1up$1 or html$1)) near2 ((chart$2 or graph$2) and tree and spread$1sheet$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:14
S60	183	((xml$1 or mark$1up$1 or html$1)) same ((chart$2 or graph$2) and tree and spread$1sheet$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:15
S61	19296	((xml$1 or mark$1up$1 or html$1)) same ((chart$2 or graph$2) or spread$1sheet$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:23
S62	10106	(((xml$1 or mark$1up$1 or html$1)) same ((chart$2 or graph$2) or spread$1sheet$2)) same (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:23
S63	1031	(((xml$1 or mark$1up$1 or html$1)) near2 ((chart$2 or graph$2) or spread$1sheet$2)) same (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:24
S64	217	(((xml$1 or mark$1up$1 or html$1)) near2 ((chart$2 or graph$2) or spread$1sheet$2)) near2 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:24
S65	42	(((xml$1 or mark$1up$1 or html$1)) near2 (spread$1sheet$2)) near2 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:49
S66	754	(((xml$1 or mark$1up$1 or html$1))	US-PGPUB;	OR	OFF	2011/07/28

		near2 (spread$1sheet$2 or table$1 or colum$2)) near2 (view$4 or render$4 or display$4 or show$4)	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB			11:50
S67	403	(((xml$1 or mark$1up$1 or html$1)) near1 (spread$1sheet$2 or table$1 or colum$2)) near2 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:50
S68	224	(((xml$1 or mark$1up$1 or html$1)) near1 (spread$1sheet$2 or table$1 or colum$2)) near1 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:50
S69	106	(((xml$1 or mark$1up$1 or html$1)) near1 (tree)) near1 (view$4 or render$4 or display$4 or show$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 11:59
S70	43	(((xml$1 or mark$1up$1 or html$1)) near1 (tree$1)) near1 (view$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:01
S71	46	(((xml$1 or mark$1up$1 or html$1)) near1 (tree$1 or dom)) near1 (view$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:02
S72	46	(((xml$1 or mark$1up$1 or html$1)) near1 (tree$1 or dom or (document adj object adj model))) near1 (view$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:02
S73	130	(((xml$1 or mark$1up$1 or html$1)) near1 (tree$1 or dom or (document adj object adj model))) near1 (view$4 or show$4 or display$4 or render)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:02
S74	87	S73 not S70	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:02
S75	1381	(xml$1) near1 (tree$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:03
S76	53	S75 and @ay<="2000"	US-PGPUB;	OR	OFF	2011/07/28

			USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB			12:03
S77	197	((xml$1) near1 (tree$1)) same (displa$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:05
S78	6	S77 and @ay<="2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/07/28 12:05
S79	1953	(combin$2 near2 (xml$1 or mark$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 14:32
S80	80	S79 and @ay="2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 14:33
S81	799	(combin$2 near2 (xml$1 or mark$1up))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 14:35
S82	35	S81 and @ay="2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 14:35
S83	3043	(((generat$4 or produce$4) near2 (xml$1 or mark$1up$2)) same (data$1base$4 or reposit$4 or stora$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 15:49
S84	4310	(((generat$4 or produce$4) near2 (xml$1 or mark$1up$2)) same (data$1base$4 or reposit$4 or stor$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 15:49
S85	383	((((generat$4 or produce$4) near2 (xml$1 or mark$1up$2)) same (data$1base$4 or reposit$4 or stor$4)) same (dynami$4 or automa$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 15:50
S86	21	S85 and @ay<="2000"	US-PGPUB;	OR	OFF	2011/08/01

			USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB			15:50
S87	809	((mark$1up$1 or html$1 or xml$1) near2 (tree$2)) same (view$4 or display$4 or render$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:15
S88	63	S87 and @ay<="2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:15
S89	3322	((mark$1up$1 or html$1 or xml$1) near2 (tree$2 or structur$4)) same (view$4 or display$4 or render$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:28
S90	163	S89 and @ay<"2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:28
S91	121	S90 not S88	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:28
S92	1269	((mark$1up$1 or html$1 or xml$1) near2 (tree$2 or dom$4)) same (view$4 or display$4 or render$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:31
S93	1322	((mark$1up$1 or html$1 or xml$1) near2 (tree$2 or (dom or (document adj object adj model$1)))) same (view$4 or display$4 or render$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:31
S94	45	S93 and @ay<"2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:32
S95	16	foot$1note$2 near2 (xml$1 or mark$1up$1 or html$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 16:43
S96	10356	(black$1jack$1)	US-PGPUB;	OR	OFF	2011/08/01

			USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB			17:39
S97	19	(black$1jack$1) near2 (simulatio$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/01 17:39
S98	4	(("5748188") or ("6148330") or ("6314424") or ("6535896")).PN.	USPAT; USOCR	OR	OFF	2011/08/01 18:46
S99	5	(("5748188") or ("6148330") or ("6314424") or ("6535896") or ("6507856")).PN.	USPAT; USOCR	OR	OFF	2011/08/01 18:46
S100	2791	(recei$$ or send$4) near2 (meta$1data$1 or (numerical$4 near2 (data$1 or value$4 or information$4)))	USPAT	OR	OFF	2011/08/02 13:23
S101	2675	(convert$4) near2 (mark$1up$1 or html$1 or xml$1)	USPAT	OR	OFF	2011/08/02 13:23
S102	37	S101 and S100	USPAT	OR	OFF	2011/08/02 13:23
S103	3335	((dynamic$4 or automat$4) near2 (genera$4 or produc$4 or creat$4 or make$4)) same (xml$1 or mark$1up$1 or html$1)	USPAT	OR	OFF	2011/08/02 13:27
S104	1042	(combin$4 or merg$4 or assembl$4) near2 (xml$1 or markup1 or html$1)	USPAT	OR	OFF	2011/08/02 13:28
S105	223	S104 and S103	USPAT	OR	OFF	2011/08/02 13:28
S106	9219	((dynamic$4 or automat$4) near2 (genera$4 or produc$4 or creat$4 or make$4)) same (xml$1 or mark$1up$1 or html$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/02 13:30
S107	3056	(combin$4 or merg$4 or assembl$4) near2 (xml$1 or markup1 or html$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/02 13:30
S108	543	S107 and S106	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/02 13:30
S109	57	S108 and @ay<"2000"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/02 13:30
S110	89	(convert$4 or transform$4) near2 (flat$4 and (xml$1 or mark$1up$1 html$1))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/02 14:07
S111	6132	(convert$4 or transform$4) near2 ((flat$4 or data$2 or information$4)	US-PGPUB; USPAT;	OR	OFF	2011/08/02 14:09

		and (xml$1 or mark$1up$1 html$1))	EPO; JPO; DERWENT; IBM_TDB			
S112	1	("6249291").PN.	USPAT; USOCR	OR	OFF	2011/08/03 14:22
S113	1	(08/515057).APP.	USPAT; USOCR	OR	OFF	2011/08/03 16:14
S114	198	(((generat$4 or creat$4 or make$2 or produc$4) near2 (xml$1 or mark$1up$1 or html$1)) same ((raw$1 or flat$4 or un$1structu$4) same (data$2 or information$4 or content$4))	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:02
S115	56	S114 and @ay<"2000"	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:02
S116	8	((merg$4 or combin$4 or assembl$4) near2 (xml$1 or mark$1up$1 or html$1)) same ((raw$1 or flat$4 or un$1structu$4) same (data$2 or information$4 or content$4))	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:07
S117	23	((merg$4 or combin$4 or assembl$4) near2 (xml$1 or mark$1up$1 or html$1 or tag$1)) same ((raw$1 or flat$4 or un$1structu$4) same (data$2 or information$4 or content$4))	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:08
S118	169	((merg$4 or combin$4 or assembl$4) near2 (xml$1 or mark$1up$1 or html$1 or tag$1 or structure$4)) same ((raw$1 or flat$4 or un$1structu$4) same (data$2 or information$4 or content$4))	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:08
S119	146	S118 not S117	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:09
S120	161	S118 not S116	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:09
S121	115	((map$4) near2 (xml$2 or mark$1up$1 or html$1)) same (data$3 near2 (sourc$4 or database$4))	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:15
S122	1958	(variabl$4) near2 (document$4)	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:18
S123	389	S122 and (XML or html$2 or mark$1up)	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:19

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S124	67	S123 and @ay<"2000"	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:19
S125	493	((variabl$4) near2 (document$4)) same (gener$4 or produ$3 or mark$3)	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:20
S126	23	S125 and S124	USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/08/03 18:20
S127	0	(12/222751).APP.	USPAT; USOCR	OR	OFF	2011/08/04 16:34
S128	0	(12/222752).APP.	USPAT; USOCR	OR	OFF	2011/08/04 16:35
S129	1	(09/573778).APP.	USPAT; USOCR	OR	OFF	2011/08/04 16:36
S130	1	("6507856").PN.	USPAT; USOCR	OR	OFF	2011/08/05 12:59
S131	1	("6199046").PN.	USPAT; USOCR	OR	OFF	2011/08/05 13:01
S132	1	(12/222751).APP.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 06:53
S133	43	(((associat$4 or merge$4) near2 (numerical$4)) same (data$4)) same (xml$3 or tag$1 or mark$1up$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 07:13
S134	182551	((combin$4 or merg$4) near3 (data$4 or numbers$4 or numerical$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 08:41
S135	21387	(produc$4 or generat$4) near2 (xml$1 or mark$1up or html$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 08:42
S136	2851	S135 and S134	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 08:42
S137	142816	((combin$4 or merg$4) near2 (data$4 or numbers$4 or numerical$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 08:42
S138	2322	S137 and S136	US-PGPUB;	OR	OFF	2012/01/23

			USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB			08:43
S139	12275	((produc$4 or generat$4) near2 (xml$1 or mark$1up or html$1)) same (document$3 or file$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 08:43
S140	1377	S139 and S138	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 08:43
S141	30172	(((produc$4 or generat$4 or make$4 or spawn$4 or creat$4) near3 (html$1 or mark$1up$1 or xml$1)) same (document$4 or fil$4 or pag$4))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 09:36
S142	30646	(((produc$4 or generat$4 or make$4 or spawn$4 or creat$4) near3 (html$1 or mark$1up$1 or xml$1)) same (document$4 or fil$4 or pag$4 or templat$4))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 09:36
S143	3296	(combin$4 or merg$4) near4 (xml$1 or mark$1up$1 or html$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 09:37
S144	403	(xml$1 or html$1 or mark$1up$1) near3 (ontolog$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 09:37
S145	11	S144 and S143 and S142	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 09:38
S146	6	((transla$4 or tranform$4) near3 (flat$1file$2)) same (xml$1 or mark$1up$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 10:36
S147	13	((transla$4 or tranform$4 or convert$4) near3 (flat$1file$2)) same (xml$1 or mark$1up$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/23 10:37
S148	27	("20020129059"	"20020161749"		US-PGPUB;	OR	OFF	2012/01/23

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		"20020178103" | "20030088543" | "20030130845" | "20030225770" | "20040088320" | "20040139111" | "20040153405" | "20040177062" | "20040186840" | "20040205562" | "20050091639" | "20050108057" | "20050114479" | "20050138048" | "20050222996" | "20050268217" | "20050273365" | "20060064428" | "20060101058" | "20060161840" | "20060179067" | "20070198539" | "6836890" | "6996589" | "7421458").PN.	USPAT; USOCR			10:38
S149	1991	((select$4) near2 (tag$2)) same (value$2)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 11:18
S150	6	((select$4) near2 (mark$1up near3 tag$2)) same (value$2)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 11:18
S151	4821	((assign$4) near3 (tag$1)) same (value$3 or number$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 11:19
S152	8	((assign$4) near3 (mark$1up$1 same tag$1)) same (value$3 or number$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 11:19
S153	62	((assign$4) near3 ((mark$1up$1 or xml$1 or html$1) same tag$1)) same (value$3 or number$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 11:20
S154	14	((assign$4 or select$4) near2 ((numerical$4 or valu$4 or number$4) same serie$4)) same meta$1data	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 13:09
S155	14	((assign$4 or select$4) near2 ((numerical$4 or valu$4 or number$4) same serie$4)) same meta$1data$1	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 13:09
S156	0	((cell$1) near2 (format$3)) near3 (number same serie$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 13:58
S157	226	((cell$1) near2 (format$3)) same (spread$1sheet$1)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 13:59
S158	99	(numerical$2) near2 (meta$1data)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 14:54
S159	0	((xml$1) near2 (numerical$3)) same (meta$1data)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 14:55
S160	41	((xml$1) near2 (number$3)) same (meta$1data)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 14:55
S161	3951	(numerical) near3 (series or list$1)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 14:57
S162	216	((numerical) near3 (series or list$1)) same (meta$1data$1 or characterist$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 14:57
S163	160	(real$1time$2) near2 (annotation$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 15:12

S164	44	((real$1time$2) near2 (annotation$4)) and sharin$4	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/23 15:12
S165	29	US-5581686-$.DID. OR US-20010018694-$.DID. OR US-6621505-$.DID. OR US-6631402-$.DID. OR US-5953724-$.DID. OR US-6434541-$.DID. OR US-5983247-$.DID. OR US-20030140045-$.DID. OR US-6424980-$.DID. OR US-5721847-$.DID. OR US-5371675-$.DID. OR US-5008853-$.DID. OR US-6910017-$.DID. OR US-5461708-$.DID. OR US-5907820-$.DID. OR US-6014643-$.DID. OR US-6075530-$.DID. OR US-6714201-$.DID. OR US-6408430-$.DID. OR US-5530942-$.DID. OR US-5701400-$.DID. OR US-6339767-$.DID. OR US-5987469-$.DID. OR US-20030078883-$.DID. OR US-6446048-$.DID. OR US-7421648-$.DID. OR US-7512875-$.DID. OR US-7401076-$.DID. OR US-20090089657-$.DID.	US-PGPUB; USPAT	OR	OFF	2012/01/23 16:19
S166	10	S165 and (xml or mark$1up)	US-PGPUB; USPAT	OR	OFF	2012/01/23 16:21
S167	1	(08/902293).APP.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/24 15:37
S168	15558	(tranform$4 or conver$4 or translat$4) near3 (xml$1 or mark$1up$1 or html$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 16:30
S169	2891	(combin$4 or merg$4) near3 (xml$1 or html$1 or mark$1up$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 16:31
S170	949	S169 and S168	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 16:31
S171	128	S170 and @ay<"2001"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 16:32
S172	107549	(xml$1 or html$1 or mark$1up$1 or sgml$1) near2 (languag$4 or vocabu$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 16:46
S173	124	S172 and S171	US-PGPUB; USPAT; FPRS;	OR	OFF	2012/01/24 16:46

			EPO; JPO; DERWENT; IBM_TDB			
S174	707	((transform$4 or transfor$4 or convert$4) near2 (numerical$4 or number or value$4)) same (xml$1 or html$1 or mark$1up$1 or html$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 17:11
S175	894	((transform$4 or translat$4 or convert$4) near2 (numerical$4 or number or value$4)) same (xml$1 or html$1 or mark$1up$1 or html$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 17:11
S176	83	S175 and @ay<"2001"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 17:12
S177	5402	((numerical$4) near2 (values$4)) same (format$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:02
S178	265	(combin$4 or merg$4) near2 (numerical$4 same value$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:02
S179	0	S178 and S167	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:02
S180	29	S178 and S177	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:02
S181	6024	((numerical$4) near2 (values$4)) same (format$4 or styl$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:05
S182	67	(((numerical$4) near2 (values$4)) same (format$4 or styl$4)) same (tag$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:05
S183	2454	(combin$4 or merg$4 or join$4 or fus$4) near2 (xml$1 or mark$1up$1 or html$1 or sgml$1)	US-PGPUB; USPAT; FPRS;	OR	OFF	2012/01/24 18:10

			EPO; JPO; DERWENT; IBM_TDB			
S184	280	S183 and @ay<"2001"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:10
S185	422004	(value$4 or number$4 or numerica$4 or digi$4) near3 (tags or meta$1data$1 or tag or mark$1up$1 or characteris$4 or descript$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:12
S186	78	S185 and S184	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/24 18:12
S187	1661	((combin$4 or merg$4) near2 (data$1 near3 set$3)) same (differ$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 12:36
S188	268	S187 and @ay<"2001"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 12:37
S189	7	(xml$1 or mark$1up$1 or html$1) and S188	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 12:37
S190	113	("5235654" | "5339392" | "5491820" | "5623656" | "5664207" | "5666490").PN. OR ("5784562").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 12:54
S191	85	S190 and (mark$1up$1 or html$1 or xml$1 or sgml$1 or (name adj3 valu$3 adj pai$3))	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 12:55
S192	66	S191 and (combin$4 or merg$4 or transform$4 or translat$4)	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 12:56
S193	40	S191 and ((combin$4 or merg$4 or transform$4 or translat$4) same (data$4 or number$4 or value$4 or digit$4))	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 12:57
S194	1	(12/222752).APP.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 13:38
S195	1	(09/573778).APP.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 13:39
S196	1	("6223189").PN.	US-PGPUB;	OR	OFF	2012/01/25

			USPAT; USOCR			13:51
S197	0	(63/397967).APP.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 13:54
S198	1	("6339767").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 13:54
S199	1	("5461708").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 14:03
S200	2	(("6621505") or ("5581686")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 14:12
S201	16518	((transfor$4 or translat$4 or convert$4) near3 (numerical$4 or number$2 or value$4)) same (format$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:17
S202	5336	S201 and @ay<"2001"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:18
S203	252	((format$4) near2 (numerical$4 or values$4 or numbers$4)) same (uniform$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:19
S204	13	S203 and S202	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:20
S205	39449	(translat$4 or convert$4 or transform$4) near3 (measuremen$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:23
S206	69	S187 and S205	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:24
S207	1427	((data$4) near3 (conver$4 or transla$4)) same (metric$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:26
S208	5	S207 and S187	US-PGPUB; USPAT; FPRS; EPO; JPO;	OR	OFF	2012/01/25 14:26

			DERWENT; IBM_TDB			
S209	7865	((combin$4 or merg$4) near2 (data$1 near3 set$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:27
S210	17	S209 and S207	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 14:27
S211	123	((combin$4 or merg$4) near3 (document$4 or xml$1 or sgml$1 or html$1)) same (differen$4 near2 format$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:15
S212	13187	((combin$4 or merg$4) near3 (document$4 or xml$1 or sgml$1 or html$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:24
S213	13501	((combin$4 or merg$4) near3 (document$4 or xml$1 or sgml$1 or html$1 or mark$1up$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:24
S214	31341	((combin$4 or merg$4 or join$4 or fus$4) near3 (web$1document$4 or web$1pag$4 o or xml$1 or sgml$1 or html$1 or mark$1up$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:26
S215	3690	((combin$4 or merg$4 or join$4 or fus$4) near3 (web$1document$4 or web$1pag$4 or xml$1 or sgml$1 or html$1 or mark$1up$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:26
S216	4811	((combin$4 or merg$4 or join$4 or fus$4 or assemble$4) near3 (web$1document$4 or web$1pag$4 or xml$1 or sgml$1 or html$1 or mark$1up$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:27
S217	14160	((web$1document$4 or web$1pag$4 or xml$1 or sgml$1 or html$1 or mark$1up$1)) same ((format$4 or style$4 or type$4 or languag$4) near2 (differ$4 or disimi$4 or unlike$4))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:28
S218	61916	((web$1document$4 or web$1pag$4 or xml$1 or sgml$1 or html$1 or mark$1up$1)) same (numerical$4 or numbers$4 or value$4 or digit$4 or	US-PGPUB; USPAT; FPRS; EPO; JPO;	OR	OFF	2012/01/25 15:30

		measuremen$4 or metric$4 or sum$4 or total$4)	DERWENT; IBM_TDB			
S219	857	S218 and S217 and S216	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:31
S220	107	S219 and @ay<"2001"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:33
S221	38	(rdml or (reusable adj marke$1up))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 15:58
S222	17585	((translat$4 or transfor$4 or convert$4) near3 (web$1document$4 or web$1pag$4 or xml$1 or sgml$1 or html$1 or mark$1up$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 17:12
S223	0	S222 and ls216	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 17:13
S224	4811	((combin$4 or merg$4 or join$4 or fus$4 or assemble$4) near3 (web$1document$4 or web$1pag$4 or xml$1 or sgml$1 or html$1 or mark$1up$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 17:13
S225	1567	S222 and S224	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 17:13
S227	198	S225 and @ay<"2001"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 17:13
S228	106	S225 and @ay<"2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/25 17:14
S229	59	("4807182" | "5956726" | "6098071" | "6119124" | "6343265" | "6407753" | "6446081").PN. OR ("6502112").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 17:21
S231	9	S229 and @ay<"2000"	US-PGPUB;	OR	OFF	2012/01/25

			USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB			17:22
S232	1	(09/573780).APP.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/25 18:06
S237	2	(copy$4 and past$4) near3 (numerical$4 same value$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:07
S238	111	(copy$4 and (paste or pasting)) near3 (number$2 or values$3 or numeral$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:08
S239	182	(cop$4 and (paste or pasting)) near3 (number$2 or values$3 or numeral$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:09
S240	1625	(merge$4)near3 (format$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:09
S241	1625	(merge$4) near3 (format$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:09
S242	0	S241 and S239	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:09
S243	1207	(cop$4 and (paste or pasting)) near3 (number$2 or values$3 or numeral$3 or text$2)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:10
S244	3	S243 and S241	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:10
S245	5077	(merge$4 or keep$2) near3 (format$4)	US-PGPUB; USPAT; FPRS; EPO; JPO;	OR	OFF	2012/01/26 11:11

			DERWENT; IBM_TDB			
S246	16	S245 and S243	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:11
S247	2362	(cop$4 and (paste or pasting)) near3 (number$2 or values$3 or numeral$3 or text$2 or character$4 or conten$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:14
S248	26	S247 and S245	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:14
S249	10	S248 not S246	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:15
S250	140	((cop$4 and (paste or pasting)) near3 (number$2 or values$3 or numeral$3 or text$2 or character$4 or conten$4)) same (mark$1up$1 or xml$1 or html$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:16
S251	118161	((transform$4 or translat$4 or convert$4) near3 (text$2 or character$4 or number$2 or digit$4 or numeral$2)) same (format$4 or styl$4 or font$2 or color$2 or size$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:28
S252	5738	(paste or pastin$4) near3 (text$2 or number$2 or numeral$2 or character$4 or digit$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:29
S253	483	S252 and S251	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:29
S254	53	S253 and @ay<"2000"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/01/26 11:29
S255	2	(("5956737") or ("5838906")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/01/26 12:18
S256	1	(09/573780).APP.	US-PGPUB;	OR	OFF	2012/01/26

			USPAT; USOCR			14:26

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... static information such as appearance items, formulas, diagram and etc.) and its **markup** (including
into ... 4. Generation of "FROM" query part: - **merge** of queries obtained on step 3 of this algorithm
for each entity from set JoinLinked with aid of indicated join type (LEFT JOIN ...
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for grouping data items according to their semantics, and specifying **combined** semantic
compressors. ... start by illustrating with a very simple, but quite useful example: Web Log files. ...
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Web-centric business process modelling
A Rainer - International journal of electronic business, 2004 - Inderscience
... If, for example, the **merge** activity had been modelled as an OR-Join it was enabled as ... in such
details that add no value to their business process, such as the **document merge** activity in ... 14
DAML, Darpa **Markup** Language (2003) http://www.daml.org (last visited August 26, 2003 ...
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K Taghva, T Nartker ... - ... workshop on Hardcopy **document** ..., 2004 - dl.acm.org
... For example, the Hypertext **Markup** Language (HTML) (derived from SGML[5]) is a common **format**
used ... r replace word, find confusions b backward join (**merge** previous word) j forward join (**merge**
next word ... the tagging applied by the HMM because the order of the tags did not ...
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... contains all terms related to alliance such as "joint venture", "strategic alliance", "**combined**
initiative" etc ... of the information present in the **documents** is not captured by the tags and thus
is ... on new collections without any preparation, as well as the ability to **merge** several distinct ...
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A comparison of business process modeling methods
W Wang, H Ding, J Dong... - Service Operations and ..., 2006 - ieeexplore.ieee.org
... Join node is for synchronous **combine** ofinputs, whereas **merge** node is for asynchronous ...
divergence and convergence of sequence flow, just like traditional decision, **merge**, fork andjoin. ...
Most ofthe models adopt XML (Extensible **Markup** Language) as their serial representation ...
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Cardholm, LL. M. Working Group Authenticity and Security, **XBRL** Sweden ...

[PDF] **XBRL, Financial Reporting, and Auditing**
info.cba.ksu.edu/.../XBRL%20Articles/XBRLFinancialReportingAudt...
File Format: PDF/Adobe Acrobat - Quick View
by RY Shin - 2003 - Cited by 7 - Related articles
Dec 31, 1998 - Extensible Business Reporting Language (**XBRL**) was developed by a
consortium ... The purpose of this article is to present an overview of **XBRL** as well as
the ...

[PDF] **Analysis of XBRL Literature: A Decade of Progress and Puzzle**
www.uhu.es/ijdar/10.4192/1577-8517-v10_6
File Format: PDF/Adobe Acrobat - Quick View
Oct 14, 1999 - The objective of this paper is to examine a decade (1998-2008) of
XBRL articles ... goal is to assess public perceptions of **XBRL**, its capabilities and its
future.

[PDF] **THE ROLE OF XBRL IN EBR The Role of XBRL in Enhanced ...**
www.uhu.es/ijdar/documentos/DARC06/Virginia.pdf
File Format: PDF/Adobe Acrobat - Quick View
Apr 7, 1997 - 1. THE ROLE OF **XBRL**. IN EBR. Enrique Bonsón Ponte
(bonson@uhu.es) Virginia Cortijo Gallego (virginia.cortijo@decd.uhu.es) Tomas
Escobar Rodriguez ...

Item 601 -- Exhibits
www.law.uc.edu/CCL/regS-K/SK601.html
Jul 15, 1998 - (99) Additional exhibits, X, X, X, X, X, X, X, X, X, X, X, X. (100) **XBRL**
-Related Documents, x. x, x, ---. x, x, x. x, ---, X, ---, X, X. (101) Interactive Data File, x,
x, x, x ...

XBRL: News [Page 9] - Business Exchange
bx.businessweek.com/xbrl/news/page9/
Jan 1, 1970 - **XBRL** - updated news and articles. Find the latest **XBRL** information for
business professionals. Given that SEC has recently mandated the use of **XBRL** (or ...

Download Xbrl converter free 1 - 1 softwares - YankeeDownload.com
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Mar 1, 1997 - 1 downloads - **Xbrl** converter freeware and **Xbrl** converter shareware.
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www.yankeedownload.com/info/xbrl-tool.html
Mar 1, 1997 - 3 downloads - **Xbrl** tool freeware and **Xbrl** tool shareware. Get the **xbrl**
tool free trials ordered by download popularity.

XBRL
www.xbrl.org.tw/ - Translate this page
Sep 28, 1998 - **XBRL**可以解決臺灣和國外財報格式不一致的問題，也能讓財報資料很
容易再製造，對投資人、發行公司、監管者、整體市場都有利。**XBRL**的推動，我們從
資本市場 ...

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Search

Page 2 of about 600,000 results (0.43 seconds)

Any time–Dec 31, 1999

Everything
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Past week
Past month
Past year
Custom range...
From:
To: 12/31/1999
ex: 9/23/2004
Search

Sorted by relevance
Sorted by date

All results
Sites with images
Related searches
Dictionary
Reading level
Nearby
Translated foreign pages
Verbatim

Reset tools

[PDF] MIL-PRF-28001C -- Final
www.navsea.navy.mil/nswc/carderock/tedinfsys/cal-std/.../28001c.pdf
File Format: PDF/Adobe Acrobat
May 2, 1997 - **document** so that the **produced** (printed or displayed) copy
corresponds to the .... syntax, optional features, and capacity requirements of a
document's markup. ... and FOSIs existing for the types of **data** being acquired, they
should be used. ..... A style sheet **combining** all the elements' style information as
well as some page ...

<ETD> Electronic Thesis an...
etd.vt.edu/etd-ml/userguid.htm
Mar 9, 1997 - Electronic Thesis and Dissertation **Markup** Language (ETD-ML) ... The
system determines how to format the **data** and where the links go. ... First, in your **file**
"thesis.etd" you **make** the **document** type declaration : <! .... Inevitably, software
developers would **join**, and inevitably, it would affect their writing in extreme ways .

The Evolution of Web Documents: The Ascent of XML, by Dan ...
xml.coverpages.org/connollyAscent.html
Sep 21, 1997 - HTML is the ubiquitous **data** format for Web pages; most information ...
It was designed to be reusable for batch processors to **produce** books, reports, and ...
This **markup** minimization erred on the side of making these **documents** easier to .....
And yet the ability to **combine** resources that were developed independently is an ...

[PDF] Language Information in Structured Documents: A Model for Ma...
www.tug.org/TUGboat/tb18-3/tb56lang.pdf
File Format: PDF/Adobe Acrobat - Quick View
by F Mittelbach - Cited by 7 - Related articles
Dec 1, 1997 - A Model for **Mark-up** and Rendering. Frank Mittelbach and ... LATEX,
please **join** the project's electronic discussion list. To do this ... **data** written in a
certain " language". These tags .... encoded in the source **document** but is **produced**
from tags ...

Hypertext Markup Language - 2.0 - RFC Editor
www.rfc-editor.org/rfc/rfc1866.txt
Sep 21, 1995 - Abstract The Hypertext **Markup** Language (HTML) is a simple
markup .... (HTML) is a simple **data** format used to **create** hypertext **documents** that
are portable from one .... An SGML **document** consists of **data** characters and
markup; the **markup** ..... If multiple META elements are provided with the same name,
their **combined** ...

[PDF] **Markup** Enhancement: Converting CEE Dictionaries into TEI, an...
www.cs.vassar.edu/~ide/papers/complex99-final.pdf
File Format: PDF/Adobe Acrobat - Quick View
by T z Erjavec - 1999 - Cited by 1 - Related articles
Aug 24, 1999 - This paper describes the process of **markup** enhancement for six Cen-
tral and Eastern European ... ing **produced** by the Slovene publishing house DZS, and
based on ... translating from original DZS SGML **documents** into a TEI dictionary
document and ... cialized DTD that can serve as a general model for lexical **data**,
and ...

Frequently-Asked Questions about the Extensible **Markup** Language ...
xml.silmaril.ie/faq.html
Feb 10, 1998 - When you **join** a mailing list you will be sent details of how to use it. ...
XML allows authors and providers to design their own **document markup** instead of
being ... An application is free to use the **data to produce** an image of the part,
generate a ...

[PDF] An RDF Editor and Portal for the Semantic Web
citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.58...rep...
File Format: PDF/Adobe Acrobat - Quick View
by A Kalyanpur - Cited by 2 - Related articles
Feb 22, 1999 - **combines** WYSIWIG HTML editing with a semantic web portal for
guided ... mechanism for presenting **data** to human users. While ... Web allows users
to **create** precise, unambiguous ... semantically **markup** their **documents**, we need a
tool ...

Empty elements in SGML, HTML, XML, and XHTML
www.cs.tut.fi/~jkorpela/html/empty.html
Dec 15, 1997 - More importantly, it illustrates the implications of the decision to **make**
HTML ... People who try write HTML **documents** so that conform to XHTML ... The
validator regards the ">" character as character **data**, which of course is not ... Note
that although **markup** is sequential, linear, it is intended to express tree-like
structures .

How to Write Doc Comments for the Javadoc Tool
www.oracle.com/technetwork/.../documentation/index-137868.html
Feb 28, 1997 - This **document** describes the style guide, tag and image conventions
we use in ... When this applet attempts to draw the image on * the screen, the **data** will
be loaded. ..... In general, if the **markup** is intended to affect or **produce**
documentation, ... **file** that The Javadoc tool will **merge** into the documentation that it
produces.

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include the **exact** words in your search.

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[PPT] Las Cuentas Anuales y el Registro Mercantil - **XBRL** España
www.xbrl.es/ivcongresoxbrl/.../Jose_Melendez_Re... - Translate this page
File Format: Microsoft Powerpoint - Quick View
May 26, 1999 - **XBRL** y el Depósito de Cuentas. Objetivo Básico: Facilitar la gestión
de la PYME. Comienza la presentación de depósitos en soporte papel incluyendo
los ...

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[PDF] **Computational Aspects of Resilient Data Extraction from ...**
www.cs.sunysb.edu/~kifer/TechReports/data-extraction.pdf
File Format: PDF/Adobe Acrobat - Quick View
by H Davulcu - Cited by 28 - Related articles
Computational Aspects of Resilient Data Extraction from **Semistructured
Sources**. *. (Extended Abstract). Hasan Davulcu. Guizhen Yang. Michael Kifer ...

[PS] **Computational Aspects of Resilient Data Extraction from ...**
www.cs.washington.edu/education/courses/cse591d/00sp/davulcu.ps
File Format: Adobe PostScript - View as HTML
by H Davulcu - Cited by 28 - Related articles
Computational Aspects of Resilient Data Extraction. from **Semistructured
Sources** . (Extended Abstract). Hasan Davulcu. Guizhen Yang. Michael Kifer ...

[PDF] **Computational Aspects of Resilient Data Extraction from ...**
www.public.asu.edu/~hdavulcu/pods00.pdf
File Format: PDF/Adobe Acrobat - Quick View
by H Davulcu - 2002 - Cited by 28 - Related articles
Computational Aspects of Resilient Data Extraction from **Semistructured
Sources**. (Extended Abstract). Hasan Davulcu. Guizhen Yang*. Michael Kifer ...

Computational aspects of resilient data extraction from ...
citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.128.6703
by H Davulcu - 2000 - Cited by 28 - Related articles
... Automatic **data extraction from semistructured sources** such ...
627 The Lorel Query Language for **Semistructured Data** - Abiteboul, Quass, et ...
442 Wrapper induction for information **extraction** - Kushmerick, Weld, et al ...

Computational aspects of resilient data extraction from semistru...
dl.acm.org/citation.cfm?id=335168.335216
by H Davulcu - 2000 - Cited by 28 - Related articles
Computational aspects of resilient data extraction from semistructured sources
(extended abstract). Published by ACM 2000 Article. Bibliometrics Data ...

Computational Aspects of Resilient Data Extraction from - Sciwe...
www.sciweavers.org/.../computational-aspects-resilient-data-extractio...
Aug 1, 2010 -- **Computational Aspects of Resilient Data Extraction from
Semistructured Sources**.

Computational Aspects of Resilient Data Extraction from - Arnet...
arnetminer.org/viewpub.do?pid=544978
Davulcu, H., Yang, G., Kifer, M., and Ramakrishnan, I.V. **Computational Aspects of
Resilient Data Extraction from Semistructured Sources**. In Proceedings of ...

PODS 2000: 135-144
www.informatik.uni-trier.de/~ley/db/conf/pods/DavulcuYKR00.html
**Computational Aspects of Resilient Data Extraction from Semistructured
Sources** ... Craig A. Knoblock: Wrapper Generation for Semi-structured Internet
Sources. ...

Protection Techniques from Information Extraction
ieeexplore.ieee.org › ... › Conferences › Web Intelligence. 2006. WI 200
by G Greco - 2006 - Cited by 1 - Related articles
Jan 15, 2007 -- Information extraction technologies meet the market need for ...
Aspects of Resilient Data Extraction from Semistructured Sources, PODS, 2000.

DBLife: Computational Aspects of Resilient Data Extraction from ...
dblife.cs.wisc.edu/.../Computational_Aspects_of_Resilient_Data_Extr...
Computational Aspects of Resilient Data Extraction from Semistructured
Sources. Bing Google Google Scholar Yahoo! Source: PODS. Year: 2000. Pages:
136- ...

1 2 3 4 5 6 7 8 9 10   **Next**

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Managing a digital library of legislation
Arnold-Moore, T.; Anderson, Ph.; Sacks-Davis, R.
 Corresp. Author/ Affil: Arnold-Moore, T.: RMIT
 Conference Title: Proceedings of the 1997 2nd ACM International Conference on Digital Libraries
 Conference Location: Philadelphia, PA, USA   **Conference Date:** 19970723-19970726
Sponsor: ACM
 E.I. Conference No.: 47163
 Proceedings of the ACM International Conference on Digital Libraries (Proc ACM Int Conf Digital Libr
) 1997 (175-183)
 Publication Date: 19970101
 Publisher: ACM
 Document Type: Conference Paper; Conference Proceeding   **Record Type:** Abstract
 Language: English   **Summary Language:** English
Number of References: 28

We provide an overview of the Themis system, a commercial implementation of a digital library of legislation. Themis uses **SGML** to store legislation. This allows a **single** source document to be exported in a **number** of **different formats** and presentations. Themis also allows access to different versions of legislation by specifying a point-in-time at which the law is required. We discuss how this is achieved in Themis and how versioning impacts the storage of fragments of documents and management of references within and between documents.

Conducting Internet inquiry projects: Comparing the motivation and achievement of two groups of high-school biology students
Author: Jones, Brett David   **Degree:** Ph.D.
Year: 1999
Corporate Source/ Institution: The University of North Carolina at Chapel Hill (0153)
Adviser: Gary B. Stuck
Source: Volume 6012A of Dissertations Abstracts International.
PAGE 4317 . 147 PAGES

    The purpose of this study was to determine how **different types** of Internet access and different **amounts** of online support affected high-school biology students' motivation and achievement during an Internet inquiry project. Four classes of ninth- and tenth-grade honors students (N = 100) participated in an Internet inquiry project in which they were presented with an ecology question that required them to make a decision based on information that they gathered, analyzed, and synthesized from the Internet and their textbook. Students then composed papers with a rationale for their decision. Students in **one** group had access to pre-selected relevant **Web sites**, unlimited access to the entire Internet, and were provided with less online support (less structured group). Students in the other group had access to only pre-selected relevant Web sites and were provided with more online support that included a description of what they should have been looking for once they got to a Web site and how much time they should have spent on each section of the project (more structured group). The hypotheses were that students in the less structured group would be more motivated due to their greater choice of Web sites, but would achieve less than the more structured group because, they would spend time searching the Internet. The study was also designed to provide recommendations to teachers interested in implementing effective Internet inquiry projects.
    Data sources included motivation questionnaires, ecology achievement tests, a computer

experience questionnaire, an ecology project questionnaire, students' ecology papers, time sheets, fieldnotes, and interviews with the teacher and the students. Surprisingly, students in the less structured group did not spend much time searching the Internet. This might explain why there were no significant differences in achievement between the two groups. Furthermore, students in both groups did not differ in their level of motivation. Two of the most important recommendations were: (1) to provide students with online support on the project Web page; and (2) to allow students to search the Internet for information in addition to providing them with pre-selected links to relevant Web sites.

Type checking higher-order polymorphic multi-methods
Author(s): Bourdoncle, F.[1]; Merz, S.
Affiliation(s):
[1] Centre de Math. Appliquees, Ecole des Mines de Paris, Valbonne, France
Book Title: Conference Record of POPL '97: The 24th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages
Inclusive Page Numbers: 302-15
Publisher: ACM, New York, NY
Country of Publication: USA
Publication Date: 1997
Conference Title: Proceedings of POPL '97: 24th ACM SIGPLAN-SIGACT
Conference Date: 15-17 Jan. 1997
Conference Location: Paris, France
Conference Sponsor: ACM
Number of Pages: viii+497
Language: English
Document Type: Conference Paper (PA)

Presents a new predicative and decidable type system, called $ML_{<=}$, that is suitable for languages that integrate functional programming and parametric polymorphism in the tradition of ML, and class-based object-oriented programming and higher-order multi-methods in the tradition of CLOS (Common Lisp Object System). Instead of using extensible records as a foundation for object-oriented extensions of functional languages, we propose to reinterpret ML datatype declarations as abstract and concrete class declarations, and to **replace** pattern matching on run-time **values** by dynamic dispatch on run-time types. $ML_{<=}$ is based on universally quantified polymorphic constrained types. Constraints are conjunctions of inequalities between monotypes built from type constructors organized into extensible and partially ordered classes. We give type checking rules for a small, explicitly-typed functional language in the style of **XML** with **multi**-methods, show that the resulting system has decidable minimal types and discuss subject reduction. Finally, we propose a new object-oriented programming language based on the $ML_{<=}$ type system. (*41 refs.*)

Multi-window internet search with webpage preload
Swahn, Alan Earl , USA
Document Type: Patent   **Record Type:** Abstract
Language: English

Methods are described to preload a **plurality** of **webpages** from a hyperlink list either previously saved or returned by **one** or more search engines, where said **webpages** are displayed on demand in a web browser. The web browser has been augmented to display **multiple webpages** simultaneously and to allow **changing** the **number** of webpages displayed. Any displayed portion of this **plurality** of **webpages** can be captured to a **standard** graphics **format** for later use. The viewing magnification

factor can be changed for this **plurality** of **webpages** both globally for preloaded webpages not displayed and selectively for displayed webpages. The hyperlinks associated with any portion of this **plurality** of **webpages** can be saved as a list of hyperlinks (group bookmark) for later retrieval. A queue of favorite webpages can be dynamically created from this **plurality** of **webpages** by selecting **one** or **more webpages** and having the associated hyperlinks to said selected webpages appended to a queue of hyperlinks which is available for preloading, display, or saved as a group bookmark.

15/3,K/1 (Item 1 from file: 275)
DIALOG(R)File 275: Gale Group Computer DB(TM)

Take a meeting in a virtual room on the Net. (Instinctive Technology's eRoom workgroup software) (Software Review)(Evaluation)(Brief Article)
Plain, Stephen W.
Windows Sources , v4 , n12 , p134(1)
Dec , 1997
Document Type: Evaluation Brief Article
Language: English   **Record Type:** Fulltext
Word Count: 614   **Line Count:** 00050

be shipping by the time you read this.
    eRoom is a tool strictly for closed workgroups. You specify who can participate in a workgroup, then **set** up virtual "rooms"--**Web pages** that contain a **number** of **different types** of objects: files, discussions, polls, announcements, and links to Web pages and other eRooms. You can set up Version Organizers that track documents and even...

15/3,K/2 (Item 2 from file: 275)
DIALOG(R)File 275: Gale Group Computer DB(TM)

InfoAccess' HTML Transit 2.0 is a champ at converting documents in bulk for the Web. (simple Web-authoring tool) (Software Review)(Brief Article)
Rapoza, Jim
PC Week , v13 , n41 , p102(2)
Oct 14 , 1996
Document Type: Brief Article
Language: English   **Record Type:** Fulltext
Word Count: 480   **Line Count:** 00040

select which document styles would represent the top two heading styles in the HTML document. We could configure it to break a long document into **several HTML** pages, and we could add specific text and E-mail addresses to the bottom of every page.
    After creating the template with this single document, we were able to **convert** a large **number** of documents that had **similar formatting.**
    The main interface offers many more configuration options, such as how to handle graphics, table of contents and indexes, and navigational buttons. However, all of...

15/3,K/6 (Item 1 from file: 148)
DIALOG(R)File 148: Gale Group Trade & Industry DB

NCM: Trade credit protection -- quotes via NCM'S website.
M2 Presswire , NA
April 13 , 1999
Language: English
Record Type: Fulltext
Word Count: 502   **Line Count:** 00044

mailing NCM a short proposal form.

NCM provides domestic and export credit insurance to companies of all sizes all over the world. Through its general **website**, www.ncm. **group**.com, businesses can obtain information on the benefits of credit insurance (including access to finance and to a database of worldwide business intelligence): multinationals can learn about the tailored global policy, available in nine different languages and nineteen **different currencies**; large to medium-sized organisations about the international policy specially formulated for their needs; and small and growing businesses about the Compact Policy.

"The credit...

Exhibit 1002_0795

/M.A./
01/27/2012

Bing

merge or merg markup document with number format

Web

Web | More ▾

SEARCH HISTORY
merge or merg markup
document with ...
Similar searches
combine or merg
markup document...
See all
Clear all · Turn off

ALL RESULTS   51-60 of 3,420,000 results · Advanced

Using MS Word Mail Merge Feature Microsoft Word
... General **Formatting**: Mail **Merge**. ... **markup** balloons not ... This is used to let you
see how your data will appear in the actual **document**. The **number** with the arrows
on ...
www.tutcity.com/word/using-ms-word-mail-merge-feature.23993.html

Tag Browser: merge-document-maintain-formatting-header-footer-page ...
... **merge-document**-maintain-**formatting**-header-footer-page ... com asp vb
document combine; ... **merge document** maintain **formatting** header footer page
number; **merge** field; ...
www.aspose.com/community/public/tags/merge-document-maintain... · Cached
page

Using Merge Fields (Microsoft Word)
When creating a mail **merge document**, you use **merge** fields to indicate where the
information from each record of your data source should be inserted. This is easy
to ...
word.tips.net/T001370_Using_Merge_Fields.html

Mail Merge and Access format of telephone number
Mail **Merge** and Access **format** of telephone **number** Page showing the last 10:- ...
Microsoft Word **Document** Properties & **Formatting** Members, ...
www.thecodecage.com/forumz/microsoft-word-document-properties...

Help with Formatting Percentages in Mail Merge Master Document ...
Help with **Formatting** Percentages in Mail **Merge** Master **Document** Microsoft
Office ... >> Nonetheless, I've bookmarked your writeup on mail **merge formatting**
www.techtalkz.com/...help-formatting...mail-merge-master-document.html

Customizing Word 2002
... is the use of "**markup** balloons" in Print ... or be **formatted** the same as text in the
destination **document. Merge formatting** when pasting ...
sbarnhill.mvps.org/wordfaqs/customizingword2002.htm

Mail Merge: Part I - MSDN – Explore Windows, Web, Cloud, and ...
You can remedy this problem in your Main **merge document** by adding **number** and
data **format** switches to ... Use **formatting** switches to change how dates and
numbers are ...
msdn.microsoft.com/en-us/library/aa140183(v=office.10).aspx

Comparing Text Files (or Typed/Pasted Text)
Merge comes with a **number** of ... that you can drag and drop a pair of Microsoft
Word **documents** onto a **Merge** ... **Merge** is not therefore able to show you
formatting ...
www.araxis.com/merge/topic_comparing_text_files.html

Barry MacDonnell's Toolbox for WordPerfect for Windows - Macros ...
"You need to include any 'resetting' **formatting** (page **number**, margins ... How to set
Page Numbering in a Multiple Page **Merge Document** for WordPerfect® 9.
wptoolbox.com/tips/MergeMP.html

Retaining cell formatting in mail merge
When I perform the **merge**, I lose the cell **formatting** and the **numbers** ... and the
numbers appear in my **merged document** as **numbers** without commas or dollar
signs and ...
www.excelforum.com/excel-general/...cell-formatting-in-mail-merge.html

Prev   2   3   4   5   6   7   8   9   10   Next

merge or merg markup document with number format

Exhibit 1002_0796

				Complete if Known	

<table>
<tr><td rowspan="5">INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

<i>(Use as many sheets as necessary)</i></td><td colspan="5"><i>Complete if Known</i></td></tr>
</table>

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Complete if Known	
	Application Number	12/222,752
	Filing Date	August 15, 2008
	First Named Inventor	Russell T. Davis
	Art Unit	2176
(Use as many sheets as necessary)	Examiner Name	Mustafa A. Amin
Sheet 1 of 2	Attorney Docket Number	07643.0002-02

U.S. PATENTS AND PUBLISHED U.S. PATENT APPLICATIONS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Issue or Publication Date MM-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/M.A./		US-5,983,247	11-1999	Yamanaka et al.	
		US-2003/0140045	07-2003	Heninger et al.	
		US-6,424,980	07-2002	Iizuka et al.	
		US-5,721,847	02-1998	Johnson, Jeffrey J.	
		US-5,371,675	12-1994	Greif et al.	
		US-5,008,853	04-1991	Bly et al.	
		US-6,910,017	06-2005	Woo et al.	
		US-2003/0078883	04-2003	Stewart et al.	
		US-6,446,048	09-2002	Wells et al.	
		US-5,461,708	10-1995	Kahn, Philippe R.	
		US-5,907,820	05-1999	Pan, Shaoher X	
		US-6,014,643	01-2000	Minton, Vernon F.	
		US-6,339,767	01-2002	Rivette et al.	
		US-6,075,530	06-2000	Lucas et al.	
		US-6,714,201	03-2004	Grinstein et al.	
		US-6,408,430	06-2002	Gunter et al.	
		US-5,530,942	06-1996	Tzou et al.	
		US-6,223,189	04-2001	Steffens et al.	
		US-5,701,400	12-1997	Amado, Carlos Armando	
		US-5,987,469	11-1999	Lewis et al.	
		US-5,581,686	12-1996	Koppolu et al.	
		US-2001/0018694	08-2001	Iwamoto et al.	
		US-6,621,505	09-2003	Beauchamp et al.	
		US-6,631,402	10-2003	Devine et al.	
		US-5,953,724	09-1999	Lowry, David D.	
		US-5,737,739	04-1998	Shirley et al.	
		US-5,895,476	04-1999	Orr et al.	
		US-6,052,710	04-2000	Saliba et al.	
		US-6,112,242	08-2000	Jois et al.	
		US-6,173,272	01-2001	Thomas et al.	
		US-6,173,316	01-2001	De Boor et al.	
		US-6,192,362	02-2001	Schneck et al.	
		US-6,185,573	02-2001	Angelucci et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.A./

Exhibit 1002_0797

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Complete if Known	
	Application Number	12/222,752
	Filing Date	August 15, 2008
	First Named Inventor	Russell T. Davis
	Art Unit	2176
(Use as many sheets as necessary)	Examiner Name	Mustafa A. Amin
Sheet 2 of 2	Attorney Docket Number	07643.0002-02

U.S. PATENTS AND PUBLISHED U.S. PATENT APPLICATIONS

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Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Translation[6]

NONPATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation[6]
		"ProQuest Information and Learning – 0789717298 – Special Edition Using Microsoft® Excel 2000." ~~11/23/2008~~ http://proquest.safaribooksonline.com/0789717298	

Examiner Signature	/Mustafa Amin/	Date Considered	01/27/2012

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.A./

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
12/222,752	08/15/2008	2176	2580	07643.0002-02	27	5

CONFIRMATION NO. 5842

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

CORRECTED FILING RECEIPT

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Date Mailed: 03/07/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)
             Russell T. Davis, Bethesda, MD;
Assignment For Published Patent Application
             E-Numerate Solutions, Inc.
Power of Attorney:
Arthur Garrett--20338   James Hammond--31964
Charles O'Rourke--26014   Jeffrey Berkowitz--36743
Robert Converse Jr--27432   Charles Van Horn--40266
Edward Yoches--30120
Richard Burgujian--31744

Domestic Priority data as claimed by applicant
             This application is a DIV of 09/573,778 05/18/2000 PAT 7421648
             which claims benefit of 60/135,525 05/21/1999
             and claims benefit of 60/183,152 02/17/2000

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 09/04/2008
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/222,752**
Projected Publication Date: Not Applicable
Non-Publication Request: No
Early Publication Request: No

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Exhibit 1002_0799

Title

COMBINING REUSABLE DATA MARKUP LANGUAGE DOCUMENTS

Preliminary Class

715

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