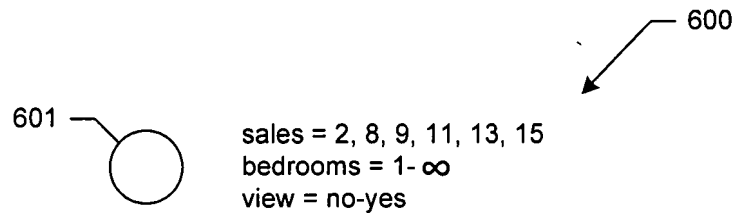
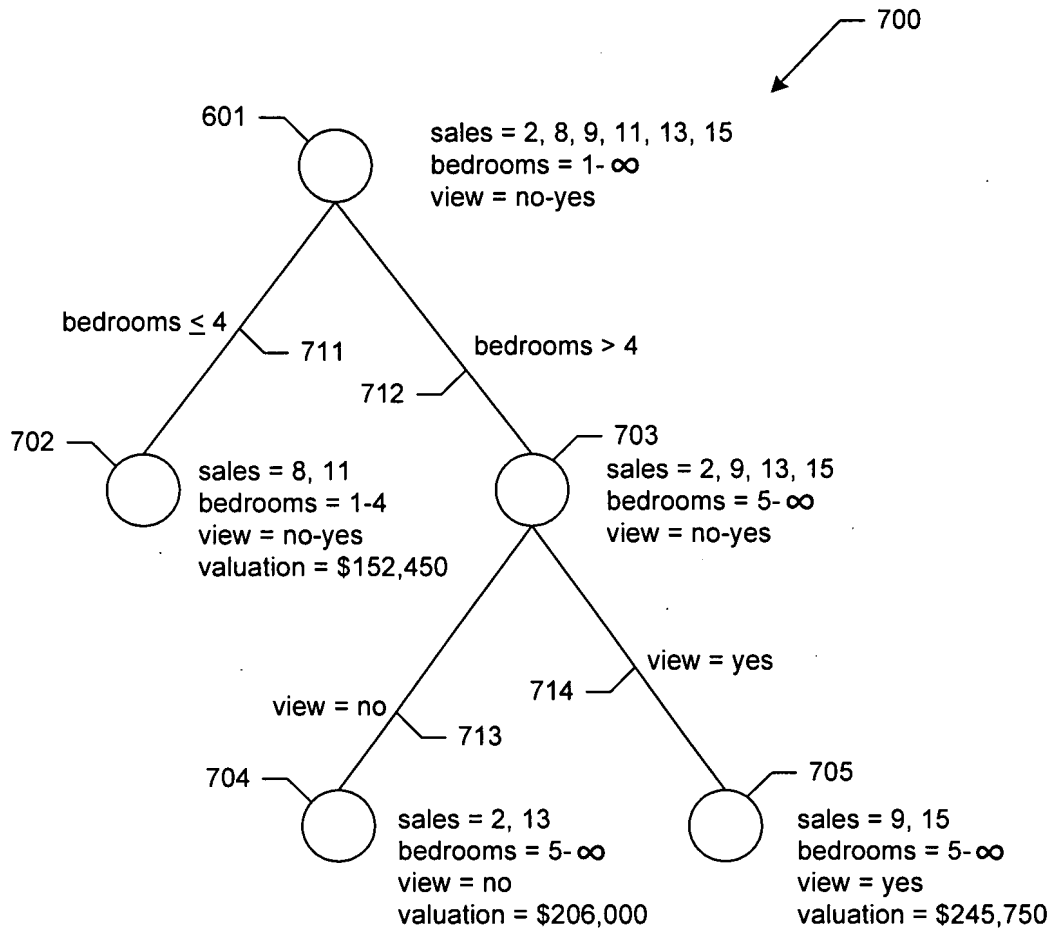


# REPLACEMENT SHEET

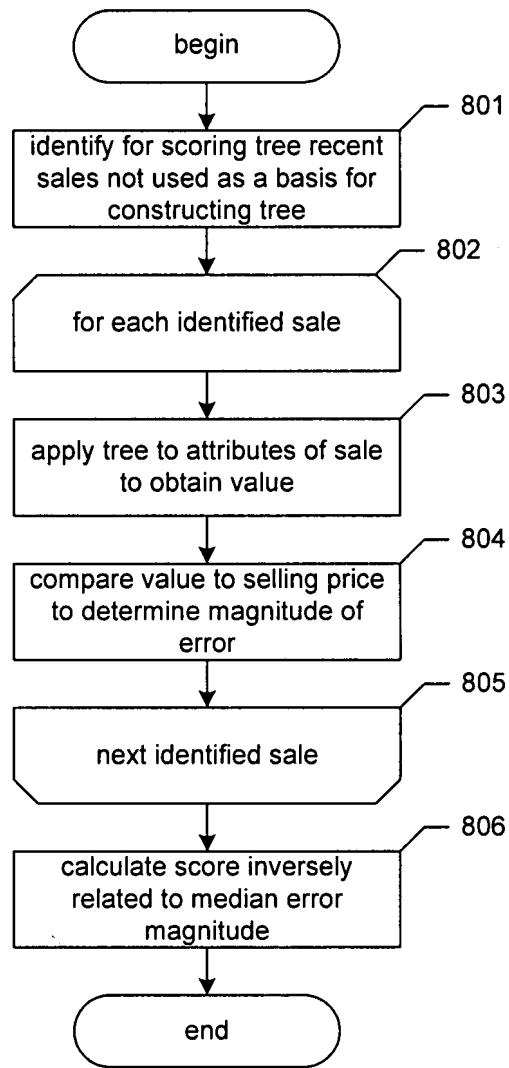


**FIG. 6**



**FIG. 7**

# REPLACEMENT SHEET



**FIG. 8**

# REPLACEMENT SHEET

id	address	bedrooms	view	selling price	tree 1 scoring table	
					valuation	error
1	111 Main St., Hendricks, IL 62012	4	no	\$132,500	\$152,450	0.1506
3	140 Cottontail Rd., Baron, IL 62019	3	no	\$98,750	\$152,450	0.5438
4	6 Spratt Ln., Baron, IL 62019	2	no	\$106,500	\$152,450	0.4315
5	776 Fir St., Hendricks, IL 62014	3	yes	\$251,000	\$152,450	0.3926
6	111 Industry Ave., Fenton IL 62017	2	no	\$240,000	\$152,450	0.3648
7	105 Elm St., Hendricks, IL 62014	5	yes	\$230,000	\$245,750	0.0685
10	142 Cottontail Rd., Baron, IL 62019	3	no	\$102,000	\$152,450	0.4946
12	36 Spratt Ln., Baron, IL 62019	4	no	\$111,000	\$152,450	0.3734
14	234 Cottontail Rd., Baron, IL 62019	4	yes	\$197,900	\$152,450	0.2297
321		324	327	329	911	912
median err.						0.3734

**FIG. 9**

REPLACEMENT SHEET

1000 ↙

---

21505 SE 2nd St, Sammamish, WA 98074 <sup>1001</sup>

**ZESTIMATE™ : \$455,899** <sup>1002</sup> (what's this?)

Value Range: \$250,744 - \$752,233

Refine value of this home  Map comparable homes

---

1011 ↗

**FIG. 10**





# REPLACEMENT SHEET

1200

Home Facts	
Residence:	single family
Bedrooms:	4
Baths:	2.5
Total rooms:	8
Sq ft:	2,949
Lot sq ft:	96,582
Year built:	1924
Year updated:	--
Total stories:	2
Heating:	Gas
Cooling:	Central

1201

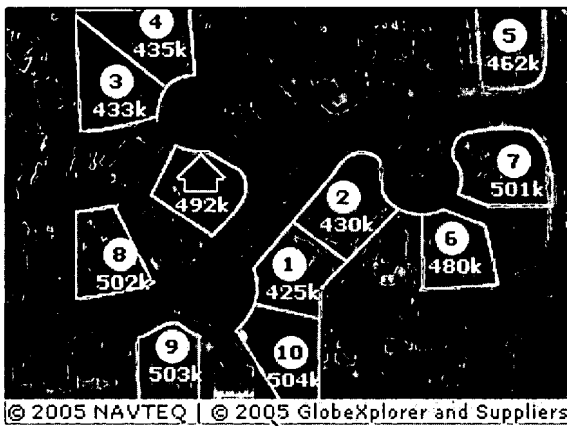
1202

1210

[Refine value based on home facts](#)

**FIG. 12**

## Recently Sold Comparable Homes



### How this home stacks up

This home \$ per Sq ft: \$412

Average \$ per Sq ft: \$396

### About Comparables

Comparables are recently sold homes similar in location, sales price, and age to this home.

[How to use these comps.](#)

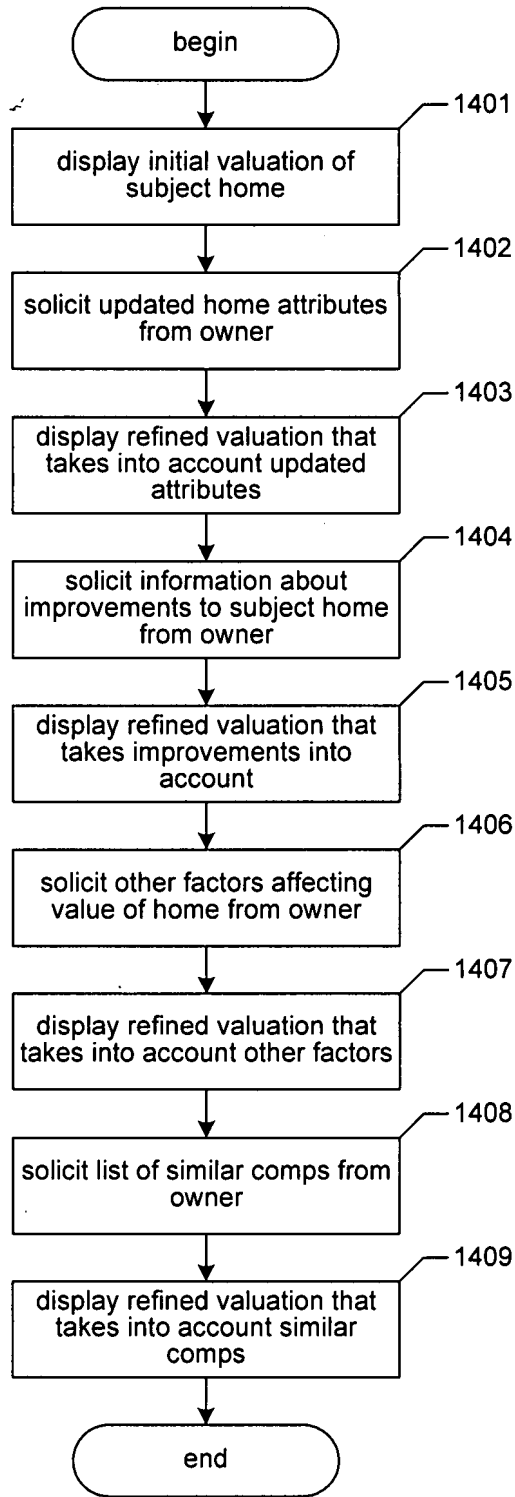
[See all 10 comparables on larger map](#)

[Choose your own comparable homes](#)

1310


**FIG. 13**

# REPLACEMENT SHEET



**FIG. 14**

# REPLACEMENT SHEET



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Your Edge in Real Estate

**Hawaii: Say "aloha" to low rates and free upgrades this fall!**

---

Home
Map & Search
Inside Edge
Top Cities
FAQ

Value Any Home

Address: OR Street OR Neighborhood City, State OR ZIP  
Optional Required

Show/Hide  
GO Advanced Search

**My Zestimator** (What's this?)

7055 18th Ave. N.E. Seattle, WA 98115

1510 {

1591  1511  1512  1513  1514  1515

**Next** →

1520  1580  1570

Summary

Refine Comps

Other Features

Add Home Improvements

**Step 1 of 5: Edit Home Facts** (No updates to make? Click the Next button.)

**ZESTIMATE™: \$555,727**  1570  **Update Value**

**MY REFINED VALUE = \$557,227**

Update facts below if you feel they are incorrect, then click the Update Value or Next button. [Learn more.](#)

Residence:	Single family <input checked="" type="checkbox"/>	View:	Territorial <input type="checkbox"/>	1537
# Bedrooms:	3	Garage:	Attached <input type="checkbox"/>	1538
# Baths:	2.5	Architectural style:	<input type="checkbox"/>	1539
Sq ft:	1345	Construction quality:	<input type="checkbox"/>	1540
Lot size (sf):	1638	Pool:	No <input type="checkbox"/>	1541
Year built:	1955			

**Restore original facts**  1560

Subtotal change in home facts = \$0  1550

**NOTE:** Changes you make in My Zestimator™ will not be saved and will not affect the Zestimate™. [Learn more.](#)

FIG. 15

# REPLACEMENT SHEET



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Home | Map & Search | Inside Edge | Top Cities | FAQ

Value Any Home  Optional  Address OR Street OR Neighborhood, City, State OR ZIP  Required

1600

## My Zestimator (What's this?)

7055 18th Ave. N.E. Seattle, WA 98115

1610

1 2 3 4 5  
Edit Home Facts Add Home Improvements Other Features Refine Comps Summary

Step 2 of 5: Add Home Improvements (No updates to make? Click the Next button.)

ZESTIMATE™: \$555,727 1620 1680  
**MY REFINED VALUE = \$557,227** 1670

Find out [how we calculate improvement values.](#)

1630

Improvement Type	Date completed	Total cost	Improvement value
Mid-range major kitchen remodel <input type="checkbox"/>	1 year <input type="checkbox"/>	\$ 5,000 <input type="checkbox"/>	\$3,000 (Edit) <input type="checkbox"/>
<input type="button" value="Add another home improvement"/>			
Subtotal improvements =			+ \$3,000

1650

- Improvement Type Descriptions 1640
- Minor Kitchen Remodel**
    - Refinish existing cabinets; new wall covering or paint.
    - New energy-efficient wall oven, cooktop.
    - New mid-priced sink, faucet, laminate countertops. [See more >](#)
  - Mid-range Major Kitchen Remodel**
    - New cabinets, laminate countertops, double stainless-steel sink.
    - Energy efficient wall oven, cooktop, new ventilation system.
    - New built-in microwave, dishwasher, custom lighting. [See more >](#)
  - Upscale Major Kitchen Remodel**
    - New cherry cabinets, granite or marble countertops, imported ceramic tile backsplash.
    - New 36-inch commercial grade range/hood, built-in microwave/convection oven.
    - New built-in refrigerator, dishwasher. [See more >](#)
  - Bathroom**
  - Exterior**
  - Additional Rooms**

NOTE: Changes you make in My Zestimator™ will not be saved and will not affect the Zestimate™. [Learn more.](#)

Excerpted with permission from the November 2004 issue of REMODELING Magazine. Remodeling's 2004 Cost vs. Value Report is available at [www.remodelingmagazine.com](http://www.remodelingmagazine.com)

**THIS HOME**

**Seattle Dining Guide**  
 Check out local food destinations. Find dining options from 'A to Z'.  
[www.AOLCityGuide.com](http://www.AOLCityGuide.com)

**Brunch in Kirkland**  
 Euro chic restaurant & bar, your brunch close to the ocean.  
[www.pbharrington.com](http://www.pbharrington.com)


**Seattle Delicious**  
 Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](http://www.roysrestaurant.com)

**Seattle Food**  
 Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](http://www.roysrestaurant.com)

**Seattle Eatery**  
 Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](http://www.roysrestaurant.com)



FIG. 16



**Hawaii: Say "aloha" to low rates and free upgrades this fall!**

Home | Map & Search | Inside Edge | Top Cities | FAQ

---

Value Any Home

Address OR Street OR Neighborhood

**GO** [Show/Hide Advanced Search](#)

**THIS HOME**

[Home Details](#)

[Refine value](#)

[Graphs & data](#)

---

**My Zestimator** (what's this?)

7055 18th Ave. N.E. Seattle, WA 98115

1792

**Prev**

2

3

4

5

**Next**

**Step 3 of 5: Other Features** (No updates to make? Click the Next button.)

**ZESTIMATE™: \$555,727**

**MY REFINED VALUE = \$560,527**

Peek-a-boo views, lush gardens, a workshop, or a rotting fence add or detract from a home's value. You can update a home's value based on characteristics like those.

Enter your description:

**Add another item**

Add or subtract   Estimated Value

Subtotal other values = \$0

---

**THIS HOME**

[Home Details](#)

[Refine value](#)

[Graphs & data](#)

Ads by Google

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[www.AOLCityGuide.com](http://www.AOLCityGuide.com)

**Brunch in Kirkland**  
Euro chic restaurant & bar, your brunch close to the ocean.  
[www.pbhampton.com](http://www.pbhampton.com)

**Seattle Delicious**  
Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.

FIG. 17

# REPLACEMENT SHEET

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Hawaii: Say "aloha" to low rates and free upgrades this fall!

Home
Map & Search
Inside Edge
Top Cities
FAQ

Value Any Home  Address OR Street OR Neighborhood    [Show/Hide Advanced Search](#)

**My Zestimator** (What's this?)  
7055 18th Ave. N.E. Seattle, WA 98115

1892 1891 1814

Prev Next

1 Edit Home Facts 2 Add Home Improvements 3 Other Features 4 Refine Comps 5 Summary

**Step 4 of 5: Refine Comps** (No updates to make? Click the Next button.)

ZESTIMATE™: \$555,727 <sup>1820</sup>

MY REFINED VALUE= \$560,227 <sup>1880</sup>  <sup>1870</sup>

Zillow uses zillions of data points to create this comparables list, which are recently sold homes near this address. You can further customize this list, based on your knowledge of the neighborhood, to get a refined Zestimate. [Learn more.](#)

**THIS HOME**

- [Home Details](#)
- [Refine value](#)
- [Graphs & data](#)

**Ads by Google**

**Seattle Dining Guide**  
Check out local food destinations. Find dining options from 'A to Z'.  
[www.AOLCityGuide.com](http://www.AOLCityGuide.com)

**Brunch in Kirkland**  
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[www.pbhampton.com](http://www.pbhampton.com)

**Seattle Delicious**  
Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](http://www.roysrestaurant.com)

**Seattle Food**  
Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](http://www.roysrestaurant.com)

**Seattle Eatery**  
Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](http://www.roysrestaurant.com)

**My Comps**  
Choose up to 10.

- 1833
- 
- 
- 
- 
- 
- 
- 
- 
-

**Zillow Comps** Page 1 | 2 | 3 | 4 | 5


Comparable Home	Sold Price	Date Sold	Home (Sq ft)	Lot (sq ft)	BR	BA	Home \$/sq ft	Lot \$/sq ft	Year Built
<input type="checkbox"/> Add <b>810 N. Monterey Jack St 12</b>	--	--	1313	17,062	2	3	\$120	\$120	1979
<input type="checkbox"/> Add <b>814 N. Monterey St 1</b>	\$165,000	10/03/05	1313	1782	2	3	\$123	\$123	1979
<input type="checkbox"/> Add <b>6427 111TH St</b>	\$402,000	10/03/05	1313	1782	2	3	\$233	\$233	1979
<input type="checkbox"/> Add <b>13036 NE 128th Place</b>	\$170,000	10/03/05	1313	1782	2	3	\$250	\$250	1979
<input type="checkbox"/> Add <b>2335 Bothell-</b>	\$152,500	10/03/05	1575	1838	3	3	\$530	\$530	1975
<input type="checkbox"/> Add <b>814 N. Monterey</b>	\$249,000	10/03/05	1575	1838	3	3	\$120	\$120	1975
<input type="checkbox"/> Add <b>814 N. Monterey</b>	\$177,000	10/03/05	1358	1838	2	3	\$223	\$223	1975
<input type="checkbox"/> Add <b>814 N. Monterey</b>	\$29,500	10/03/05	1313	1782	2	3	\$80	\$80	1979
<input type="checkbox"/> Add <b>814 N. Monterey</b>	\$164,000	10/03/05	1313	1782	2	3	\$100	\$100	1979
<input type="checkbox"/> Add <b>814 N. Monterey</b>	\$173,000	10/03/05	1313	1782	2	3	\$118	\$118	1979
<input type="checkbox"/> Add <b>814 N. Monterey</b>	\$399,000	10/03/05	1313	1782	2	3	\$168	\$168	1979

Page 1 | 2 | 3 | 4 | 5

NOTE: Changes you make in My Zestimator™ will not be saved and will not affect the Zestimate™. [Learn more.](#)

FIG. 18

# REPLACEMENT SHEET



**Zillow.com**  
Your Earth Real Estate

Hawaii: Say "aloha" to low rates and free upgrades this fall!

1900

---

Home | Map & Search | Inside Edge | Top Cities | FAQ

Value Any Home  Optional  Street  Neighborhood  City  State  ZIP  Required  Show/Hide  GO  Advanced Search

1910

---

**My Zestimator** (What's this?)  
7035 18th Ave, N.E. Seattle, WA 98115

1915

1992 1 2 3 4 5  
 Home Facts  Add Home Improvements  Other Features  Refine Comps  Summary

Step 5 of 5: Summary (No updates to make. Click the Next button.)

**ZESTIMATE™: \$555,727** 1920

**MY REFINED VALUE = \$563,177** 1980 1993

[Back to Step 1](#)

1982

1981

**THIS HOME**

- Home Details
- Refine value
- Graphs & data

[Add to Details](#)

**Seattle Dining Guide**  
Check out local food situations. Find dining options from page 2.  
[www.ACityGuide.com](#)

**Brunch in Kirkland**  
Euro chic restaurant & bar, your brunch close to the ocean.  
[www.pbhampson.com](#)

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[www.roysrestaurant.com](#)

**Seattle Food**  
Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](#)

**Seattle Eatery**  
Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](#)

---

1930

**Overall Summary**

Original Zestimate	\$555,727
Change Home Fact	+ \$ 1,500
Change Home Improvements	+ \$ 1,300
Your other estimated values	- \$ 300
Change based on comparable homes	+ \$ 2650
<b>NEW REVISED VALUE</b>	<b>= \$663,177</b>

[Print this page](#)

E-mail this page (Separate addresses by commas)  
E-mail address:

1940

---

**Home Facts Detailed Summary**

Residence:	Single Family	View:	Water (none)
# Bedrooms:	4 *(3)	Garage:	Attached
# Baths:	2.5	Architectural style:	Colonial
Sq ft:	1658	Construction quality:	Good
Lot size (sq):	2356	Pool:	No
Year built:	1955		

Total changes to home facts = \$1500 \* (Previous info)

1950

---

**Home Improvements Detailed Summary**

New Roof	+ \$300
Kitchen Remodel	+ \$1000
<b>Total home improvements</b>	<b>= \$1300</b>

1960

---

**Other Values Detailed Summary**

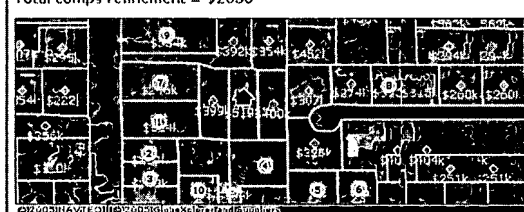
Orchard in back	+ \$700
Need new fence	- \$1000
<b>Total other values</b>	<b>\$1700</b>

1970

---

**Comparable Homes Detailed Summary**

Total comps refinement = \$2650



**My Comps**

Comparable Home	Sold Price	Date Sold	Home (Sq Ft)	Lot (sq Ft)	BR	BA	Home Sq Ft	Lot Sq Ft	Year Built	Dist (mi)
810 N. Monterey JACK St 12			1315	17,082	2	3	1120	1120	1979	2.5
① 814 N. Monterey St 1	\$185,000	10/03/05	1313	1782	2	3	\$123	\$123	1979	..
② 6417 11TH St	\$402,000	10/03/05	1313	1782	2	3	\$233	\$233	1979	..
③ 13126 NE 128th Place	\$170,000	10/03/05	1313	1762	2	3	\$250	\$250	1979	..
④ 2333 Robell	\$152,500	10/03/05	1575	1838	3	3	\$530	\$530	1975	..
⑤ 814 N. Monterey	\$249,000	10/03/05	1575	1838	3	3	\$120	\$120	1975	..
⑥ 814 N. Monterey	\$177,000	10/03/05	1358	1838	2	3	\$223	\$223	1975	..
⑦ 814 N. Monterey	\$29,500	10/03/05	1313	1782	2	3	\$80	\$80	1979	..
⑧ 814 N. Monterey	\$164,000	10/03/05	1313	1782	2	3	\$100	\$100	1979	..
⑨ 814 N. Monterey	\$173,000	10/03/05	1313	1782	2	3	\$118	\$118	1979	..
⑩ 814 N. Monterey	\$399,000	10/03/05	1313	1782	2	3	\$168	\$168	1979	..

1980

FIG. 19A



# REPLACEMENT SHEET

<b>Overall Summary</b>	
Original Zestimate.....	\$555,727
Change Home Fact.....	+ \$ 1,500
Change Home Improvements.....	+ \$ 3,300
Your other estimated values.....	- \$ 300
Change based on comparable homes.....	+ \$ 2650
<b>NEW REVISED VALUE</b>	<b>= \$ 563,177</b>

**FIG. 19B**

<b>Home Facts Detailed Summary</b>			
<b>Residence:</b>	Single Family	<b>View:</b>	Water *(none)
<b># Bedrooms:</b>	4 *(3)	<b>Garage:</b>	Attached
<b># Baths:</b>	2.5	<b>Architechtural style:</b>	Colonial
<b>Sq ft:</b>	1658	<b>Construction quality:</b>	Good
<b>Lot size (sf):</b>	2356	<b>Pool:</b>	No
<b>Year built:</b>	1955		
Total changes to home facts = \$1500			* (Previous info)

**FIG. 19C**

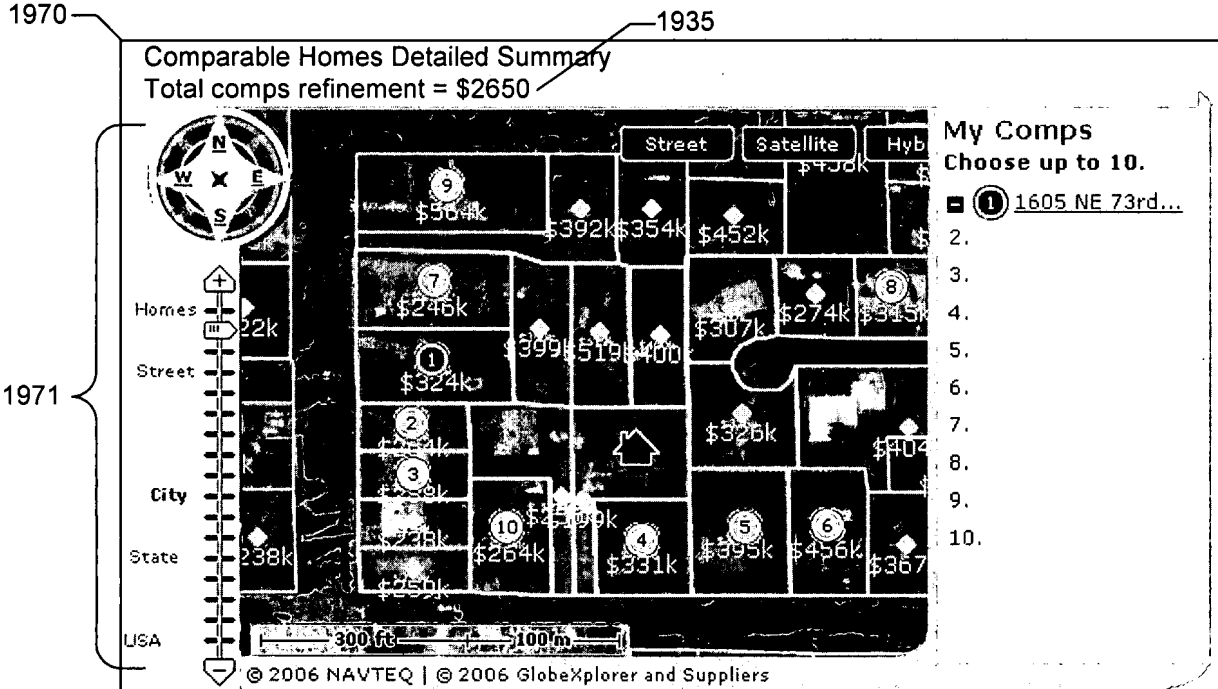
<b>Home Improvements Detailed Summary</b>	
New Roof.....	+ \$300
Kitchen Remodel.....	+ \$3000
<b>Total home improvements</b>	<b>= \$ 3300</b>

**FIG. 19D**

<b>Other Values Detailed Summary</b>	
Orchard in back.....	+ \$700
Need new fence.....	- \$1000
<b>Total other values</b>	<b>= - \$ 300</b>

**FIG. 19E**

# REPLACEMENT SHEET



1972

Zillow Comps											Page 1   2   3   4   5				
	Comparable Home	Sold Price	Date Sold	Home (Sq ft)	Lot (sq ft)	BR	BA	Home \$/sq ft	Lot \$/sq ft	Year Built					
	810 N Monterey Jack St 12	--	--	1313	17,082	2	3	\$120	\$120	1979					
<input checked="" type="checkbox"/>	<b>Remove</b> ① 814 N Monterey St 1	\$185,000	10/03/05	1313	1782	2	3	\$123	\$123	1979					
<input checked="" type="checkbox"/>	<b>Add</b> ② 6427 111TH St	\$402,000	10/03/05	1313	1782	2	3	\$233	\$233	1979					
<input checked="" type="checkbox"/>	<b>Add</b> ③ 13036 NE 128th Place	\$170,000	10/03/05	1313	1782	2	3	\$250	\$250	1979					
<input checked="" type="checkbox"/>	<b>Add</b> ④ 2335 Bothell-	\$152,500	10/03/05	1575	1838	3	3	\$530	\$530	1975					
<input checked="" type="checkbox"/>	<b>Add</b> ⑤ 814 N Monterey	\$249,000	10/03/05	1575	1838	3	3	\$120	\$120	1975					
<input checked="" type="checkbox"/>	<b>Add</b> ⑥ 814 N Monterey	\$177,000	10/03/05	1358	1838	2	3	\$223	\$223	1975					
<input checked="" type="checkbox"/>	<b>Add</b> ⑦ 814 N Monterey	\$29,500	10/03/05	1313	1782	2	3	\$80	\$80	1979					
<input checked="" type="checkbox"/>	<b>Add</b> ⑧ 814 N Monterey	\$164,000	10/03/05	1313	1782	2	3	\$100	\$100	1979					
<input checked="" type="checkbox"/>	<b>Add</b> ⑨ 814 N Monterey	\$173,000	10/03/05	1313	1782	2	3	\$118	\$118	1979					
<input checked="" type="checkbox"/>	<b>Add</b> ⑩ 814 N Monterey	\$399,000	10/03/05	1313	1782	2	3	\$168	\$168	1979					

Page 1 | 2 | 3 | 4 | 5

FIG. 19F

# REPLACEMENT SHEET

Henderson County recent sales table for linear regression model

id	sq. ft.	lot size	bedrooms	bathrooms	floors	year	selling price	roof type	use code
1	1850	4345	4	2	2	1953	\$132,500	shingle	single-family
2	2220	6000	6	2	3	1965	\$201,000	shingle	single-family
3	1375	3100	3	1	1	1974	\$98,750	tile	single-family
4	1590	4575	2	2	1	1973	\$106,500	shingle	single-family
5	2280	7300	3	3	2	1948	\$251,000	shingle	single-family
6	1950	6205	2	2	1	1925	\$240,000	shingle	single-family
7	2180	7880	5	2	3	1940	\$230,000	shake	single-family
8	1675	3421	4	2	1	1975	\$74,900	shingle	single-family
9	2400	6050	6	3	2	1938	\$253,500	shingle	single-family
10	1450	3230	3	1	1	1966	\$102,000	shingle	single-family
11	1952	4912	4	2	1	1920	\$230,000	shingle	single-family
12	1475	2900	4	2	1	1964	\$111,000	shingle	single-family
13	2140	6330	5	2	2	1935	\$211,000	shingle	single-family
14	1980	3500	4	3	2	1930	\$197,900	shingle	single-family
15	2320	4250	5	3	2	1927	\$238,000	shake	single-family
16	1925	5015	4	2	2	1949	\$179,900	shingle	single-family
17	2025	4015	4	2	2	1959	\$229,900	shake	single-family

2000  
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**FIG. 20**

18W

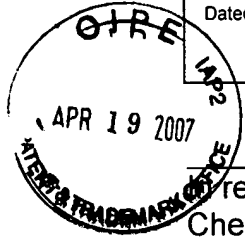
I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service on the date shown below with sufficient postage as First Class Mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Dated: April 16, 2007

Signature:

*Sandy Reisman*  
(Sandy Reisman)

Docket No.: 569208005US  
(PATENT)



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Pro Patent Application of:  
Cheng et al.

Application No.: 11/347,024

Confirmation No.: 1383

Filed: February 3, 2006

Art Unit: 3691

For: **AUTOMATICALLY DETERMINING A  
CURRENT VALUE FOR A REAL ESTATE  
PROPERTY, SUCH AS A HOME, THAT IS  
TAILORED TO INPUT FROM A HUMAN  
USER, SUCH AS ITS OWNER**

Examiner: S. Karmis

**INFORMATION DISCLOSURE STATEMENT (IDS)**

MS Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 CFR 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed before the mailing date of a first Office Action on the merits as far as is known to the undersigned (37 CFR 1.97(b)(3)).

In accordance with 37 CFR 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of non-patent literature in accordance with 37 CFR 1.98(a)(2).

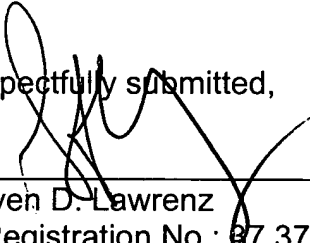
This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, applicant does not admit that any enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

It is submitted that the Information Disclosure Statement is in compliance with 37 CFR 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-0665, under Order No. 569208005US.

Dated: April 16, 2007

Respectfully submitted,

By   
Steven D. Lawrenz  
Registration No.: 37,376  
PERKINS COIE LLP  
P.O. Box 1247  
Seattle, Washington 98111-1247  
(206) 359-8000  
(206) 359-7198 (Fax)  
Attorney for Applicant



PTO/SB/08A/B (09-06)  
 Approved for use through 03/31/2007. OMB 0651-0031  
 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
 Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)		Application Number	11/347,024-Conf. #1383
		Filing Date	February 3, 2006
		First Named Inventor	David Cheng
		Art Unit	3691
		Examiner Name	S. Karmis
		Attorney Docket Number	569208005US
Sheet	1	of	2

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US-20030212565	11-13-2003	Badali et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)				

\*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. \* CITE NO.: Those application(s) which are marked with an single asterisk (\*) next to the Cite No. are not supplied (under 37 CFR 1.98(a)(2)(iii)) because that application was filed after June 30, 2003 or is available in the IFW. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	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.	T <sup>2</sup>
		Breiman, L., "Random Forests," Machine Learning, 45, pages 5-32, 2001, Kluwer Academic Publishers, The Netherlands.	
		<a href="http://www.ics.uci.edu/~mlearn/databases/housing/housing.names">http://www.ics.uci.edu/~mlearn/databases/housing/housing.names</a> , 1 page [accessed 12/13/2005].	
		StatSoft, Inc., "Classification Trees," <a href="http://www.statsoft.com/textbook/stclatre.html">http://www.statsoft.com/textbook/stclatre.html</a> , pages 1-20, ©1984-2003 [accessed 12/13/2005]	
		Breiman et al., "Random Forest," Classification Description, <a href="http://www.stat.berkeley.edu/users/breiman/RandomForests/cc_home.htm">http://www.stat.berkeley.edu/users/breiman/RandomForests/cc_home.htm</a> , pages 1-28 [accessed 12/13/2005].	
		Real-info.com, "What is an AVM," <a href="http://www.real-info.com/products_avm.asp">www.real-info.com/products_avm.asp</a> ? Internet Archive Date: October 30, 2005, 5 pages [accessed 3/21/2007].	
		RealEstateABC.com, see paragraph headed "How do I make the estimate more accurate?" <a href="http://www.realestateabc.com/home-values/">www.realestateabc.com/home-values/</a> , Internet Archive Dated: April 5, 2006, 4 pages [accessed 3/20/2007].	
		STANDARD & POORS, "Guidelines for the use of Automated Valuation Models for U.K. RMBS Transactions," <a href="http://www.rics.org/NR/rdonlyres/8Fcd20c-7FAC-4549-86FB-3930CD0CBC05/0/StandardandPoorsReportonAVMs.pdf">http://www.rics.org/NR/rdonlyres/8Fcd20c-7FAC-4549-86FB-3930CD0CBC05/0/StandardandPoorsReportonAVMs.pdf</a> , Published Feb. 20, 2004, 4 pages.	
		<a href="http://www.r-project.org">www.r-project.org</a> , "The R Project for Statistical Computing," <a href="http://web.archive.org/web/20060102073515/www.r-project.org/main.shtml">http://web.archive.org/web/20060102073515/www.r-project.org/main.shtml</a> , 1 page [internet archive date: 01/02/2006]	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

56920-8005US/LEGAL 13154170.1

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)				Application Number	11/347,024-Conf. #1383
				Filing Date	February 3, 2006
				First Named Inventor	David Cheng
				Art Unit	3691
				Examiner Name	S. Karmis
				Attorney Docket Number	569208005US
Sheet	2	of	2		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No. <sup>1</sup>	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.	T <sup>2</sup>
		"Centre for Mathematical Sciences," Lund University, <a href="http://web.archive.org/web/20060101005103/http://www.maths.lth.se/">http://web.archive.org/web/20060101005103/http://www.maths.lth.se/</a> , 1 page [internet archive date: 01/01/2006].	<input type="checkbox"/>
		"An Introduction to R," <a href="http://web.archive.org/web/20060118050840/http://cran.r-project.org/doc/manuals/R-intro.html">http://web.archive.org/web/20060118050840/http://cran.r-project.org/doc/manuals/R-intro.html</a> , pages 1-105 [internet archive date: 01/18/2006].	<input type="checkbox"/>
		<a href="http://www.cran.r-project.org">www.cran.r-project.org</a> , "The Comprehensive R Archive Network," <a href="http://web.archive.org/web/20050830073913/cran.r-project.org/banner.shtml">http://web.archive.org/web/20050830073913/cran.r-project.org/banner.shtml</a> , pages 1-2 [internet archive date: 08/30/2005].	<input type="checkbox"/>

\*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.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--



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 NUMBER	FILING OR 371(c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/347,024	02/03/2006	David Cheng	569208005US

**CONFIRMATION NO. 1383**

25096  
PERKINS COIE LLP  
PATENT-SEA  
P.O. BOX 1247  
SEATTLE, WA98111-1247

Date Mailed. 03/01/2007

**NOTICE OF NEW OR REVISED PROJECTED PUBLICATION DATE**

The above-identified application has a new or revised projected publication date. The current projected publication date for this application is 08/09/2007. If this is a new projected publication date (there was no previous projected publication date), the application has been cleared by Licensing & Review or a secrecy order has been rescinded and the application is now in the publication queue.

If this is a revised projected publication date (one that is different from a previously communicated projected publication date), the publication date has been revised due to processing delays in the USPTO or the abandonment and subsequent revival of an application. The application is anticipated to be published on a date that is more than six weeks different from the originally-projected publication date.

More detailed publication information is available through the private side of Patent Application Information Retrieval (PAIR) System. The direct link to access PAIR is currently <http://pair.uspto.gov>. Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at (703) 305-3028.

Questions relating to this Notice should be directed to the Office of Patent Publication at (703) 305-8283.

PART 1 - ATTORNEY/APPLICANT COPY





## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
 United States Patent and Trademark Office  
 Address: COMMISSIONER FOR PATENTS  
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 Alexandria, Virginia 22313-1450  
 www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
11/347,024	02/03/2006	David Cheng	569208005US

CONFIRMATION NO. 1383

25096  
 PERKINS COIE LLP  
 PATENT-SEA  
 P.O. BOX 1247  
 SEATTLE, WA 98111-1247

Date Mailed: 02/23/2007

### Communication Regarding Rescission Of Nonpublication Request and/or Notice of Foreign Filing

Applicant's rescission of the previously-filed nonpublication request and/or notice of foreign filing is acknowledged. The paper has been reflected in the Patent and Trademark Office's (USPTO's) computer records so that the earliest possible projected publication date can be assigned.

The projected publication date is 08/09/2007.

If applicant rescinded the nonpublication request before or on the date of "foreign filing,"<sup>1</sup> then no notice of foreign filing is required.

If applicant foreign filed the application after filing the above application and before filing the rescission, and the rescission did not also include a notice of foreign filing, then a notice of foreign filing (not merely a rescission) is required to be filed within 45 days of the date of foreign filing. See 35 U.S.C. § 122(b)(2)(B)(iii), and Clarification of the United States Patent and Trademark Office's Interpretation of the Provisions of 35 U.S.C. § 122(b)(2)(B)(ii)-(iv), 1272 Off. Gaz. Pat. Office 22 (July 1, 2003).

If a notice of foreign filing is required and is not filed within 45 days of the date of foreign filing, then the application becomes abandoned pursuant to 35 U.S.C. § 122(b)(2)(B)(iii). In this situation, applicant should either file a petition to revive or notify the Office that the application is abandoned. See 37 CFR 1.137(f). Any such petition to revive will be forwarded to the Office of Petitions for a decision. Note that the filing of the petition will not operate to stay any period of reply that may be running against the application.

Questions regarding petitions to revive should be directed to the Office of Petitions at (571) 272-3282. Questions regarding publications of patent applications should be directed to the patent application publication hotline at (703) 605-4283 or by e-mail [pgpub@uspto.gov](mailto:pgpub@uspto.gov).

<sup>1</sup> Note, for purpose of this notice, that "foreign filing" means "filing an application directed to the same invention in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing".

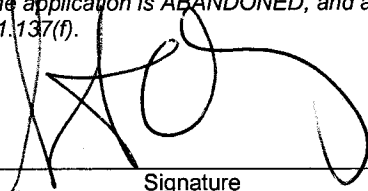
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<p align="center"><b>RESCISSION OF PREVIOUS NONPUBLICATION REQUEST</b>                  (35 U.S.C. 122(b)(2)(B)(ii))  <b>AND, IF APPLICABLE, NOTICE OF FOREIGN FILING</b>                  (35 U.S.C. 122(b)(2)(B)(iii))</p> <hr/> Send completed form to: MS PGPUB Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450  FAX: (571) 273-8300	Application Number	11/347,024-Conf. #1383
	Filing Date	February 3, 2006
	First Named Inventor	David Cheng
	Title	AUTOMATICALLY DETERMINING A CURRENT VALUE FOR A REAL ESTATE PROPERTY, SUCH AS A HOME, THAT IS TAILORED TO INPUT FROM A HUMAN USER, SUCH AS ITS OWNER
	Atty Docket Number	569208005US
	Art Unit	3624
	Examiner	Not Yet Assigned

A request that the above-identified application not be published under 35 U.S.C. 122(b) (nonpublication request) was included with the above-identified application on filing pursuant to 35 U.S.C. 122(b)(2)(B)(i). I hereby **rescind** the previous nonpublication request.

If a notice of foreign or international filing is or will be required by 35 U.S.C. 122(b)(2)(B)(iii) and 37 CFR 1.213(c), I hereby provide such notice. This notice is being provided no later than forty-five (45) days after the date of such foreign or international filing.

*If a notice of subsequent foreign or international filing required by 35 U.S.C. 122(b)(2)(B)(iii) and 37 CFR 1.213(c) was not filed within forty-five (45) days after the date of filing of the foreign or international application, the application is ABANDONED, and a petition to revive under 37 CFR 1.137(b) is required. See 37 CFR 1.137(f).*

  
 \_\_\_\_\_  
 Signature

February 21, 2007  
 \_\_\_\_\_  
 Date

Steven D. Lawrenz  
 \_\_\_\_\_  
 Typed or printed name

37,376  
 \_\_\_\_\_  
 Registration Number, if applicable

(206) 359-8000  
 \_\_\_\_\_  
 Telephone Number

**This request must be signed in compliance with 37 CFR 1.33(b).**

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	1533405
<b>Application Number:</b>	11347024
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	1383
<b>Title of Invention:</b>	Automatically determining a current value for a real estate property, such as a home, that is tailored to input from a human user, such as its owner
<b>First Named Inventor/Applicant Name:</b>	David Cheng
<b>Customer Number:</b>	25096
<b>Filer:</b>	Maurice J. Pirio/Sandy Reisman
<b>Filer Authorized By:</b>	Maurice J. Pirio
<b>Attorney Docket Number:</b>	569208005US
<b>Receipt Date:</b>	21-FEB-2007
<b>Filing Date:</b>	03-FEB-2006
<b>Time Stamp:</b>	15:45:02
<b>Application Type:</b>	Utility

### Payment information:

Submitted with Payment	no
------------------------	----

### File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Rescind Nonpublication Request for Pre Grant Pub	Rescission.pdf	41824	no	1

### Warnings:

<b>Information:</b>	
<b>Total Files Size (in bytes):</b>	41824
<p>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.</p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b>  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.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b>  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.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b>  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.</p>	



PTO/SB/21 (09-04)  
 Approved for use through 07/31/2006. OMB 0651-0031  
 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

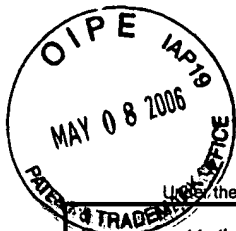
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<h2 style="margin: 0;">TRANSMITTAL FORM</h2> <p style="margin: 5px 0 0 0;"><i>(to be used for all correspondence after initial filing)</i></p>	Application Number	11/347,024-Conf. #1383
	Filing Date	February 3, 2006
	First Named Inventor	David Cheng
	Art Unit	3624
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	569208005US00
Total Number of Pages in This Submission		

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input checked="" type="checkbox"/> Reply to Missing Parts/Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input checked="" type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Declaration Filing Fee for Application (\$1,240) Part 2 Copy of Notice Return Receipt Postcard Recordation coversheet Assignment
Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	PERKINS COIE LLP		
Signature			
Printed name	Steven D. Lawrenz		
Date	May 8, 2006	Reg. No.	37,376

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 853118034US, on the date shown below in an envelope addressed to: MS Missing Parts, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450	
Dated: 5/8/06	Signature:  (Attila Kovacs-Szabo)



Under the Paperwork Reduction Act of 1995, no person are required to respond to a collection of information unless it displays a valid OMB control number.

<p>Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).</p> <h2 style="text-align: center;">FEE TRANSMITTAL</h2> <h3 style="text-align: center;">For FY 2006</h3>		<b>Complete if Known</b>		
		Application Number	11/347,024-Conf. #1383	
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Filing Date	February 3, 2006	
		First Named Inventor	David Cheng	
		Examiner Name	Not Yet Assigned	
		Art Unit	3624	
TOTAL AMOUNT OF PAYMENT	(\$)	1,280.00	Attorney Docket No.	569208005US00

**METHOD OF PAYMENT** (check all that apply)

Check  
  Credit Card  
  Money Order  
  None  
  Other (please identify): \_\_\_\_\_

Deposit Account  
 Deposit Account Number: 50-0665  
 Deposit Account Name: Perkins Coie LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

Charge fee(s) indicated below  
  Charge fee(s) indicated below, except for the filing fee

Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17  
  Credit any overpayments

**FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)**

**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	<u>Small Entity</u> Fee (\$)	Fee (\$)	<u>Small Entity</u> Fee (\$)	Fee (\$)	<u>Small Entity</u> Fee (\$)	
Utility	300	150	500	250	200	100	500.00
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

**2. EXCESS CLAIM FEES**

Fee Description	Fee (\$)	<u>Small Entity</u> Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims    Extra Claims    Fee (\$)                      Fee Paid (\$)  
 43    - 20 =    23    x    25.00    =    575.00

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims    Extra Claims    Fee (\$)                      Fee Paid (\$)  
 4    - 3 =    1    x    100.00    =    100.00

HP = highest number of independent claims paid for, if greater than 3.

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), 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).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
42	- 100 =	1/50	(round up to a whole number) x	

**4. OTHER FEE(S)**

	Fees Paid (\$)
Non-English Specification, \$130 fee (no small entity discount)	
Other (e.g., late filing surcharge): 2051 Surcharge-Late filing fee	65.00
Recordation Fee	40.00

**SUBMITTED BY**

Signature		Registration No. (Attorney/Agent)	37,376	Telephone	(206) 359-8000
Name (Print/Type)	Steven D. Lawrenz	Date	May 8, 2006		

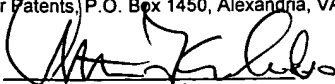
I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 853118034US, on the date shown below in an envelope addressed to: MS Missing Parts, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Dated: 5/8/06                      Signature: (Attila Kovacs-Szabo)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 853118034US, on the date shown below in an envelope addressed to: MS Missing Parts, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Dated: 5/8/06

Signature:

  
(Attila Kovacs-Szabo)

Docket No.: 569208005US00

Docket No.: 569208005US00  
(PATENT)



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Patent Application of:  
Cheng et al.

Application No.: 11/347,024

Filed: February 3, 2006

For: AUTOMATICALLY DETERMINING A  
CURRENT VALUE FOR A REAL ESTATE  
PROPERTY, SUCH AS A HOME, THAT IS  
TAILORED TO INPUT FROM A HUMAN  
USER, SUCH AS ITS OWNER

Confirmation No.: 1383

Art Unit: 3624

Examiner: Not Yet Assigned

**RESPONSE TO NOTICE TO FILE MISSING PARTS OF APPLICATION**

MS Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Notice to File Missing Parts of Application – Filing Date Granted mailed March 6, 2006, Applicant respectfully submits a Declaration, a Power of Attorney, the Filing Fee for the Application (as shown on accompanying Fee Transmittal), and Part 2 Copy of Notice.

Our check in the amount of \$1,280.00 covering the fees set forth in 37 CFR 1.16(f), 1.16(a)(1), 1.16(k), 1.16(o), 1.16(i), and 1.16(h) is enclosed. The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to

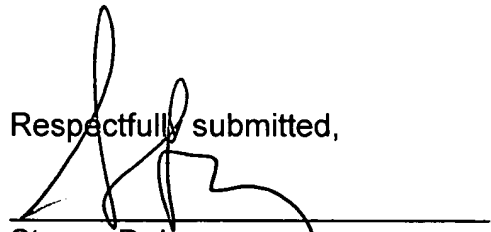
Application No.: 11/347,024

Docket No.: 569208005US00

our Deposit Account No. 50-0665, under Order No. 569208005US00. A duplicate copy of this paper is enclosed.

Dated: May 8, 2006

Respectfully submitted,



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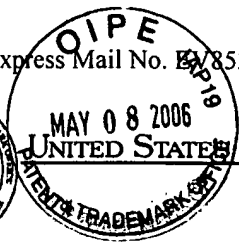
Steven D. Lawrenz  
Registration No.: 37,376  
PERKINS COIE LLP  
P.O. Box 1247  
Seattle, Washington 98111-1247  
(206) 359-8000  
(206) 359-7198 (Fax)  
Attorney for Applicant



5-9-06

*JFW*

Express Mail No. EA853118034US



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
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Address: COMMISSIONER FOR PATENTS  
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Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
11/347,024	02/03/2006	David Cheng	569208005US

**CONFIRMATION NO. 1383**  
**FORMALITIES LETTER**

25096  
PERKINS COIE LLP  
PATENT-SEA  
P.O. BOX 1247  
SEATTLE, WA 98111-1247

Date Mailed: 03/06/2006

**NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION**

**FILED UNDER 37 CFR 1.53(b)**

*Filing Date Granted*

**Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.  
*Applicant must submit \$ 150 to complete the basic filing fee for a small entity.*
- The oath or declaration is missing. *A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.*  
*Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.*

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Additional claim fees of \$675 as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of \$65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

**SUMMARY OF FEES DUE:**

Total additional fee(s) required for this application is \$1240 for a Small Entity

05/10/2006 YPOLITE1 00000015 11347024

01 FC:2011	
02 FC:2111	150.00 OP
03 FC:2311	250.00 OP
04 FC:2051	100.00 OP
05 FC:2201	65.00 OP
06 FC:2202	100.00 OP
	575.00 OP

- \$150 Statutory basic filing fee.

- **\$65** Surcharge.
  
- The application search fee has not been paid. Applicant must submit **\$250** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit **\$100** to complete the examination fee for a small entity in compliance with 37 CFR 1.27
  
- Total additional claim fee(s) for this application is **\$675**
  - **\$100** for **1** independent claims over 3.
  - **\$575** for **23** total claims over 20.

Replies should be mailed to:    Mail Stop Missing Parts  
   Commissioner for Patents  
   P.O. Box 1450  
   Alexandria VA 22313-1450

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*A copy of this notice **MUST** be returned with the reply.*

*RW*

Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199, or 1-800-972-6382  
PART 2 - COPY TO BE RETURNED WITH RESPONSE



Express Mail No. EV 853118034US

<b>Declaration for Patent Application English Language Declaration</b>		Attorney Docket No.	569208005US00
		First Named Inventor	David Cheng
<b>COMPLETE IF KNOWN:</b>			
<input type="checkbox"/> Submitted with initial filing <input checked="" type="checkbox"/> Submitted after initial filing (surcharge required 37 CFR 1.16(e))	Application No.	11/347,024	
	Filing Date	February 3, 2006	
	Art Unit	N/A	
	Examiner	Not Yet Assigned	

As a below named inventor, I hereby declare that:

My residence, mailing address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**AUTOMATICALLY DETERMINING A CURRENT VALUE FOR A REAL ESTATE PROPERTY, SUCH AS A HOME, THAT IS TAILORED TO INPUT FROM A HUMAN USER, SUCH AS ITS OWNER**

the specification of which

is attached hereto  
OR

was filed on 02/03/2006

as United States Application No. or PCT International Application No. 11/347,024  
and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the National or PCT International filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign applications(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's right certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

**Prior Foreign Application(s)**

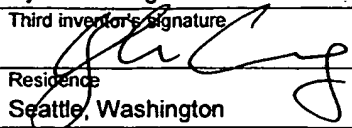
			Priority Not Claimed	Certified Copy Attached	
			<input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
_____ (Number)	_____ (Country)	_____ (Filing Date)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____ (Number)	_____ (Country)	_____ (Filing Date)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____ (Number)	_____ (Country)	_____ (Filing Date)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

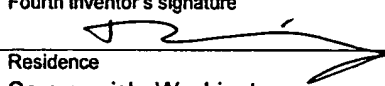
Additional prior foreign applications are listed on a supplemental data sheet attached hereto.

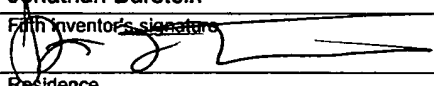
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

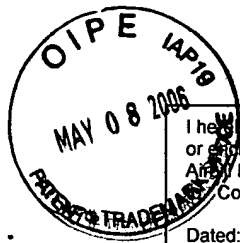
Full name of sole or first inventor David Cheng	
Sole or first inventor's signature <i>David Cheng</i>	Date 4-28-06
Residence Seattle, Washington	
Citizenship US	
Mailing Address  500 - 5th Avenue W, Unit 66 Seattle, Washington 98119	

Full name of second inventor Stan Humphries	
Second inventor's signature <i>Stan Humphries</i>	Date 4/28/2006
Residence Sammamish, Washington	
Citizenship US	
Mailing Address  21505 SE 2nd Street Sammamish, Washington 98074	

Full name of third inventor <b>Kyusik Chung</b>	
Third inventor's signature 	Date <b>4.28.2006</b>
Residence <b>Seattle, Washington</b>	
Citizenship <b>US</b>	
Mailing Address  <b>2716 Elliott Avenue, #805 Seattle, Washington 98121</b>	

Full name of fourth inventor, if any <b>Dong Xiang</b>	
Fourth inventor's signature 	Date <b>4/28/06</b>
Residence <b>Sammamish, Washington</b>	
Citizenship <b>People's Republic of China</b>	
Mailing Address  <b>3502 - 211th Place SE Sammamish, Washington 98075</b>	

Full name of fifth inventor, if any <b>Jonathan Burstein</b>	
Fifth inventor's signature 	Date <b>28 April 2006</b>
Residence <b>Seattle, Washington</b>	
Citizenship <b>US</b>	
Mailing Address  <b>1614 Summit Avenue, #501 Seattle, Washington 98122</b>	



I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service as Express Mail, Air Mail No. EV 853118034US, on the date shown below in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Dated: 5/8/06 Signature: *Attila Kovacs-Szabo*  
(Attila Kovacs-Szabo)

Docket No.: 569208005US00  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Cheng et al.

Application No.: 11/347,024

Confirmation No.: N/A

Filed: February 3, 2006

Art Unit: N/A

For: AUTOMATICALLY DETERMINING A  
CURRENT VALUE FOR A REAL ESTATE  
PROPERTY, SUCH AS A HOME, THAT IS  
TAILORED TO INPUT FROM A HUMAN  
USER, SUCH AS ITS OWNER

Examiner: Not Yet Assigned

**POWER OF ATTORNEY**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Zillow, Inc., assignee of the entire right title and interest in the above-identified application by assignment, a copy of which is submitted herewith, hereby appoints the following attorneys and/or agents of the firm of Perkins Coie LLP:

All practitioners at Customer Number 25096.

as its attorneys with full power of substitution to prosecute this application and to transact all business in the Patent and Trademark Office in connection therewith.

The assignee certifies that it has reviewed the assignment and to the best of the assignee's knowledge and belief, title is in the assignee.

Please direct all correspondence regarding this application to the following:

PERKINS COIE LLP  
Attn: Steven D. Lawrenz  
P.O. Box 1247  
Seattle, Washington 98111-1247  
Telephone: (206) 359-3265  
Fax: (206) 359-4265

For: Zillow, Inc.

  
\_\_\_\_\_  
Lloyd Frink, President

Dated: May 5, 2006



## UNITED STATES PATENT AND TRADEMARK OFFICE

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 United States Patent and Trademark Office  
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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
11/347,024	02/03/2006	David Cheng	569208005US

CONFIRMATION NO. 1383

FORMALITIES  
 LETTER

25096  
 PERKINS COIE LLP  
 PATENT-SEA  
 P.O. BOX 1247  
 SEATTLE, WA 98111-1247

Date Mailed: 03/06/2006

## NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted*

### Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.  
*Applicant must submit \$ 150 to complete the basic filing fee for a small entity.*
- The oath or declaration is missing. *A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.*  
*Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.*

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The required item(s) identified below must be timely submitted to avoid abandonment:

- Additional claim fees of \$675 as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of \$65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

### SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$1240 for a Small Entity

- \$150 Statutory basic filing fee.



- **\$65** Surcharge.
  
- The application search fee has not been paid. Applicant must submit **\$250** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit **\$100** to complete the examination fee for a small entity in compliance with 37 CFR 1.27
  
- Total additional claim fee(s) for this application is **\$675**
  - **\$100** for **1** independent claims over 3.
  - **\$575** for **23** total claims over 20.

Replies should be mailed to:    Mail Stop Missing Parts  
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   Alexandria VA 22313-1450

---

*A copy of this notice **MUST** be returned with the reply.*

*Red*

Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199, or 1-800-972-6382  
PART 3 - OFFICE COPY

020306

17439 U.S. PTO

PTO/SB/05 (05-05)

Approved for use through 07/31/2006. OMB 0651-0032  
U.S. Patent and Trademark Office. U.S. DEPARTMENT OF COMMERCE

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.

<b>UTILITY PATENT APPLICATION TRANSMITTAL</b> <small>(ONLY FOR NEW NONPROVISIONAL APPLICATIONS UNDER 37 CFR 1.53(B))</small>	<b>Attorney Docket No.</b>	569208005US
	<b>First Inventor</b>	David Cheng
	<b>Title</b>	AUTOMATICALLY DETERMINING A CURRENT VALUE FOR A REAL ESTATE PROPERTY, SUCH AS A HOME, THAT IS TAILORED, etc.
	<b>Express Mail Label No.</b>	EV853117864US

<b>APPLICATION ELEMENTS</b> <small>See MPEP chapter 600 concerning utility patent application contents.</small>	<b>ADDRESS TO:</b> Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450
--	---

1.  **Fee Transmittal Form** (e.g., PTO/SB/17)  
(Submit an original and a duplicate for fee processing)
2.  **Applicant claims small entity status.**  
See 37 CFR 1.27.
3.  **Specification** [Total Pages 42 ]  
Both the claims and abstract must start on a new page  
(For information on the preferred arrangement, see MPEP 608.01(a))
4.  **Drawing(s)** (35 U.S.C. 113) [Total Sheets 22 ]
5.  **Oath or Declaration** [Total Sheets \_\_\_\_\_ ]
  - a.  Newly executed (original or copy)
  - b.  A copy from a prior application (37 CFR 1.63(d))  
(for continuation/divisional with Box 18 completed)
  - i.  **DELETION OF INVENTOR(S)**  
Signed statement attached deleting inventor(s) named in the  
prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6.  **Application Data Sheet.** See 37 CFR 1.76
7.  **CD-ROM or CD-R** in duplicate, large table or  
Computer Program (Appendix)  
 Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**  
(if applicable, items a. - c. are required)
  - a. **Computer Readable Form (CRF)**
    - i.  Computer Readable Form (CRF)
    - ii.  Transfer Request (37 CFR 1.821(e))
  - b. **Specification Sequence Listing on:**
    - i.  CD-ROM or CD-R (2 copies); or
    - ii.  Paper
  - c.  Statements verifying identity of above copies

**ACCOMPANYING APPLICATION PARTS**

9.  **Assignment Papers** (cover sheet & document(s))  
Name of Assignee: \_\_\_\_\_
10.  **37 CFR 3.73(b) Statement**  **Power of Attorney**  
(when there is an assignee)
11.  **English Translation Document** (if applicable)
12.  **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)  
 Copies of foreign patent documents,  
publications, & other information
13.  **Preliminary Amendment**
14.  **Return Receipt Postcard** (MPEP 503)  
(Should be specifically itemized)
15.  **Certified Copy of Priority Document(s)**  
(if foreign priority is claimed)
16.  **Nonpublication Request** under 35 U.S.C. 122 (b)(2)(B)(i).  
Applicant must attach form PTO/SB/35 or equivalent.
17.  **Other:** \_\_\_\_\_

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

Continuation  Divisional  Continuation-in-part (CIP) of prior application No.: \_\_\_\_\_

Prior application information: Examiner \_\_\_\_\_ Art Unit: \_\_\_\_\_

**19. CORRESPONDENCE ADDRESS**

The address associated with Customer Number: 25096 OR  Correspondence address below

Name					
Address					
City	State	Zip Code			
Country	Telephone	Email Address			
Signature				Date	February 3, 2006
Name (Print/Type)	Steven D. Lawrenz			Registration No. (Attorney/Agent)	37,376

113007 U.S. PTO  
11/347024

020306

AUTOMATICALLY DETERMINING A CURRENT VALUE FOR A REAL  
ESTATE PROPERTY, SUCH AS A HOME, THAT IS TAILORED TO  
INPUT FROM A HUMAN USER, SUCH AS ITS OWNER

TECHNICAL FIELD

**[0001]** The described technology is directed to the field of electronic commerce techniques, and, more particularly, to the field of electronic commerce techniques relating to real estate.

BACKGROUND

**[0002]** In many roles, it can be useful to be able to accurately determine the value of real estate properties ("properties"), such as residential real estate properties ("homes"). As examples, by using accurate values for homes: taxing bodies can equitably set property tax levels; sellers and their agents can optimally set listing prices; and buyers and their agents can determine appropriate offer amounts.

**[0003]** A variety of conventional approaches exist for valuing homes. Perhaps the most reliable is, for a home that was very recently sold, attributing its selling price as its value. Unfortunately, following the sale of a home, its current value can quickly diverge from its sale price. Accordingly, the sale price approach to valuing a home tends to be accurate for only a short period after the sale occurs. For that reason, at any given time, only a small percentage of homes can be accurately valued using the sale price approach.

**[0004]** Another widely-used conventional approach to valuing homes is appraisal, where a professional appraiser determines a value for a home by comparing some of its attributes to the attributes of similar nearby homes that have recently sold ("comps"). The appraiser arrives at an appraised value by subjectively adjusting the sale prices of the comps to reflect differences between the attributes of the comps and the attributes of the home being appraised. The accuracy of the appraisal approach can be adversely affected

by the subjectivity involved. Also, appraisals can be expensive, can take days or weeks to complete, and may require physical access to the home by the appraiser.

**[0005]** While it might be possible to design systems that automatically value homes, such automatic valuations would generally be performed based upon the contents of a public database, and without input from each home's owner or other information not in the public database. In such systems, failing to consider such information may result in valuations that are significantly inaccurate in some instances.

**[0006]** In view of the shortcomings of conventional approaches to valuing homes discussed above, a new approach to valuing homes that was responsive to owner input, as well as having a high level of accuracy, and being inexpensive and convenient, would have significant utility.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0007]** Figure 1 is a block diagram showing some of the components typically incorporated in at least some of the computer systems and other devices on which the facility executes.

**[0008]** Figure 2 is a flow diagram showing steps typically performed by the facility to automatically determine current values for homes in a geographic area.

**[0009]** Figure 3 is a table diagram showing sample contents of a recent sales table.

**[0010]** Figure 4A is a flow diagram showing steps typically performed by the facility in order to construct a tree.

**[0011]** Figure 4B is a flow diagram showing steps typically performed by the facility in order to determine whether and how to split a node of a tree.

**[0012]** Figure 5 is a table diagram showing sample contents of a basis table containing the basis information selected for the tree.

**[0013]** Figure 6 is a tree diagram showing a root node corresponding to the basis table 500.

**[0014]** Figure 7 is a tree diagram showing a completed version of the sample tree.

**[0015]** Figure 8 is a flow diagram showing steps typically performed by the facility in order to score a tree.

**[0016]** Figure 9 is a table diagram showing sample results for scoring a tree.

**[0017]** Figure 10 is a display diagram showing detailed information about an individual home.

**[0018]** Figure 11 is a display diagram showing a map identifying a number of homes in the same geographic area.

**[0019]** Figure 12 is a display diagram showing a display typically presented by the facility containing the attributes of a particular home.

**[0020]** Figure 13 is a display diagram showing a display typically presented by the facility to identify possible comparable sales on a map.

**[0021]** Figure 14 is a flow diagram showing steps typically performed by the facility in order to tailor a valuation of a subject home based on information provided by a user such as the home's owner.

**[0022]** Figure 15 is a display diagram showing a sample display typically presented by the facility to display an initial valuation of the subject home and solicit updated home attributes from the user.

**[0023]** Figure 16 is a display diagram showing a typical display presented by the facility to permit the user to describe improvements made to the subject home.

**[0024]** Figure 17 is a display diagram showing a sample display typically presented by the facility to enable the user to describe other aspects of the subject home that affect its value.

**[0025]** Figure 18 is a display diagram showing a sample display presented by the facility in order to enable the user to identify comps regarded by the owner as similar to the subject home.

**[0026]** Figures 19A-19F show a sample display typically presented by the facility in order to present an overall revised value for the subject home.

**[0027]** Figure 20 is a table diagram showing sample contents of recent sales information used to construct a linear regression valuation model that is based on the attributes whose values are available for the user to update in the first step of the process of generating a tailored valuation.

## DETAILED DESCRIPTION

### Overview

**[0028]** A software facility for automatically determining a current value for a home or other property that is tailored to input from its owner or another user ("the facility") is described. While the following discussion liberally employs the word "home" to refer to the property being valued in other nearby properties, those skilled in the art will appreciate that the facility may be straightforwardly applied to properties of other types. Similarly, while a wide variety of users may use the facility, including the owner, an agent or other person representing the owner, a prospective buyer, an agent or other person representing prospective buyer, or another third party.

**[0029]** In some embodiments, the facility uses a web site to receive information from a user and display to the user a refined valuation for the home that is based upon the information provided by the user. In some embodiments, the information provided by the user may include additional, corrected, and/or updated attributes of the home relative to the attributes known by the facility, such as attributes retrieved by the facility from a public or private database of home attributes; information about improvements to the home; information about other factors likely to affect the value of the home, such as well-kept grounds, historical significance, ground water issues, etc.; and information identifying, among recent, nearby sales of comparable homes ("comps"), those that the user regards as the most similar to the subject home. In some embodiments, the facility displays the results of refining its valuation in a manner that makes clear how the valuation was affected by the different information provided by the user.

**[0030]** By enabling an user to refine a valuation of his or her home based upon information about the home known to the user, the facility in many cases makes the

valuation more accurate than would otherwise be possible, and/or helps the user to more fully accept the valuation as appropriate.

### Home Valuation

**[0031]** In some embodiments, the facility constructs and/or applies housing price models each constituting a forest of classification trees. In some such embodiments, the facility uses a data table that identifies, for each of a number of homes recently sold in the geographic region to which the forest corresponds, attributes of the home and its selling price. For each of the trees comprising the forest, the facility randomly selects a fraction of homes identified in the table, as well as a fraction of the attributes identified in the table. The facility uses the selected attributes of the selected homes, together with the selling prices of the selected homes, to construct a classification tree in which each non-leaf node represents a basis for differentiating selected homes based upon one of the selected attributes. For example, where number of bedrooms is a selected attribute, a non-leaf node may represent the test "number of bedrooms  $\leq$  4." This node defines 2 subtrees in the tree: one representing the selected homes having 4 or fewer bedrooms, the other representing the selected homes having 5 or more bedrooms. Each leaf node of the tree represents all of the selected homes having attributes matching the ranges of attribute values corresponding to the path from the tree's root node to the leaf node. The facility assigns each leaf node a value corresponding to the mean of the selling prices of the selected homes represented by the leaf node.

**[0032]** In some areas of the country, home selling prices are not public records, and may be difficult or impossible to obtain. Accordingly, in some embodiments, the facility estimates the selling price of a home in such an area based upon loan values associated with its sale and an estimated loan-to-value ratio.

**[0033]** In order to weight the trees of the forest, the facility further scores the usefulness of each tree by applying the tree to homes in the table other than the homes that were selected to construct the tree, and, for each such home, comparing the value indicated for the home by the classification tree (i.e., the value of the root leaf node into which the tree classifies the home) to its selling price. The closer the values indicated by the tree to the selling prices, the higher the score for the tree.

**[0034]** In most cases, it is possible to determine the attributes of a home to be valued. For example, they can often be obtained from existing tax or sales records maintained by local governments. Alternatively, a home's attributes may be inputted by a person familiar with them, such as the owner, a listing agent, or a person that derives the information from the owner or listing agent. In order to determine a value for a home whose attributes are known, the facility applies all of the trees of the forest to the home, so that each tree indicates a value for the home. The facility then calculates an average of these values, each weighted by the score for its tree, to obtain a value for the home. In various embodiments, the facility presents this value to the owner of the home, a prospective buyer of the home, a real estate agent, or another person interested in the value of the home or the value of a group of homes including the home.

**[0035]** In some embodiments, the facility applies its model to the attributes of a large percentage of homes in a geographic area to obtain and convey an average home value for the homes in that area. In some embodiments, the facility periodically determines an average home value for the homes in a geographic area, and uses them as a basis for determining and conveying a home value index for the geographic area.

**[0036]** Because the approach employed by the facility to determine the value of a home does not rely on the home having recently been sold, it can be used to accurately value virtually any home whose attributes are known or can be determined. Further, because this approach does not require the services of a professional appraiser, it can typically determine a home's value quickly and inexpensively, in a manner generally free from subjective bias.

**[0037]** Figure 1 is a block diagram showing some of the components typically incorporated in at least some of the computer systems and other devices on which the facility executes. These computer systems and devices 100 may include one or more central processing units ("CPUs") 101 for executing computer programs; a computer memory 102 for storing programs and data—including data structures, database tables, other data tables, etc.—while they are being used; a persistent storage device 103, such as a hard drive, for persistently storing programs and data; a computer-readable media drive 104, such as a CD-ROM drive, for reading programs and data stored on a computer-



readable medium; and a network connection 105 for connecting the computer system to other computer systems, such as via the Internet, to exchange programs and/or data—including data structures. In various embodiments, the facility can be accessed by any suitable user interface including Web services calls to suitable APIs. While computer systems configured as described above are typically used to support the operation of the facility, one of ordinary skill in the art will appreciate that the facility may be implemented using devices of various types and configurations, and having various components.

**[0038]** Figure 2 is a flow diagram showing steps typically performed by the facility to automatically determine current values for homes in a geographic area. The facility may perform these steps for one or more geographic areas of one or more different granularities, including neighborhood, city, county, state, country, etc. These steps may be performed periodically for each geographic area, such as daily. In step 201, the facility selects recent sales occurring in the geographic area. The facility may use sales data obtained from a variety of public or private sources.

**[0039]** Figure 3 is a table diagram showing sample contents of a recent sales table. The recent sales table 300 is made up of rows 301-315, each representing a home sale that occurred in a recent period of time, such as the preceding 60 days. Each row is divided into the following columns: an identifier column 321 containing an identifier for the sale; an address column 322 containing the address of the sold home; a square foot column 323 containing the floor area of the home; a bedrooms column 324 containing the number of bedrooms in the home; a bathrooms column 325 containing the number of bathrooms in the home; a floors column 326 containing the number of floors in the home; a view column 327 indicating whether the home has a view; a year column 328 showing the year in which the house was constructed; a selling price column 329 containing the selling price at which the home was sold; and a date column 330 showing the date on which the home was sold. For example, row 301 indicates that sale number 1 of the home at 111 Main St., Hendricks, IL 62012 having a floor area of 1850 square feet, 4 bedrooms, 2 bathrooms, 2 floors, no view, built in 1953, was for \$132,500, and occurred on January 3, 2005. While the contents of recent sales table 300 were included to pose a comprehensible example, those skilled in the art will appreciate that the facility can use a

recent sales table having columns corresponding to different and/or a larger number of attributes, as well as a larger number of rows. Attributes that may be used include, for example, construction materials, cooling technology, structure type, fireplace type, parking structure, driveway, heating technology, swimming pool type, roofing material, occupancy type, home design type, view type, view quality, lot size and dimensions, number of rooms, number of stories, school district, longitude and latitude, neighborhood or subdivision, tax assessment, attic and other storage, etc. For a variety of reasons, certain values may be omitted from the recent sales table. In some embodiments, the facility imputes missing values using the median value in the same column for continuous variables, or the mode (i.e., most frequent) value for categorical values.

**[0040]** While Figure 3 and each of the table diagrams discussed below show a table whose contents and organization are designed to make them more comprehensible by a human reader, those skilled in the art will appreciate that actual data structures used by the facility to store this information may differ from the table shown, in that they, for example, may be organized in a different manner; may contain more or less information than shown; may be compressed and/or encrypted; etc.

**[0041]** Returning to Figure 2, in steps 202-205, the facility constructs and scores a number of trees, such as 100. This number is configurable, with larger numbers typically yielding better results but requiring the application of greater computing resources. In step 203, the facility constructs a tree. In some embodiments, the facility constructs and applies random forest valuation models using an R mathematical software package available at <http://cran.r-project.org/> and described at <http://www.maths.lth.se/help/R/.R/library/randomForest/html/randomForest.html>. Step 203 is discussed in greater detail below in connection with Figure 4. In step 204, the facility scores the tree constructed in step 203. Step 204 is discussed in greater detail below in connection with Figure 8.

**[0042]** In steps 206-207, the facility uses the forest of trees constructed and scored in steps 202-205 to process requests for home valuations. Such requests may be individually issued by users, or issued by a program, such as a program that automatically requests valuations for all homes in the geographic area at a standard frequency, such as

daily, or a program that requests valuations for all of the homes occurring on a particular map in response to a request from a user to retrieve the map. In step 206, the facility receives a request for valuation identifying the home to be valued. In step 207, the facility applies the trees constructed in step 203, weighted by the scores generated for them in step 204, to the attributes in the home identified in the received request in order to obtain a valuation for the home identified in the request. After step 207, the facility continues in step 206 to receive the next request.

**[0043]** Those skilled in the art will appreciate that the steps shown in Figure 2 and in each of the flow diagrams discussed below may be altered in a variety of ways. For example, the order of the steps may be rearranged; substeps may be performed in parallel; shown steps may be omitted, or other steps may be included; etc.

**[0044]** Figure 4A is a flow diagram showing steps typically performed by the facility in order to construct a tree. In step 401, the facility randomly selects a fraction of the recent sales in the geographic area to which the tree corresponds, as well as a fraction of the available attributes, as a basis for the tree.

**[0045]** Figure 5 is a table diagram showing sample contents of a basis table containing the basis information selected for the tree. Basis table 500 contains rows randomly selected from the recent sales table 300, here rows 302, 308, 209, 311, 313, and 315. The basis table further includes the identifier column 321, address column 322, and selling price column 329 from the recent sales table, as well as randomly selected columns for two available attributes: a bedrooms column 324 and a view column 327. In various embodiments, the facility selects various fractions of the rows and attribute columns of the recent sales table for inclusion in the basis table; here, the fraction one third is used for both.

**[0046]** In some embodiments, the facility filters rows from the basis table having selling prices that reflect particularly rapid appreciation or depreciation of the home relative to its immediately-preceding selling price. For example, in some embodiments, the facility filters from the basis table recent sales whose selling prices represent more than 50% annual appreciation or more than 50% annual depreciation. In other embodiments,

however, the facility initially performs the filtering described above, then uses the filtered basis table to construct a preliminary model, applies the preliminary model to the unfiltered basis table, and excludes from the basis table used to construct the primary model those sales where the valuation produced by the preliminary model is either more than 2 times the actual selling price or less than one-half of the actual selling price.

**[0047]** Returning to Figure 4A, in step 402, the facility creates a root node for the tree that represents all of the basis sales contained in the basis table and the full range of each of the basis attributes.

**[0048]** Figure 6 is a tree diagram showing a root node corresponding to the basis table 500. The root node 601 represents the sales having identifiers 2, 8, 9, 11, 13, and 15; values of the bedrooms attribute between  $1-\infty$ ; and values of the view attribute of yes and no.

**[0049]** Returning to Figure 4A, in steps 403-407, the facility loops through each node of the tree, including both the root node created in step 402 and any additional nodes added to the tree in step 405. In step 404, if it is possible to "split" the node, i.e., create two children of the node each representing a different subrange of an attribute value range represented by the node, then the facility continues in step 405, else the facility continues in step 406. Figure 4B is a flow diagram showing steps typically performed by the facility in order to determine whether and how to split a node of a tree. These steps generally identify a potential split opportunity having the highest information gain, and determine whether the information gain of that potential split opportunity exceeds the information gain of the current node. In step 451, the facility determines whether the node's population—that is, the number of basis sales represented by the node—satisfies a split threshold, such as a split threshold that requires more than three basis sales. If the threshold is not satisfied, then the facility returns to step 404 in step 452 without identifying any split opportunity, such that the facility will not split the node; otherwise, the facility continues in step 453. Though not shown, the facility may apply a variety of other tests to determine whether the node should be split, including whether any of the selected attribute ranges represented by the node is divisible. For example, where the selected attributes

are bedrooms and view, and a node represents the ranges bedrooms=5 and view=no, none of the node's selected attribute ranges can be split.

**[0050]** In steps 453-455, the facility analyzes the characteristics of the node in order to be able to compare them to characteristics of pairs of possible child nodes that would result from different opportunities for splitting the node. In step 453, the facility determines the mean selling price among the sales represented by the node to obtain a node mean selling price for the node. Applying step 453 to root node 600 shown in Figure 6, the facility determines a mean selling price for the node as shown below in Table 1 by determining the mean of all the selling prices shown in basis table 500.

1 Node mean selling price = \$201,400

Table 1

**[0051]** In step 454, the facility sums the squares of the differences between the node mean selling price determined in step 454 and the selling price of each sale represented by the node to obtain a node overall squared error. This calculation is shown below in table 2 for root node 601.

2	Sale 2 overall squared error = $(\$201,000 - \text{line 1})^2 =$	160000
3	Sale 8 overall squared error = $(\$74,900 - \text{line 1})^2 =$	16002250000
4	Sale 9 overall squared error = $(\$253,500 - \text{line 1})^2 =$	2714410000
5	Sale 11 overall squared error = $(\$230,000 - \text{line 1})^2 =$	817960000
6	Sale 13 overall squared error = $(\$211,000 - \text{line 1})^2 =$	92160000
7	Sale 15 overall squared error = $(\$238,000 - \text{line 1})^2 =$	1339560000
8	Node overall squared error =	20966500000

Table 2

In step 455, the facility divides the overall squared error by one fewer than the number of sales represented by the node in order to obtain a node variance. The calculation of step 455 for root node 600 is shown below in table 3.

Table 3

**[0052]** In steps 456-460, the facility analyzes the characteristics of each possible split opportunity that exists in the node; that is, for each attribute range represented by the node, any point at which that range could be divided. For root node 600, three such split opportunities exist: (1) view=no/view=yes; (2) bedrooms $\leq$ 4/bedrooms $>$ 4; and (3) bedrooms $\leq$ 5/bedrooms $>$ 5. In step 457, for each side of the possible split opportunity, the facility determines the mean selling price among sales on that side to obtain a split side mean selling price. Table 4 below shows the performance of this calculation for both sides of each of the three possible split opportunities of root node 600.

10	Split side mean selling price of view=no side of possible split opportunity 1 = mean of selling prices for sales 2, 8, 11, and 13 =	\$179,225
11	Split side mean selling price of view=yes side of possible split opportunity 1 = mean of selling prices for sales 9 and 15 =	\$245,750
12	Split side mean selling price for bedrooms $\leq$ 4 side of possible split opportunity 2 = mean of selling prices of sales 8 and 11 =	\$152,450
13	Split side mean selling price for bedrooms $>$ 4 side of possible split opportunity 2 = mean of selling prices of sales 2, 9, 13, and 15 =	\$225,875
14	Split side mean selling price for bedrooms $\leq$ 5 side of possible split opportunity 3 = mean of selling prices of sales 8, 11, 13, and 15 =	\$188,475
15	Split side mean selling price for bedrooms $>$ 5 side of possible split opportunity 3 = mean of selling prices of sales 2 and 9 =	\$227,250

Table 4

**[0053]** In step 458, the facility sums the squares of the differences between the selling price of each sale represented by the node and the split side mean selling price on the same side of the possible split opportunity to obtain a possible split opportunity

squared error. The result of the calculation of step 458 for root node 600 is shown below in table 5.

16	Possible split opportunity 1 squared error for sale 2 = (\$201,000 – line 10) <sup>2</sup> =	474150625
17	Possible split opportunity 1 squared error for sale 8 = (\$74,900 – line 10) <sup>2</sup> =	10883705625
18	Possible split opportunity 1 squared error for sale 9 = (\$253,500 – line 11) <sup>2</sup> =	60062500
19	Possible split opportunity 1 squared error for sale 11 = (\$230,000 – line 10) <sup>2</sup> =	2578100625
20	Possible split opportunity 1 squared error for sale 13 = (\$211,000 – line 10) <sup>2</sup> =	1009650625
21	Possible split opportunity 1 squared error for sale 15 = (\$238,000 – line 11) <sup>2</sup> =	60062500
22	Possible split opportunity 1 squared error = sum of lines 16-21 =	15065732500
23	Possible split opportunity 2 squared error for sale 2 = (\$201,000 – line 13) <sup>2</sup> =	618765625
24	Possible split opportunity 2 squared error for sale 8 = (\$74,900 – line 12) <sup>2</sup> =	6014002500
25	Possible split opportunity 2 squared error for sale 9 = (\$253,500 – line 13) <sup>2</sup> =	763140625
26	Possible split opportunity 2 squared error for sale 11 = (\$230,000 – line 12) <sup>2</sup> =	6014002500
27	Possible split opportunity 2 squared error for sale 13 = (\$211,000 – line 13) <sup>2</sup> =	221265625
28	Possible split opportunity 2 squared error for sale 15 = (\$238,000 – line 13) <sup>2</sup> =	147015625
29	Possible split opportunity 2 squared error = sum of lines 23-28 =	13778192500
30	Possible split opportunity 3 squared error for sale 2 = (\$201,000 – line 15) <sup>2</sup> =	689062500
31	Possible split opportunity 3 squared error for sale 8 = (\$74,900 – line 14) <sup>2</sup> =	12899280625
32	Possible split opportunity 3 squared error for sale 9 = (\$253,500 – line 15) <sup>2</sup> =	689062500
33	Possible split opportunity 3 squared error for sale 11 = (\$230,000 – line 14) <sup>2</sup> =	1724325625
34	Possible split opportunity 3 squared error for sale 13 = (\$211,000 – line 14) <sup>2</sup> =	507375625

35	Possible split opportunity 3 squared error for sale 15 = (\$238,000 – line 14) <sup>2</sup> =	2452725625
36	Possible split opportunity 3 squared error = sum of lines 30-35 =	18961832500

Table 5

**[0054]** In line 459, the facility divides the possible split opportunity squared error by two less than the number of sales represented by the node to obtain a variance for the possible split opportunity. The calculation of step 459 is shown below for the three possible split opportunities of root node 600.

37	Variance for possible split opportunity 1 = line 22 / 4 =	3766433125
38	Variance for possible split opportunity 2 = line 29 / 4 =	3444548125
39	Variance for possible split opportunity 3 = line 36 / 4 =	4740458125

Table 6

**[0055]** In step 460, if another possible split opportunity remains to be processed, then the facility continues in step 456 to process the next possible split opportunity, else the facility continues in step 461.

**[0056]** In step 461, the facility selects the possible split opportunity having the lowest variance. In the example, the facility compares lines 37, 38 and 39 to identify the possible split opportunity 2 as having the lowest variance. In step 462, if the selected possible split opportunity variance determined in step 461 is less than the node variance determined in step 455, then the facility continues in step 464 to return, identifying the split opportunity selected in step 461, else the facility continues in step 463 to return without identifying a split opportunity. In the example, the facility compares line 38 to line 9, and accordingly determines to split the root node in accordance with split opportunity 2.

**[0057]** Returning to Figure 4A, in step 405, where the steps shown in Figure 4B determine that the node should be split, the facility creates a pair of children for the node. Each child represents one of the subranges of the split opportunity identified in step 404



and the node's full range of unselected attributes. Each child represents all basis sales whose attributes satisfy the attribute ranges represented by the child. Step 405 is discussed in greater detail below in connection with Figure 7.

**[0058]** In step 406, because the node will be a leaf node, the facility determines the mean selling price of basis sales represented by the node.

**[0059]** In step 407, the facility processes the next node of the tree. After step 407, these steps conclude.

**[0060]** Figure 7 is a tree diagram showing a completed version of the sample tree. It can be seen that the facility added child nodes 702 and 703 to root node 601, corresponding to the subranges defined by the split opportunity selected in step 461. Node 702 represents sales whose bedrooms attribute is less than or equal to 4, that is, between 1 and 4, as well as the full range of view attribute values represented by node 601. Accordingly, node 702 represents sales 8 and 11. Because this number of sales is below the threshold of 4, node 702 qualifies as a leaf node, and its valuation of \$152,450 is calculated by determining the mean selling price of sales 8 and 11.

**[0061]** Node 703 represents sales with bedrooms attribute values greater than 4, that is, 5-∞. Node 703 further represents the full range of view attributes values for node 601. Accordingly, node 703 represents sales 2, 9, 13, and 15. Because this number of sales is not smaller than the threshold number and the node's ranges are not indivisible, the facility proceeded to consider possible split opportunities. In order to do so, the facility performs the calculation shown below in Table 7. For the following two possible split opportunities: (4) view=no/view=yes; and (5) bedrooms=5/bedrooms>5.

40	node mean selling price = mean of selling prices for sales 2, 9, 13, and 15 =	\$225,875
41	sale 2 overall squared error = $(\$201,000 - \text{line } 40)^2 =$	618765625
42	sale 9 overall squared error = $(\$253,500 - \text{line } 40)^2 =$	76314625
43	sale 13 overall squared error = $(\$211,000 - \text{line } 40)^2 =$	221265625
44	sale 15 overall squared error = $(\$238,000 - \text{line } 40)^2 =$	147015625
45	node overall squared error =	1750187500
46	node variance = line 45 / 3 =	583395833

47	split side mean selling price of view=no side of possible split opportunity 4 = mean selling prices of sales 2 and 13 =	\$206,000
48	split side mean selling price of view=yes side of possible split opportunity 4 = mean selling prices of sales 9 and 15 =	\$245,750
49	split side mean selling price for bedrooms $\leq$ 5 side of possible split opportunity 5 = mean selling prices of sales 13 and 15 =	\$224,500
50	split side mean selling price of bedrooms $>$ 5 side of possible split opportunity 5 = mean selling prices of sales 2 and 9 =	\$227,250
51	possible split opportunity 4 squared error for sale 2 = $(\$201,000 - \text{line 47})^2 =$	25000000
52	possible split opportunity 4 squared error for sale 9 = $(\$253,500 - \text{line 48})^2 =$	60062500
53	possible split opportunity 4 squared error for sale 13 = $(\$211,000 - \text{line 47})^2 =$	25000000
54	possible split opportunity 4 squared error for sale 15 = $(\$238,000 - \text{line 48})^2 =$	60062500
55	possible split opportunity 4 squared error = sum of lines 51-54 =	17012500
56	possible split opportunity 5 squared error for sale 2 = $(\$201,000 - \text{line 50})^2 =$	689062500
57	possible split opportunity 5 squared error for sale 9 = $(\$253,500 - \text{line 50})^2 =$	689062500
58	possible split opportunity 5 squared error for sale 13 = $(\$211,000 - \text{line 49})^2 =$	182250000
59	possible split opportunity 5 squared error for sale 15 = $(\$238,000 - \text{line 49})^2 =$	182250000
60	possible split opportunity 5 squared error = sum of lines 56-59 =	1742625000
61	variance for possible split opportunity 4 = line 55 / 2 =	85062500
62	variance for possible split opportunity 5 = line 60 / 2 =	871312500

Table 7

**[0062]** From Table 7, it can be seen that, between split opportunities 4 and 5, split opportunity 4 has the smaller variance, shown on line 61. It can further be seen that the

variance of possible split opportunity 4 shown on line 61 is smaller than the node variance shown on line 46. Accordingly, the facility uses possible split opportunity 4 to split node 703, creating child nodes 704 and 705. Child node 704 represents basis sales 2 and 13, and that attribute ranges bedrooms=5-∞ and view=no. Node 704 has a valuation of \$206,000, obtained by averaging the selling prices of the base of sales 2 and 13. Node 705 represents base of sales 9 and 15, and attribute value ranges bedrooms=5-∞ and view=yes. Node 705 has valuation \$245,750, obtained by averaging the selling price of sales 9 and 15.

**[0063]** In order to apply the completed tree 700 shown in Figure 7 to obtain its valuation for a particular home, the facility retrieves that home's attributes. As an example, consider a home having attribute values bedrooms=5 and view=yes. The facility begins at root node 601, and among edges 711 and 712, traverses the one whose condition is satisfied by the attributes of the home. In the example, because the value of the bedroom's attribute for the home is 5, the facility traverses edge 712 to node 703. In order to proceed from node 703, the facility determines, among edges 713 and 714, which edge's condition is satisfied. Because the home's value of the view attribute is yes, the facility traverses edge 714 to leaf node 705, and obtains a valuation for the sample home of \$245,750.

**[0064]** Those skilled in the art will appreciate that the tree shown in Figure 7 may not be representative in all respects of trees constructed by the facility. For example, such trees may have a larger number of nodes, and/or a larger depth. Also, though not shown in this tree, a single attribute may be split multiple times, i.e., in multiple levels of the tree.

**[0065]** Figure 8 shows steps typically performed by the facility in order to score a tree. In step 801, the facility identifies recent sales in the geographic area that were not used as a basis for constructing the tree in order to score the tree. In steps 802-805, the facility loops through each sale identified in step 801. In step 803, the facility applies the tree to the attributes of the sale to obtain a value. In step 804, the facility compares the value obtained in step 803 to the selling price for the sale to determine an error magnitude, dividing the difference between valuation and selling price by selling price. In step 806,

the facility calculates a score that is inversely related to the median error magnitude determined in step 804. After step 806, these steps conclude.

**[0066]** Figure 9 is a table diagram showing sample results for scoring a tree. Scoring table 900 scores tree 700 based upon the contents of recent sales table 300. The scoring table is made up of the rows of recent sales table 300 other than those used as basis sales for constructing the tree, i.e., rows 301, 303, 304, 305, 306, 307, 310, 312, and 314. It further contains the following columns from recent sales table 300: identifier column 321, address column 322, bedroom column 324, view column 327, and selling price column 329. The scoring table further contains a valuation column 911 containing the valuation of each home determined in step 803. For example, row 307 shows that the facility determines the valuation of \$245,750 for sale 7 using tree 700. In particular, the facility begins at root node 601; traverses to node 703 because the number of bedrooms 5 is greater than 4; traverses to node 705 because view = yes; and adopts the valuation of node 705, \$245,750. Scoring table 900 further contains an error column 912 indicating the difference between each home's valuation and selling price. For example, row 307 contains an error of .0685, the difference between valuation \$245,750 and selling price \$230,000, divided by selling price \$230,000. Associated with the table is a median error field 951 containing the median of error values in the scoring table, or .3734. Each tree's median error value is used to determine weightings for the trees that are inversely related to their median error values. In some embodiments, the facility determines the particular tree's weighting by generating an accuracy metric for each tree by subtracting its median error value from 1, and dividing the tree's accuracy measure by the sum of all of the trees' accuracy measures. Also, a variety of different approaches to determine a score that is negatively correlated with the average error may be used by the facility.

**[0067]** When a home is valued using the forest, the sample tree will be applied to the attributes of the home in the same way it was applied to homes in the scoring process described above. (If any attributes of the home are missing, the facility typically imputes a value for the missing attribute based upon the median or mode for that attribute in the recent sales table.) The valuation produced will be averaged with the valuations produced by the other trees of the forest. In the average, each valuation will be weighted by the

score attributed by the facility to the tree. This resultant average is presented as the valuation for the home.

**[0068]** Figures 10-11 show ways in which valuations generated by the facility may be presented. Figure 10 is a display diagram showing detailed information about an individual home. The display 1000 includes detailed information 1001 about the home. Despite the fact that the home has not been sold recently, the facility also displays a valuation 1002 for the home, enabling prospective buyers and listing agents to gauge their interest in the home, or permitting the home's owner to gauge his interest in listing the home for sale.

**[0069]** Figure 11 is a display diagram showing a map identifying a number of homes in the same geographic area. The display 1100 shows homes 1101-1112. The facility also displays its valuations 1151-1162 of these homes in connection with their location on the map. Presenting the facility's valuations in this way permits home shoppers to obtain an overview of the geographic area, identify special trends within the geographic area, identify the anomalous values as good values or poor picks, etc.

**[0070]** In some embodiments, the valuations displayed or otherwise reported by the facility are not the "raw" valuations directly produced by the valuation model, but rather "smoothed" valuations that are generated by blending the raw valuation generated by the current iteration of the model with earlier valuations. As one example, in some embodiments, the facility generates a current smoothed valuation for a home by calculating a weighted average of a current raw valuation and a smoothed valuation of the same home from the immediately-preceding time period, where the prior smooth valuation is weighted more heavily than the current raw valuation. In some embodiments, where new iterations of the model are constructed and applied daily, the prior smoothed valuation is weighted 49 times as heavily as the current raw valuation; where a new iteration of the model is constructed and applied weekly, the prior smoothed valuation is weighted 9 times as heavily as the current raw valuation; where new iterations of the model are constructed and applied monthly, the previous smoothed valuation is weighted twice as heavily as the current raw valuation. Those skilled in the art will appreciate that a

variety of other smoothing techniques may be used in order to dampen erratic movement in a particular home's reported valuation over time.

**[0071]** In some embodiments, the facility constructs and applies compound valuation models to one or more geographic areas. A compound valuation model includes two or more separate classification tree forests, some or all of which may be applied to the attributes of a particular home in order to value it. As one example, in some embodiments, the facility constructs a compound model including both a forest constructed as described above (referred to as a "core forest"), as well as a separate, "high-end" forest constructed from basis sales having a selling price above the 97.5 percentile selling price in the geographic area. In these embodiments, the compound model is applied as follows. First, the core forest is applied to the attributes of a home. If the valuation produced by the core forest is no larger than the 97.5 percentile selling price in the geographic area, then this valuation is used directly as the model's valuation. Otherwise, the facility also applies the high-end forest to the attributes of the home. If the valuation produced by the core forest is above the 99 percentile selling price, then the valuation produced by the high-end forest is used directly as the model's valuation. Otherwise, a weighted average of the valuations produced by the core forest and the high-end forest is used, where the weight of the core forest valuation is based upon nearness of the core model valuation to the 97.5 percentile selling price, while the weight of the high-end forest valuation is based on the nearness of the core forest valuation to the 99 percentile selling price.

#### Tailoring Valuation to User Input

**[0072]** The facility typically initiates the tailoring of a valuation for a subject home to input from the subject home's user in response to expression of interest by the user in performing such tailoring. In various embodiments, the facility enables the user to express such interest in a variety of ways. As one example, the user may select link 1011 from the display of detailed information about a particular home shown in Figure 10. Figures 12 and 13 show additional ways that the facility permits the user to express such interest in some embodiments. Figure 12 is a display diagram showing a display typically presented by the facility containing the attributes of a particular home, also called "home facts." The

display 1200 includes a list 1201 of attributes and their values, as well as a link 1202 to display a more extensive list. The display further includes a way 1210 that the user may traverse in order to express interest in tailoring the valuation of the home.

**[0073]** Figure 13 is a display diagram showing a display typically presented by the facility to identify possible comparable sales on a map. The display 1300 includes such a map 1301 and well as a link 1310 that the user can follow in order to express interest in tailoring evaluation of this home.

**[0074]** Figure 14 is a flow diagram showing steps typically performed by the facility in order to tailor a valuation of a subject home based on information provided by the home's user. The interactions described herein are typically performed by serving web pages to a user who is the user of the subject home, and receiving input from that user based upon the user's interaction with the web pages. These web pages may be part of a web site relating to aspects of residential or other real estate. Figures 15-19, discussed in greater detail below, contain sample displays presented by the facility in some embodiments in performing the steps of Figure 14.

**[0075]** In step 1401, the facility displays an initial valuation of the subject home. In step 1402, the facility solicits updated home attributes from the user.

**[0076]** Figure 15 is a display diagram showing a sample display typically presented by the facility to display an initial valuation of the subject home and solicit updated home attributes from the user. The display 1500 includes a navigation area 1510 which includes a progress indicator made up of step indicators 1511-1515. The display of step indicator 1511 for the first step more prominently than the other step indicators indicates that the first step is presently being performed. The display further includes an initial valuation 1520 in the amount of \$550,727. In this and the display diagrams that follow, home valuations are identified as "Zestimates." The display also includes a number of controls 1531-1541, each corresponding to a different attribute or "home fact" of the subject home. In some embodiments, attribute controls are only displayed for attributes whose value has a non-zero influence on the valuations provided by the valuation model for the geographic area containing the home, or a level of influence that exceeds a threshold larger than zero.

Initially, these attribute controls are populated with attribute values automatically retrieved from a data source and used to determine the subject home's initial valuation in the manner described above. The user can interact with any of these controls to change the corresponding attribute value. For example, the user may interact with control 1532 to correct the number of bedrooms from 3 to 4, or may interact with control 1537 to update the indicated territorial view to a water view that was created when a nearby building was demolished. In some embodiments, as the user interacts with these controls, the facility updates an indication 1550 of the extent to which the user's updates have altered the valuation of the home. In some embodiments, the facility determines this amount by determining a new valuation for the home by applying the existing geographically-specific valuation model for the home—in other words, the existing forest of decision trees for the home—to the updated attributes, and subtracting the original valuation from the result. For example, where the user uses control 1537 to change the value of the view attribute from territorial to none, the facility retraverses all of the trees of the forest constituting the model for the geographic region containing the home. In particular, when the facility traverses sample tree 700 shown in Figure 7, rather than traversing from node 703 to node 705 for the home as the facility initially did based upon an affirmative value of the view attribute, the facility traverses from node 703 to node 704 based upon the new negative value of the view attribute. Accordingly, the weighted average of the valuations for all the trees of the forest include a valuation of \$206,000 from tree 700, obtained from leaf node 704, rather than valuation of \$245,750 obtained from node 705.

**[0077]** If the user makes a mistake, he or she can select a control 1560 in order to restore the original facts on which the initial valuation was based. The user can select a control 1570 in order to update an indication 1580 of the valuation of home adjusted to take into account the user's updates to the attributes. In some embodiments (not shown), the facility further includes in the display a warning that, because an updated attribute value provided by the user is not represented among the basis sales used to construct the valuation model, updated valuations based upon this updated attribute value may be inaccurate. When the user has finished updating home attributes, he or she can select a next control 1591 to move to the next step of the process, describing home improvements.



**[0078]** Returning to Figure 14, in step 1403, the facility displays a refined valuation that takes into account the attributes updated by the user. In step 1404, the facility solicits information from the user about improvements to the subject home.

**[0079]** Figure 16 is a display diagram showing a typical display presented by the facility to permit the user to describe improvements made to the subject home. The display 1600 includes a highlighted step indication 1612 that indicates that the user is performing the second step of the process. Indication 1680 reflects the addition of \$1500 to the initial valuation based upon the attribute updates performed by the user in the first step of the process. The display includes an area 1830 that the user can use to describe improvements to the subject home. These include an improvement type control 1631, an improvement timing control 1632, and an improvement cost control 1633. When the user interacts with these controls to describe an improvement, the facility typically uses the improvement type and the geographical region containing the subject home to access a table containing average recovery rates for different improvement types and regions. The facility applies the looked-up recovery rate to the improvement cost amount to obtain an estimated present value. In some embodiments, the facility further applies a depreciation schedule to the estimated present value, such as one specifying smooth depreciation from one hundred percent to twenty-five percent over the period between zero and ten years after the improvement, and a flat twenty-five percent thereafter. In some embodiments, however, the values of various improvements are incorporated directly in the valuation model—i.e., are represented in the trees of the forest—therefore may be handled in the application of the valuation model to the home, rather than computed separately. In some embodiments, the facility further monitors for the entry of home improvement in display 1600 that are redundant with attribute updates in Figure 15, and prevents them from contributing redundantly to calculating the overall revised value for the subject home, either by preventing such an entry, or by reducing the value of such an entry to avoid double-counting. The facility then displays an indication 1634 of an estimated present value of the improvement. The user may select an edit link 1635 to override this estimate of present value. The display further includes a link 1639 that the user may follow to extend the improvement description area for describing another improvement. The

display further includes an indication 1640 of the total present value of the described improvements. The display further includes a description 1650 of different improvement types made available by the facility. The user can click the next control 1691 to proceed to the next step of the process, describing other aspects of the home that affect its value.

**[0080]** Returning to Figure 14, in step 1405, the facility displays a refined valuation that takes into account the improvements described by the user. In step 1406, the facility solicits information from the user about other factors affecting the value of the subject home.

**[0081]** Figure 17 is a display diagram showing a sample display typically presented by the facility to enable the user to describe other aspects of the subject home that affect its value. It can be seen that indication 1780 of the refined value reflects the addition of \$3300 for improvements listed in the previous step. The display includes a feature description area 1730 for inputting information about additional aspects. This area includes a description control 1731 for entering a description of the aspect, the control 1732 for indicating whether the aspect adds to or subtracts from the value of the home, and a control 1733 for indicating the magnitude of the impact of the aspect on the value of the home. The display further includes a link 1739 that the user may traverse to expand the aspect description area to describe another aspect. The display further includes an indication 1740 of the total amount added to or subtracted from the subject home's value by the described aspects. The user may select next control 1791 to proceed to the next step of the process, identifying comps regarded by the user as similar to the subject home.

**[0082]** Returning to Figure 14, in step 1407, the facility displays a refined valuation that takes into account the other factors described by the user. In step 1408, the facility solicits from the user a list of nearby homes that have recently sold ("comps") that are the most similar to the subject home.

**[0083]** Figure 18 is a display diagram showing a sample display presented by the facility in order to enable the user to identify comps regarded by the user as similar to the subject home. It can be seen that the indication 1880 of refined value has been decreased by \$300 to reflect a net reduction in the value corresponding to the sum of the

inputted values for the aspects described in the previous step of the process. The display includes a map 1830 on which possible comps are displayed as numbers appearing in circles. For example, a possible comp 1831 appears as a circle with the number one in it. When the user hovers over and/or clicks on one of these possible comps, the facility displays a pop-up balloon including information about the possible comp. Additional information about the possible comps is also shown below in table 1840. The user can traverse link 1833 in the pop-up balloon or link 1834 in the table in order to add the first possible comp to a "My Comps" list 1835. The user populates the My Comps list in this manner, until it contains what he or she regards as up to ten comps most similar to the subject home.

**[0084]** After the user has populated the My Comps list, and selects either the updated value control 1870 or the next control 1891, in step 1409, the facility determines an updated valuation for the subject home based upon the population of the My Comps list. In particular, in some embodiments, the facility makes a copy of the recent sales table 300 for the geographic region that contains the subject home and was used to construct the forest for this geographic area. The facility alters the copy of the recent sales table to increase a weighting in the copy of the recent sales table of the comps in the My Comps list, causing them to be significantly more likely to be selected from the copy of the recent sales table for inclusion in tree basis tables. In some embodiments, the facility achieves this weighting by adding copies of the rows for each comp in the My Comps list to the recent sales table. In some embodiments, the facility also increases to a lesser extent the weighting in a copy of the recent sales table of the sales of homes that are near the subject home, such as having the same zip code, having the same neighborhood name, or having a calculated distance from the subject home that is below a particular distance threshold. The facility then uses this altered copy of the recent sales table to generate a new forest for the geographic region. The facility applies this forest, which is tailored to the comps included in the My Comps list, to the attributes of the home as updated in the first step of the process. In some embodiments, the result of applying the tailored forest is adjusted by averaging it with a separate valuation determined by multiplying the floor area of the subject home by an average selling price per square foot value among the sales on

the My Comps list. In some embodiments, the facility determines the valuation by averaging the average selling price per square foot valuation with the original model valuation rather than the updated model valuation if the initial model valuation is between the adjusted model valuation and the average price per square foot valuation. The facility then subtracts from the resulting valuation the change in value from step one—\$1500 in the example—because this amount is represented in the new valuation. To arrive at an overall valuation, the facility adds to the result the additional amounts identified in the second and third steps of the process, in the example \$3300 and negative \$300.

**[0085]** In some embodiments, the facility permits the user to populate the My Comps list with any similar nearby home, irrespective of whether it has recently been sold. The facility then emphasize the valuations of these homes, such as valuations automatically determined by the facility, in determining a refined valuation for the subject home.

**[0086]** Figures 19A-19F show a sample display typically presented by the facility in order to present an overall revised value for the subject home. Figure 19A shows the entire display, while Figures 19B-19F show portions of the display at a greater level of magnification. The display includes an overall summary section 1930 containing an overview of the calculation of the new revised value, as well as detailed sections 1940, 1950, 1960, and 1970, each displaying additional detail about the value added or subtracted by each of the four steps of the process. Figure 19B shows that section 1930 contains a breakdown beginning with the initial valuation 1920, and adding value increments 1931-1934 for each of the four steps of the process to arrive at the new revised value 1980. Figure 19C shows that the increment 1931 for the updated attributes is the result of increasing the number of bedrooms from 3-4 (1941) and changing the view from none to water (1942). Figure 19D shows that the value increment for home improvements 1931 is the result of adding a value of \$300 for a new roof (1951) and \$3000 for a kitchen remodel (1952). Figure 19E shows that the increment for other aspects affecting the value of the subject home is arrived at by adding \$700 for an orchard (1961) and subtracting \$1000 because a new fence is needed (1962). Figure 19F shows that the user's selection of comps has established an increment of \$2650 (1935). Section

1970 further includes a map 1971 showing the comps selected by the user, as well as a table 1972 showing the same in a different form.

**[0087]** In various embodiments, the behavior of the facility described above is adapted in various ways. As one adaptation, in some embodiments, the facility uses a smoothed version of the valuation produced by the valuation model, rather than a raw version. For example, a smoothed version of this valuation may be obtained by blending the raw valuation produced using a current iteration of the model with one or more valuations produced using earlier iterations of the model. In some embodiments, such blending involves calculating a weighted average of the current raw valuation and the immediately-preceding smoothed valuation in which the smoothed valuation is weighted more heavily. For example, where the valuation model is updated daily, in some embodiments, the facility weights the preceding smoothed valuation 49 times more heavily than the current raw valuation.

**[0088]** As another adaptation, in some embodiments, where user input causes the facility to produce an updated valuation for a home that varies from the original valuation of the home by more than a threshold percentage, the facility displays a warning message indicating that the valuation has changed significantly, and may not be accurate.

**[0089]** As another adaptation, in some embodiments, the facility generates a tailored valuation using a valuation model that is constrained to use a proper subset of available home attributes, such as only the attributes whose values are available for the user to update in the first step of the process of generating the tailored valuation. In some embodiments, this involves using a separate decision tree forest valuation model that is constructed using only the subset of attributes. In some embodiments, this involves using a valuation model of another type that is constructed using only the subset of attributes, such as a linear regression model constructed by plotting each of the base of sales as a point in  $N+1$ -space, where  $N$  is the number of continuous attributes in the subset plus the sum of the unique values of categorical attributes in the subset minus the number of categorical attributes in the subset,  $N$  of the dimensions are devoted individually to the values of attributes among the subset, and the final dimension is devoted to selling price; and using curve-fitting techniques to construct a function yielding home value whose

independent variables are the values of the attributes among the subset; this function is used to determine valuations of the subject home.

**[0090]** Figure 20 is a table diagram showing sample contents of recent sales information used to construct a linear regression valuation model that is based on the attributes whose values are available for the user to update in the first step of the process of generating a tailored valuation. It can be seen that the table 2000 includes the following columns for each sale: a sale id column 2021 containing an identifier for the sale; a square foot column 2022 containing the improved floor area of the home; a lot size column 2023 containing the area of the home's lot, in square feet; a bedrooms column 2024 containing the number of bedrooms in the home; a bathrooms column 2025 containing the number of bathrooms in the home; a floors column 2026 containing the number of stories in the home; a year column 2027 showing the year in which the house was constructed; a selling price column 2028 containing the selling price at which the home was sold; a roof type column 2029 indicating the type of material from which the home's roof is constructed; and a use code column 2030 containing an indication of the primary use of the home.

**[0091]** Table 8 below lists variables derived from these sale attribute values that are used as independent variables to construct a linear regression model.

63 SQUAREFEETPERBEDROOM= column 2022 / column 2024  
64 BUILTDATEDIFFERENCEYEARS = current year – column 2027  
65 BATHROOMCNT = column 2025  
66 BEDROOMCNT = column 2024, or, if empty, total number of rooms  
67 FINISHEDSQUAREFEET = column 2022  
68 LOTSIZESQUAREFEET = column 2023  
69 STORYCNT = column 2026  
70 USECODETYPEIDSTANDARD = encoded version of column 2030  
71 ROOFTYPEID = encoded version of column 2029  
72 BEDSQFT = line 66 \* line 67  
73 BEDLOT = line 66 \* line 68  
74 SQFTLOT = line 67 \* line 68  
75 BED2 = (line 66)<sup>2</sup>  
76 LOT2 = (line 68)<sup>2</sup>  
77 YEAR2 = (line 64)<sup>2</sup>  
78 SQFT2 = (line 67)<sup>2</sup>

Table 8

**[0092]** For each of a group of recent sales, the facility creates a tuple made up of the values of the variables showing lines 63-78 in Table 8 based upon the sale's attribute values, as well as the selling price for the sale. The facility submits the generated tuples to a linear regression engine, which fits a curve to the points represented by the tuples, resulting in a set of coefficients representing a linear valuation formula. For example, in some embodiments, the facility performs the curve-fitting by invoking a `lm()` function described at <http://cran.r-project.org/doc/manuals/R-intro.html#Linear-models>, and available as part of the R statistical computing environment, available at <http://www.r-project.org/>. This formula can then be used as a valuation model to determine a valuation for an arbitrary home, given a tuple corresponding to the home's attribute values.

**[0093]** As an example, when the facility considers the recent sales data shown in Figure 20, it constructs a valuation formula shown as the sum of the lines of Table 9 below.

79	\$219,000		
80	-\$16	*	FINISHEDSQUAREFEET
81	-\$171	*	LOTSIZESQUAREFEET
82	\$0	*	SQFT2
83	\$0	*	LOT2
84	\$0	*	SQFTLOT
85	\$2	*	YEAR2
86	\$1,933	*	BUILTDATEDIFFERENCEYEAR
87	\$4,940	*	STORYCNT
88	\$26,100	*	BATHROOMCNT
89	\$35,110	*	BED2
90	-\$337	*	BEDSQFT
91	\$55	*	BEDLOT
92	\$62,980	*	BEDROOMCNT
93	\$15,390	if	(ROOFTYPE = tile)
94	\$87,640	if	(ROOFTYPE = shake)

Table 9

**[0094]** In some embodiments, the facility filters out the recent sales data used by the facility to generate a valuation formula sales whose attributes have extreme values, such as an age greater than 300 years. In some embodiments, the facility tailors the valuation formula created by the process described above to a particular home using one or more of the following techniques: more heavily weighting sales having a high selling price in valuation formulas constructed for valuing a home whose primary valuation is near the average selling price of these high-end homes; more heavily weighting recent sales that are geographically near the home to be valued, such as in the same zip code; and, where the user has selected particular recent sales as My Comps, more heavily weighting these sales in constructing the valuation formula. In some embodiments, data missing from the recent sales data used to construct the valuation function is imputed in a manner similar to that described above.

**[0095]** In some embodiments, the facility employs a model of a type other than the primary, decision-tree forest model, but does not use it to directly generate valuations of the subject home. Rather, it is used to generate valuations of the subject home before and after the user updates attributes of the subject home, and the percentage change in the valuation produced by the other model is applied to a valuation produced for the subject home using the original attribute values by the primary, decision-tree forest model. Similarly, in these embodiments, the facility may construct separate copies of the other model before and after the performance of the fourth, My Comps step of the process use each of the copies to value the subject home, determine the percentage change between these valuations, and apply it to a valuation produced for the subject home by the primary model before the fourth step of the process is performed.

### Conclusion

**[0096]** It will be appreciated by those skilled in the art that the above-described facility may be straightforwardly adapted or extended in various ways. For example, the facility may use a variety of user interfaces to collect various information usable in determining valuations from users and other people knowledgeable about homes. While the foregoing description makes reference to particular embodiments, the scope of the invention is defined solely by the claims that follow and the elements recited therein.



## CLAIMS

We claim:

[c1] 1. A method in a computing system for automatically determining a valuation for a subject home in response to input from an owner of the home, comprising:

presenting a display that includes an indication of a first valuation determined for the subject home and indications of attributes of the subject home used in the determination, the indicated valuation being determined by applying to the indicated attributes a geographically-specific home valuation model is based upon a plurality of homes near the subject home recently sold;

presenting a display that solicits input from the owner that updates one or more of the indicated attributes;

receiving first input from the owner that updates one or more of the indicated attributes;

applying the geographically-specific home valuation model to attributes of the subject home as updated by the first input to determine and display a second valuation for the subject home;

presenting a display that solicits input from the owner that identifies the type, cost, and timing of one or more home improvements performed on the subject home;

receiving second input from the owner that identifies the type, cost, and timing of one or more home improvements performed on the subject home;

using the second input to determine and display (a) a present value of the identified home improvements and (b) a third valuation that takes into account the present value of the identified home improvements;

presenting a display that solicits input from the owner that identifies other assets or liabilities of the subject home and the value attributed to them by the owner;

receiving third input from the owner that identifies other aspects of the subject home affecting its value and the value attributed to them by the owner;

determining a valuation adjustment corresponding to the identified aspects;

displaying a fourth valuation that takes into account the determined valuation adjustment corresponding to the identified aspects;

presenting a display that solicits input from the owner that identifies homes near the subject home that the owner regards as similar to the subject home;

receiving fourth input from the owner that identifies homes near the subject home recently sold that the owner regards as similar to the subject home;

using the fourth input to generate a tailored geographically-specific home valuation model that (1) is based upon a plurality of homes near the subject home recently sold that is a superset of the homes identified by the fourth input, but (2) places special emphasis on the homes identified by the fourth input;

applying the tailored valuation model to the updated attributes of the subject home to obtain a fifth valuation of the subject home; and

displaying the fifth valuation based on the application of the tailored valuation model.

[c2] 2. A computer-readable medium whose contents cause a computing system to perform a method for procuring information about a distinguished property from its owner that is usable to refine an automatic valuation of the distinguished property, the method comprising:

displaying at least a portion of information about the distinguished property used in the automatic valuation of the distinguished property;

obtaining user input from the owner adjusting at least one aspect of information about the distinguished property used in the automatic valuation of the distinguished property; and

displaying to the owner a refined valuation of the distinguished property that is based on the adjustment of the obtained user input.

[c3] 3. The computer-readable medium of claim 2, further comprising:  
determining whether any of the altered home attributes is an attribute not present among home sales used to construct the geographically-specific home valuation model; and  
if so, displaying a warning.

[c4] 4. The computer-readable medium of claim 2, further comprising:  
determining whether the refined valuation diverges from the automatic valuation by more than a threshold percentage; and  
if so, displaying a warning.

[c5] 5. The computer-readable medium of claim 2 wherein the adjustment of the obtained user input includes altering property attributes used in the automatic valuation of the distinguished property, and wherein the displayed refined valuation is based at least in part on the altered property attributes.

[c6] 6. The computer-readable medium of claim 2 wherein the adjustment of the obtained user input includes adding a description of an improvement to the distinguished property, and wherein the displayed refined valuation is based at least in part on a valuation of the described improvement.

[c7] 7. The computer-readable medium of claim 2 wherein the adjustment of the obtained user input includes adding a description of an aspect of the distinguished property not considered by the automatic valuation of the distinguished property and an estimate by the owner of its value, and wherein the displayed refined valuation is based at least in part on the estimate of the value of the described aspect.

[c8] 8. The computer-readable medium of claim 2 wherein the adjustment of the obtained user input includes identifying recent sales of nearby properties regarded by the owner as similar to the distinguished property, and wherein the displayed refined

valuation is based at least in part on a repetition of the automatic valuation of the distinguished property in which the influence of the identified sales is magnified.

[c9] 9. The computer-readable medium of claim 8 wherein the adjustment of the obtained user input further includes identifying a scoring of the properties sold in the identified sales reflecting the relative level of similarity of the sold properties to the distinguished property, and wherein the displayed refined valuation is based at least in part on a repetition of the automatic valuation of the distinguished property in which the influence of the identified sales is magnified in a manner consistent with the identified scores.

[c10] 10. The computer-readable medium of claim 9 wherein the user input identifies a scoring of the properties sold in the identified sales reflecting the relative level of similarity of the sold properties to the distinguished property by specifying a ranked order for the identified sales.

[c11] 11. The computer-readable medium of claim 8, the method further comprising displaying a map showing properties in a geographic region surrounding the distinguished property,  
and wherein the owner identifies the recent sales of nearby properties regarded by the owner as similar to the distinguished property by selecting them on the displayed map.

[c12] 12. The computer-readable medium of claim 8, the method further comprising displaying a map showing properties in a geographic region surrounding the distinguished property,  
and wherein the owner identifies each recent sale of a nearby property regarded by the owner as similar to the distinguished property by selecting a control in a popup balloon associated with its location on the displayed map.

[c13] 13. The computer-readable medium of claim 8, the method further comprising displaying a table comprising rows each containing textual information about a different one of a plurality of recent sales of nearby properties, and wherein the owner identifies each recent sale of a nearby property regarded by the owner as similar to the distinguished property by interaction with the row containing information about the sale.

[c14] 14. The computer-readable medium of claim 2 wherein the adjustment of the obtained user input includes identifying nearby properties regarded by the owner as similar to the distinguished property, and wherein the displayed refined valuation is based at least in part on a repetition of the automatic valuation of the distinguished property in which the influence of values for the identified sales properties is magnified.

[c15] 15. A method in a computing system for refining an automatic valuation of a distinguished home based upon input from a user knowledgeable about the distinguished home, comprising:

obtaining user input adjusting at least one aspect of information about the distinguished home used in the automatic valuation of the distinguished home;

automatically determining a refined valuation of the distinguished home that is based on the adjustment of the obtained user input; and

presenting the refined valuation of the distinguished home.

[c16] 16. The method of claim 15 wherein the presenting involves displaying the refined valuation of the distinguished home to a user providing the user input.

[c17] 17. The method of claim 15 wherein the presenting involves displaying the refined valuation of the distinguished home to a user other than the user providing the user input.

[c18] 18. The method of claim 15 wherein the automatic valuation of the distinguished home involves applying a geographically-specific home valuation model to attributes indicated by an external data source to be possessed by the distinguished home,

and wherein the adjustment of the obtained user input includes altering the home attributes indicated by an external data source to be possessed by the distinguished home, and wherein the determined refined valuation is based at least in part on applying the geographically-specific home valuation model to the altered attributes.

[c19] 19. The method of claim 18 wherein the geographically-specific home valuation model is a forest of classification trees each constructed from information about recent sales of homes near the distinguished home.

[c20] 20. The method of claim 18 wherein the geographically-specific home valuation model is a linear regression model constructed from information about recent sales of homes near the distinguished home.

[c21] 21. The method of claim 18 wherein the geographically-specific home valuation model is a hybrid model, utilizing both a forest of classification trees and a linear regression-derived function, both constructed from information about recent sales of home near the distinguished home.

[c22] 22. The method of claim 21 wherein the refined valuation is determined by dividing by a first valuation of the distinguished home generated by the linear regression-derived function from the attributes indicated by the external data source to be possessed by the distinguished home a second valuation generated by the linear regression-derived function based upon the altered attributes to obtain a ratio, and wherein the ratio is multiplied by a valuation generated by the forest of classification trees based upon the home attributes indicated by the external data source to be possessed by the distinguished home.

[c23] 23. The method of claim 21, further comprising weighting in the construction of the linear regression-derived function information about recent sales of individual homes near the distinguished home based upon the extents to which the sold home and the distinguished home are similar to high-value homes near the distinguished home.

[c24] 24. The method of claim 21, further comprising weighting in the construction of the linear regression-derived function information about recent sales of individual homes near the distinguished home based upon the degree of nearness of each of the sold homes to the distinguished home.

[c25] 25. The method of claim 18 wherein the geographically-specific home valuation model is constrained to consider only home attributes available for alteration by the user.

[c26] 26. The method of claim 15 wherein the adjustment of the obtained user input includes adding a description of an improvement to the distinguished home, and wherein the determined refined valuation is based at least in part on a valuation of the described improvement.

[c27] 27. The method of claim 26 wherein the added improvement description identifies an improvement type and a cost for the described improvement, further comprising determining the valuation of the described improvement by applying a localized improvement cost recovery rate for the identified improvement type to the identified cost.

[c28] 28. The method of claim 26 wherein the added improvement description identifies an age of the described improvement and a cost for the described improvement, further comprising determining the valuation of the described improvement by applying a depreciation schedule to the identified age and cost.

[c29] 29. The method of claim 15 wherein the adjustment of the obtained user input includes adding a description of an aspect of the distinguished home not considered by the automatic valuation of the distinguished home and an estimate by a user providing the user input of its value, and wherein the determined refined valuation is based at least in part on the estimate of the value of the described aspect.

[c30] 30. The method of claim 15 wherein the automatic valuation of the distinguished home involves applying a geographically-specific home valuation model to attributes indicated by an external data source to be possessed by the distinguished home,  
and wherein the adjustment of the obtained user input includes identifying recent sales of nearby homes regarded as similar to the distinguished home,  
the method further comprising:

constructing a new geographically-specific home valuation model that emphasizes the significance of the identified sales; and

applying the constructed new geographically-specific home valuation model to attributes of the distinguished home to obtain a result,  
and wherein the determined refined valuation is based at least in part on the obtained result.

[c31] 31. The method of claim 30 wherein the constructed new geographically-specific home valuation model is applied to attributes indicated by the external data source to be possessed by the distinguished home.

[c32] 32. The method of claim 30 wherein the adjustment of the obtained user input further includes altering the home attributes indicated by the external data source to be possessed by the distinguished home, and wherein the constructed new geographically-specific home valuation model is applied to altered attributes.



[c33] 33. The method of claim 30 wherein adjustment of the obtained user input further includes identifying a scoring of the homes sold in the identified sales reflecting the relative level of similarity of the sold homes to the distinguished home, and wherein the constructed new geographically-specific home valuation model emphasizes the significance of the identified sales in a manner consistent with the identified scoring.

[c34] 34. The method of claim 30, further comprising:  
among the identified recent sales of nearby homes regarded as similar to the distinguished home, determining an average selling price per square foot;  
multiplying the determined average selling price per square foot by the floor area of the distinguished home to obtain an alternate valuation of the distinguished home;  
and  
before presenting the refined valuation of the distinguished home, blending into the refined valuation of the distinguished home the obtained alternate valuation.

[c35] 35. The method of claim 30 wherein the constructed new geographically-specific home valuation model also emphasizes the significance of sales of homes whose locations are determined to be near the location of the distinguished home.

[c36] 36. The method of claim 35 further comprising determining that the location of a home recently sold is near the location of the distinguished home if it has the same zip code as the distinguished home.

[c37] 37. The method of claim 35 further comprising determining that the location of a home recently sold is near the location of the distinguished home if it has the same neighborhood name as the distinguished home.

[c38] 38. The method of claim 30, further comprising:  
accessing a floor area attribute of the distinguished home and the nearby homes whose recent sales were identified, and a selling price for each of the identified sales;  
determining among the identified sales a selling price per square foot metric;  
multiplying the obtained selling price per square foot metric by the floor area of the distinguished home to obtain a product; and  
combining the product with the result to obtain the determined refined valuation.

[c39] 39. The method of claim 35 further comprising determining that the location of a home recently sold is near the distinguished home if the location of the distance between it and the distinguished home is less than a threshold distance.

[c40] 40. The method of claim 15 wherein the automatic valuation of the distinguished home involves applying a geographically-specific home valuation model to attributes indicated by an external data source to be possessed by the distinguished home,  
and wherein the adjustment of the obtained user input includes both (1) altering the home attributes indicated by an external data source to be possessed by the distinguished home and (2) adding a description of an improvement to the distinguished home,  
the method further comprising detecting that the alteration of home attributes and the improvement description are both directed to adding a new feature to the distinguished home,  
and wherein, in response to the detecting, the determined refined valuation is based at least in part on applying the geographically-specific home valuation model to the altered attributes, and is not based on the improvement description.

[c41] 41. One or more computer memories collectively containing a home valuation data structure, comprising:

information identifying a home; and

a valuation for the identified home automatically generated based on both information about the identified home obtained from a public source and information about the identified home obtained from an owner of the identified home,

such that the contents of the data structure may be used to determine the value of the identified house.

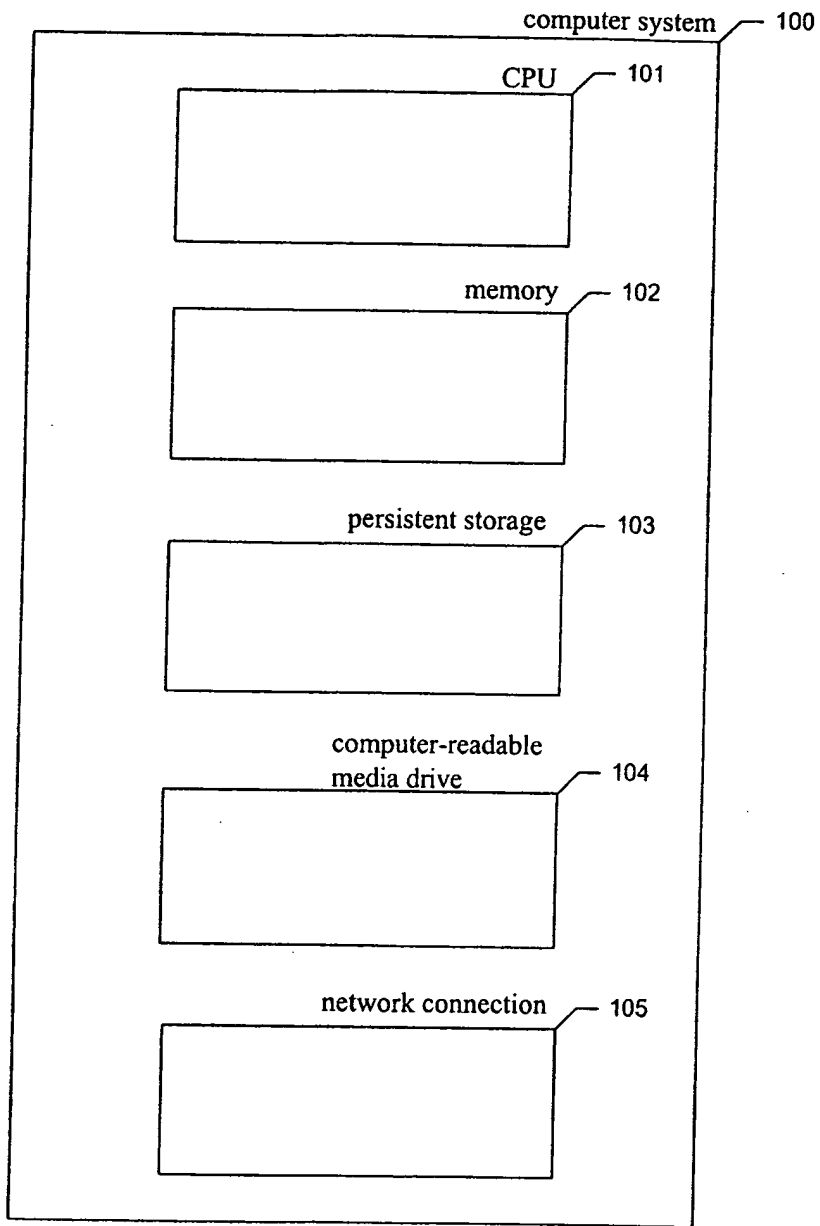
[c42] 42. The computer memories of claim 41 wherein the data structure is a display specification capable of causing a computing system to display the identifying information and the valuation.

[c43] 43. The computer memories of claim 41 wherein the data structure is a web page presenting the identifying information and the valuation.

AUTOMATICALLY DETERMINING A CURRENT VALUE FOR A REAL  
ESTATE PROPERTY, SUCH AS A HOME, THAT IS TAILORED TO  
INPUT FROM A HUMAN USER, SUCH AS ITS OWNER

ABSTRACT OF THE DISCLOSURE

A facility procuring information about a distinguished property from its owner that is usable to refine an automatic valuation of the distinguished property is described. The facility displays information about the distinguished property used in the automatic valuation of the distinguished property. The facility obtains user input from the owner adjusting at least one aspect of information about the distinguished property used in the automatic valuation of the distinguished property. The facility then displays to the owner a refined valuation of the distinguished property that is based on the adjustment of the obtained user input.



**FIG. 1**

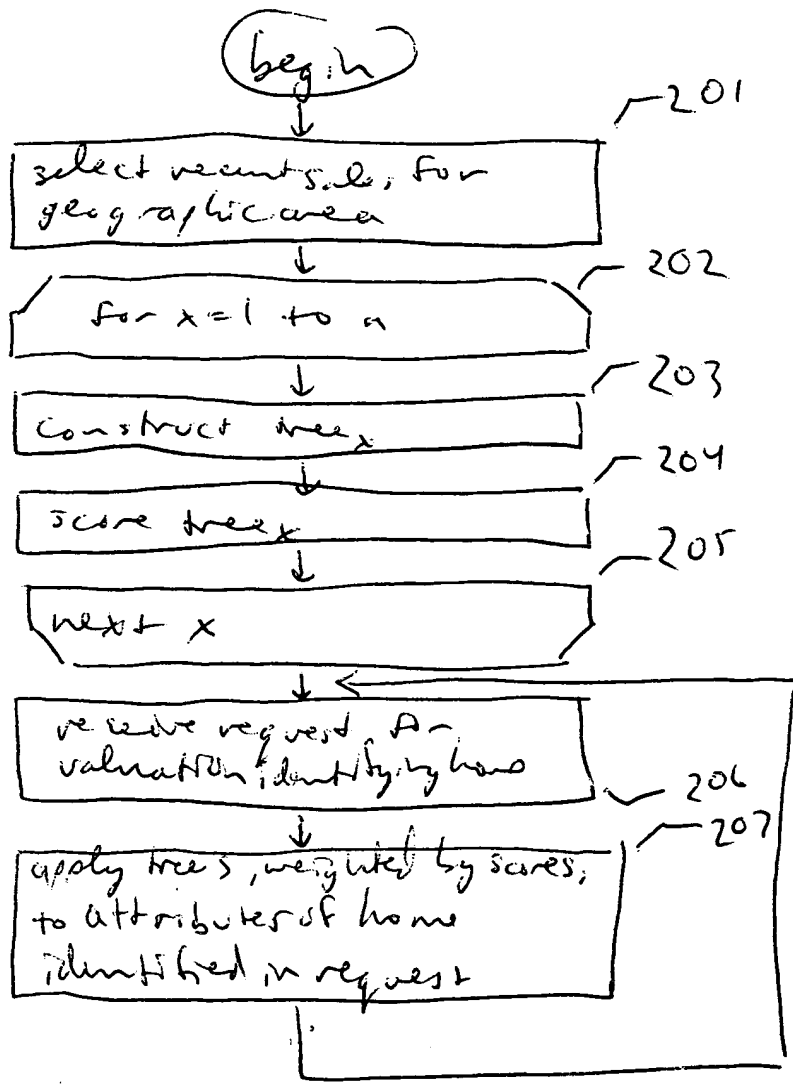


FIG 2

300

Henderson County recent sales table

id	address	sq. ft.	bedrooms	bathrooms	floors	view	year	selling price	date
1	111 Main St., Hendricks, IL 62012	1850	4	2	2	no	1953	\$132,500	1/3/2005
2	96 Elm St., Hendricks, IL 62014	2220	6	2	3	no	1965	\$201,000	1/8/2005
3	140 Cottontail Rd., Baron, IL 62019	1375	3	1	1	no	1974	\$98,750	1/11/2005
4	6 Spratt Ln., Baron, IL 62019	1590	2	2	1	no	1973	\$106,500	1/14/2005
5	776 Fir St., Hendricks, IL 62014	2280	3	3	2	yes	1948	\$251,000	1/26/2005
6	111 Industry Ave., Fenton IL 62017	1950	2	2	1	no	1925	\$240,000	2/4/2005
7	105 Elm St., Hendricks, IL 62014	2180	5	2	3	yes	1940	\$230,000	2/4/2005
8	110 Muffet St., Baron, IL 62019	1675	4	2	1	no	1975	\$74,900	2/14/2005
9	156 Elm St., Hendricks, IL 62014	2400	6	3	2	yes	1938	\$253,500	2/15/2005
10	142 Cottontail Rd., Baron, IL 62019	1450	3	1	1	no	1966	\$102,000	2/18/2005
11	160 Prospect Blvd., Fenton IL 62017	1952	4	2	1	no	1920	\$230,000	2/20/2005
12	36 Spratt Ln., Baron, IL 62019	1475	4	2	1	no	1964	\$111,000	2/20/2005
13	118 Main St., Hendricks, IL 62012	2140	5	2	2	no	1935	\$211,000	2/21/2005
14	234 Cottontail Rd., Baron, IL 62019	1980	4	3	2	yes	1930	\$197,900	2/24/2005
15	677 Fir St., Hendricks, IL 62014	2320	5	3	2	yes	1927	\$238,000	2/28/2005

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FIG 3

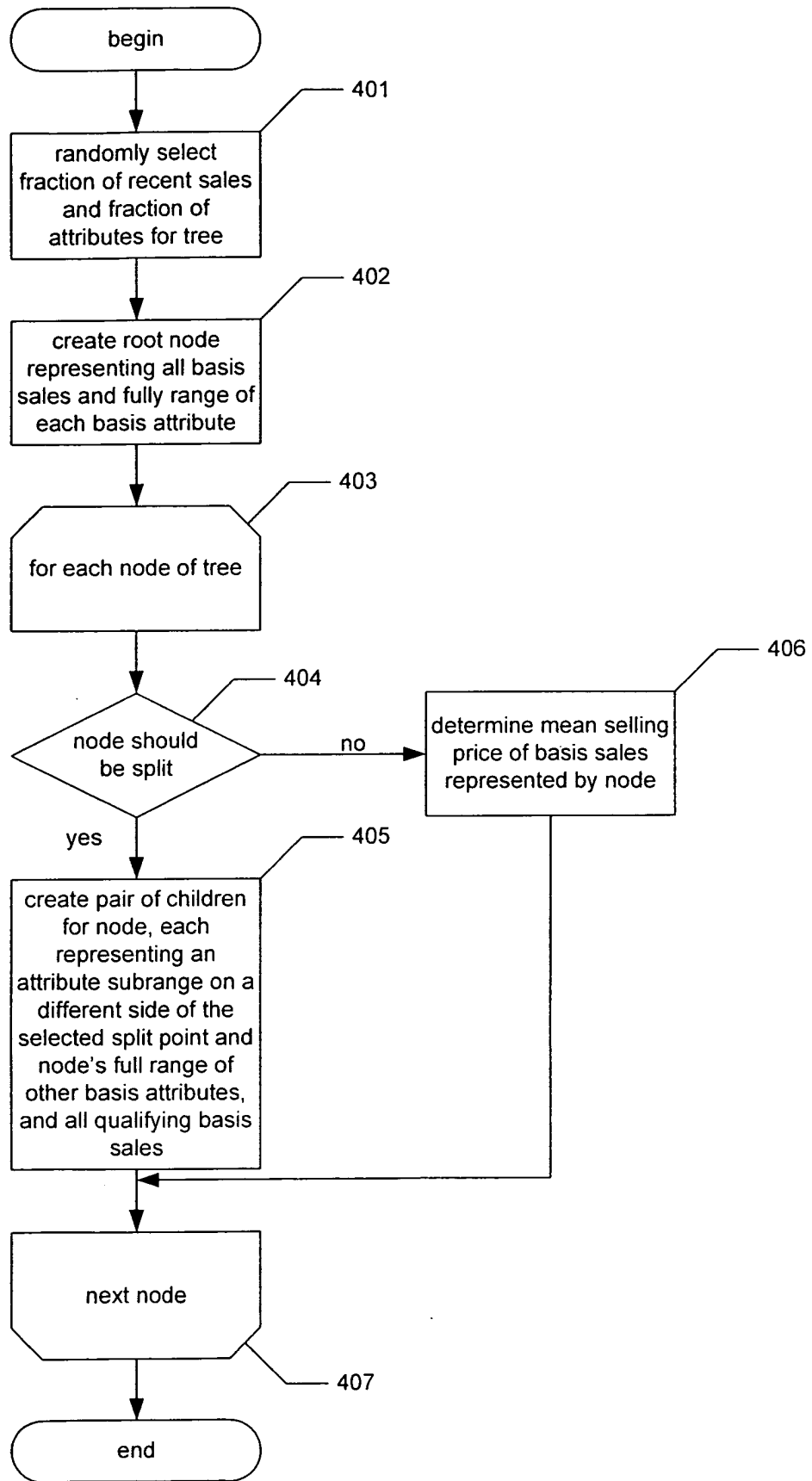


FIG 4A



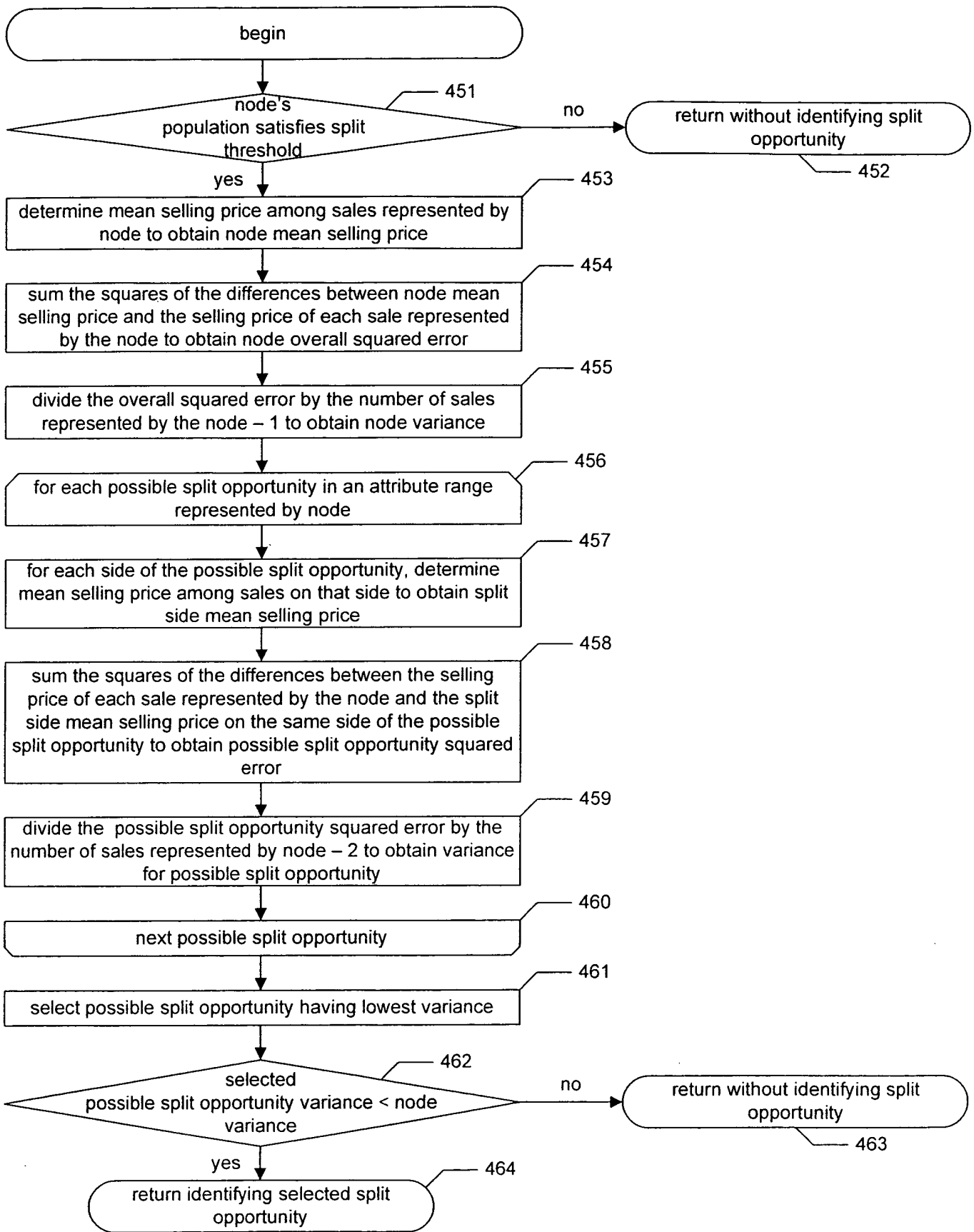


FIG 4B

500

tree 1 basis table			
id	address	bedrooms	view / selling price
2	96 Elm St., Hendricks, IL 62014	6	no \$201,000
8	110 Muffet St., Baron, IL 62019	4	no \$74,900
9	156 Elm St., Hendricks, IL 62014	6	yes \$253,500
11	160 Prospect Blvd., Fenton IL 62017	4	no \$230,000
13	118 Main St., Hendricks, IL 62012	5	no \$211,000
15	677 Fir St., Hendricks, IL 62014	5	yes \$238,000

302

308

309

311

313

315

322 324 327 329

321

FIG 5

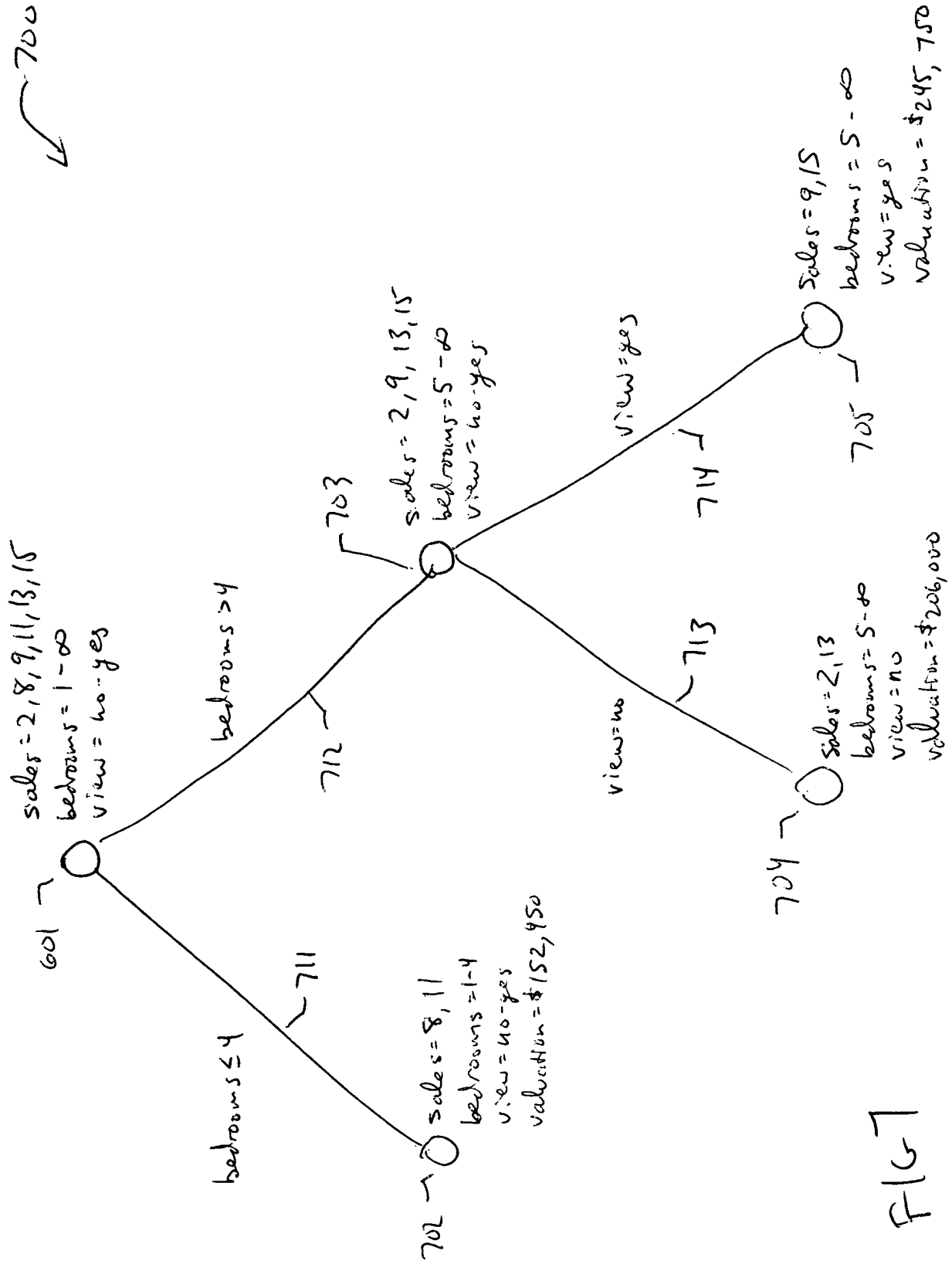
600

sales = 2, 8, 9, 11, 13, 15  
bedrooms = 1 - 6  
view = no - yes

401 - ○

FIG 6

700 ↙



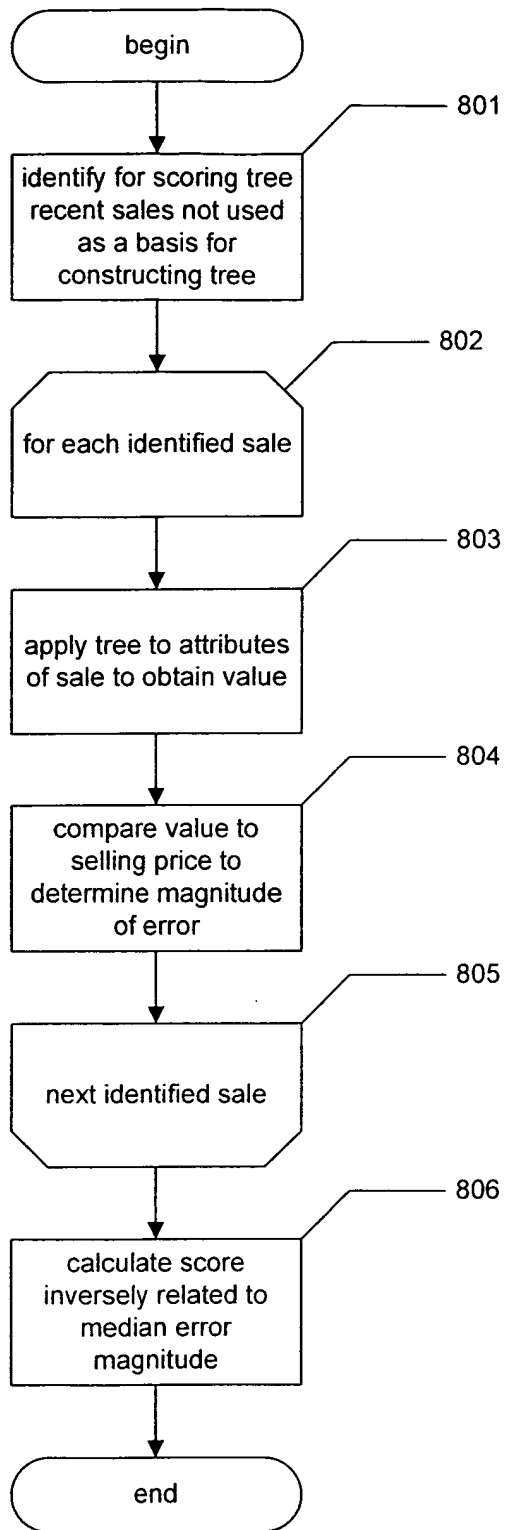


FIG 8

900

tree 1 scoring table

id	address	bedrooms	view	selling price	valuation	error
1	111 Main St., Hendricks, IL 62012	4	no	\$132,500	\$152,450	0.1506
3	140 Cottontail Rd., Baron, IL 62019	3	no	\$98,750	\$152,450	0.5438
4	6 Spratt Ln., Baron, IL 62019	2	no	\$106,500	\$152,450	0.4315
5	776 Fir St., Hendricks, IL 62014	3	yes	\$251,000	\$152,450	0.3926
6	111 Industry Ave., Fenton IL 62017	2	no	\$240,000	\$152,450	0.3648
7	105 Elm St., Hendricks, IL 62014	5	yes	\$230,000	\$245,750	0.0685
10	142 Cottontail Rd., Baron, IL 62019	3	no	\$102,000	\$152,450	0.4946
12	36 Spratt Ln., Baron, IL 62019	4	no	\$111,000	\$152,450	0.3734
14	234 Cottontail Rd., Baron, IL 62019	4	yes	\$197,900	\$152,450	0.2297

301  
303  
304  
305  
306  
307  
310  
312  
314

321 322 324 327 329 311 912  
median err. 0.3734 951

FIG 9

1000  
↙

---

21505 SE 2nd St, Sammamish, WA 98074 ~ 1001

**ZESTIMATE™: \$455,899** ~ 1002  
(What's this?)

Value Range: \$250,744 - \$752,233 ~ 1000

Refine value of this home  Map comparable homes

---

1011

**FIG. 10**

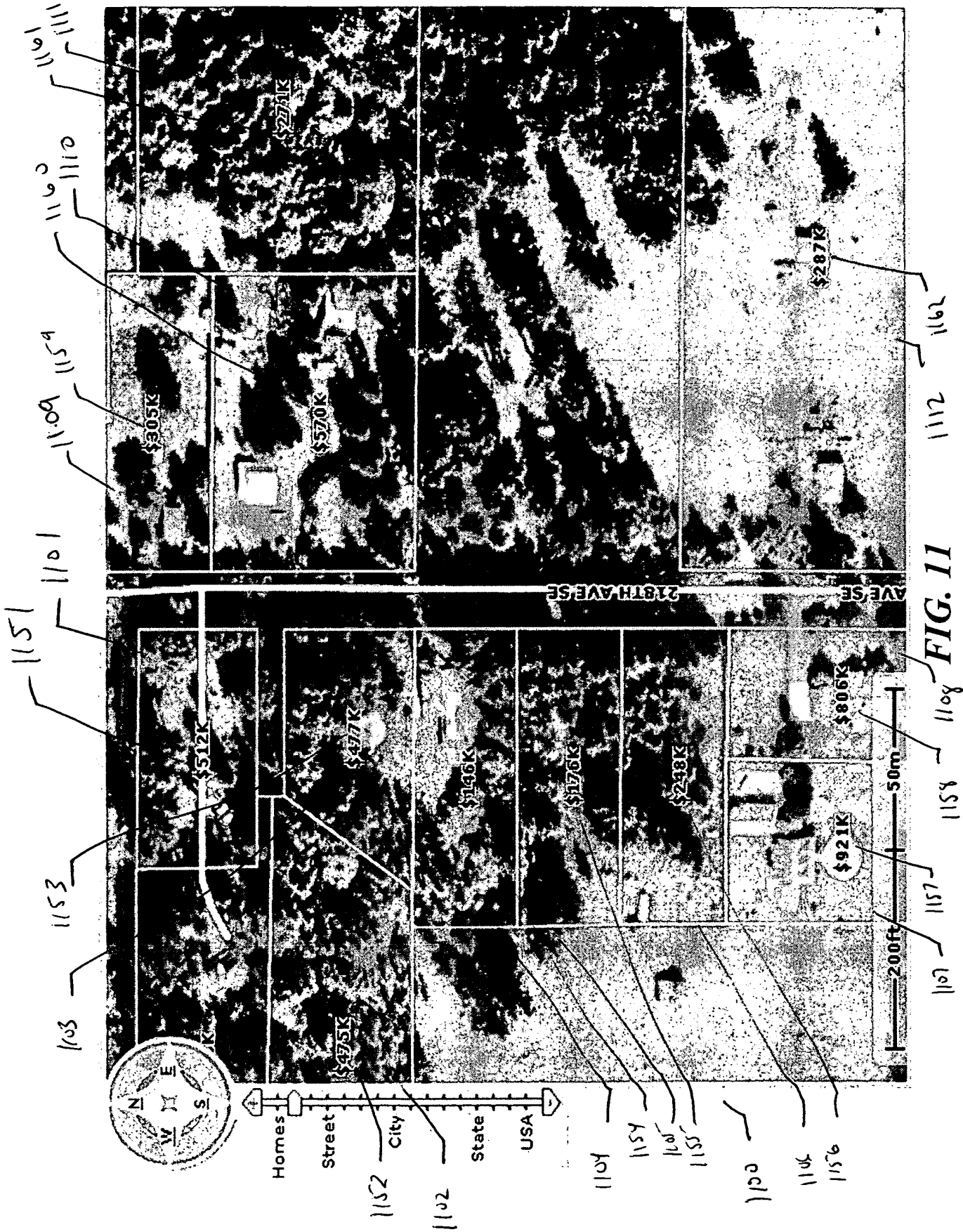


FIG. 11

BEST AVAILABLE COPY



1200

Home Facts	
Residence:	single family
Bedrooms:	4
Baths:	2.5
Total rooms:	8
Sq ft:	2,949
Lot sq ft:	96,582
Year built:	1924
Year updated:	--
Total stories:	2
Heating:	Gas
Cooling:	Central
<input checked="" type="checkbox"/> <a href="#">Show all home facts</a> 1202	
<input checked="" type="checkbox"/> <a href="#">Refine value based on home facts</a> 1210	

1201

**FIG. 12**

1300

Recently Sold Comparable Homes

---

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1301

**How this home stacks up**

This home \$ per Sq ft: **\$412**

Average \$ per Sq ft: **\$396**

**About Comparables**

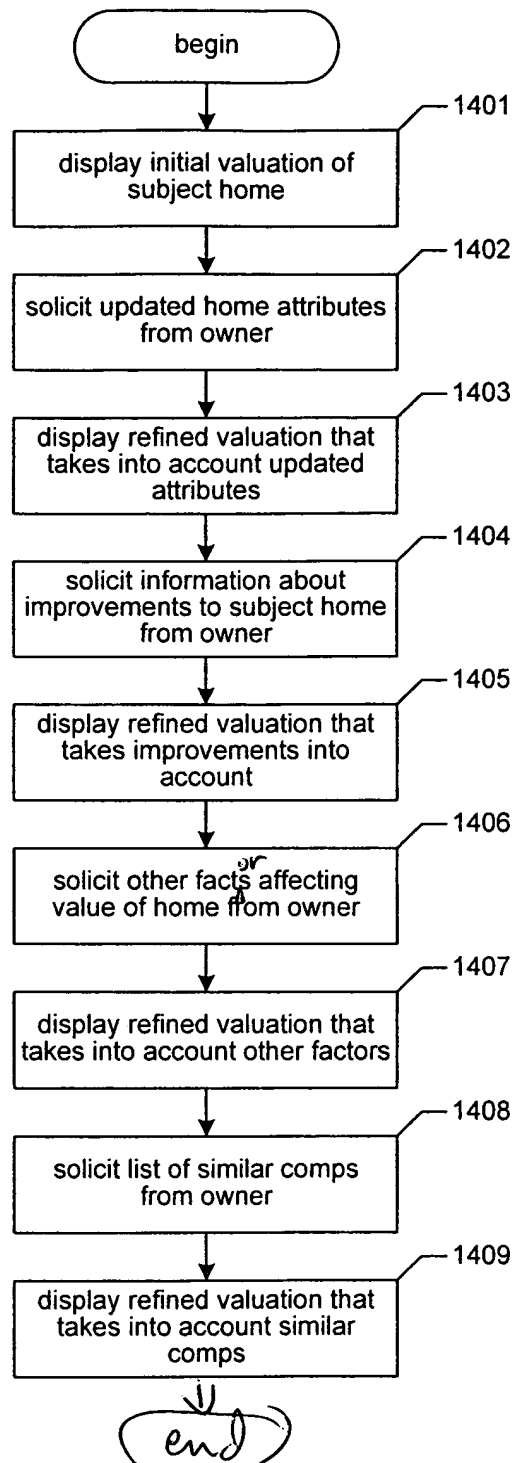
Comparables are recently sold homes similar in location, sales price, and age to this home.

[How to use these comps.](#)

[See all 10 comparables on larger map](#)

[Choose your own comparable homes](#) 1310

**FIG. 13**



**FIG. 14**

Hawaii: Say "aloha" to low rates and free upgrades this fall!

Home | Map & Search | Inside Edge | Top Cities | FAQ

Value Any Home  Address OR Street OR Neighborhood: City, State OR ZIP  Required

**My Zestimator** (What's this?)

7055 18th Ave. N.E., Seattle, WA 98115

1500 {

1591 1511 1512 1513 1514 1515

Next Home Facts Add Home Improvements Other Features Refine Comps Summary

**Step 1 of 5: Edit Home Facts** (No updates to make? Click the Next button.)

ZESTIMATE™: \$555,727 ~ 1570

MY REFINED VALUE = --- ~ 1580

Update facts below if you feel they are incorrect, then click the Update Value or Next button. [Learn more.](#)

Residence:	Single family	View:	Territorial	1538
# Bedrooms:	3	Garage:	Attached	1539
# Baths:	2.5	Architectural style:		1520
Sq ft:	1345	Construction quality:		1541
Lot size (sf):	1638	Pool:	No	
Year built:	1955			

Subtotal change in home facts = \$0 ~ 1550

NOTE: Changes you make in My Zestimator™ will not be saved and will not affect the Zestimate™. [Learn more.](#)

- THIS HOME
- [Home Details](#)
  - [Refine value](#)
  - [Graphs & data](#)

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www.pbhampton.com

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Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
www.royrestaurant.com

**Seattle Food**  
Fresh Ingredients, Bold

FIG. 15



Home | Map & Search | Inside Edge | Top Cities | FAQ

Value Any Home  Optional Address OR Street OR Neighborhood City, State OR ZIP  Required

[Show/Hide Advanced Search](#)

1600  
1660  
1692  
1691

**My Zestimator** [\(What's this?\)](#)

7055 18th Ave. N.E., Seattle, WA 98115

1 2 3 4 5

**Step 2 of 5: Add Home Improvements** (No updates to make? Click the Next button.)

ZESTIMATE™: \$555,727 ~ 1620  
**MY REFINED VALUE = \$557,227 ~ 1680**  ~ 1670

Find out [how we calculate improvement values.](#)

1630

Improvement Type	Date completed	Total cost	Improvement value
Mid-range major kitchen remodel	1 year	\$ 5,000	\$3,000 (Edit)

[Add another home improvement](#)

Subtotal improvements = +\$3,000

**Improvement Type Descriptions**

1691

- Kitchen**
  - Minor Kitchen Remodel
    - Refinish existing cabinets; new wall covering or paint.
    - New energy-efficient wall oven, cooktop.
    - New mid-priced sink, faucet, laminate countertops. [See more >](#)
  - Mid-range Major Kitchen Remodel
    - New cabinets, laminate countertops, double stainless-steel sink.
    - Energy efficient wall oven, cooktop, new ventilation system.
    - New built-in microwave, dishwasher, custom lighting. [See more >](#)
  - Upscale Major Kitchen Remodel
    - New cherry cabinets, granite or marble countertops, imported ceramic tile backsplash.
    - New 36-inch commercial grade range/hood, built-in microwave/convection oven.
    - New built-in refrigerator, dishwasher. [See more >](#)
- Bathroom**
- Exterior**
- Additional Rooms**

NOTE: Changes you make in My Zestimator™ will not be saved and will not affect the Zestimate™. [Learn more.](#)

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**THIS HOME**

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**Seattle Food**  
 Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](http://www.roysrestaurant.com)

**Seattle Eatery**  
 Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind.  
[www.roysrestaurant.com](http://www.roysrestaurant.com)

**Cornwall Real Estate Services LLC**

FIG. 16



Value Any Home

Address OR Street OR Neighborhood City, State OR ZIP  
Optional Required

GO Show/Hide Advanced Search

1800

**My Zestimator** (What's this?)

7055 19th Ave. N.E. Seattle, WA 98115

1892 1891

Prev Next Edit Home Facts Add Home Improvements Other Features Refine Comps Summary

Step 4 of 5: Refine Comps (No updates to make? Click the Next button.)

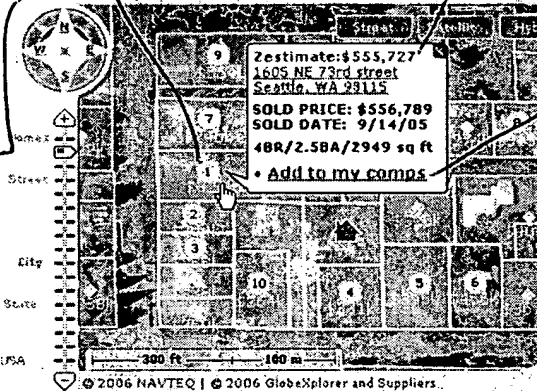
ZESTIMATE™: \$555,727 ~ 1820

MY REFINED VALUE = \$560,227 ~ 1870

Update Value

Zillow uses zillions of data points to create this comparables list, which are recently sold homes near this address. You can further customize this list, based on your knowledge of the neighborhood, to get a refined Zestimate. [Learn more.](#)

Comparable homes



My Comps  
Choose up to 10.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Zillow Comps

Page 1 | 2 | 3 | 4 | 5

Comparable Home	Sold Price	Date Sold	Home (Sq ft)	Lot (Sq ft)	BR	BA	Home \$/sq ft	Lot \$/sq ft	Year Built
810 N Monterey Jack St 12	--	--	1313	17,082	2	3	\$120	\$120	1979
<input checked="" type="checkbox"/> Add 1 814 N Monterey St 1	\$185,000	10/03/05	1313	1782	2	3	\$123	\$123	1979
<input checked="" type="checkbox"/> Add 2 6427 111TH St	\$402,000	10/03/05	1313	1782	2	3	\$233	\$233	1979
<input checked="" type="checkbox"/> Add 3 13036 NE 128th Place	\$170,000	10/03/05	1313	1782	2	3	\$250	\$250	1979
<input checked="" type="checkbox"/> Add 4 2335 Bothell	\$152,500	10/03/05	1575	1838	3	3	\$530	\$530	1975
<input checked="" type="checkbox"/> Add 5 814 N Monterey	\$249,000	10/03/05	1575	1838	3	3	\$120	\$120	1975
<input checked="" type="checkbox"/> Add 6 814 N Monterey	\$177,000	10/03/05	1358	1838	2	3	\$223	\$223	1975
<input checked="" type="checkbox"/> Add 7 814 N Monterey	\$29,500	10/03/05	1313	1782	2	3	\$80	\$80	1979
<input checked="" type="checkbox"/> Add 8 814 N Monterey	\$164,000	10/03/05	1313	1782	2	3	\$100	\$100	1979
<input checked="" type="checkbox"/> Add 9 814 N Monterey	\$173,000	10/03/05	1313	1782	2	3	\$118	\$118	1979
<input checked="" type="checkbox"/> Add 10 814 N Monterey	\$399,000	10/03/05	1313	1782	2	3	\$168	\$168	1979

Page 1 | 2 | 3 | 4 | 5

NOTE: Changes you make in My Zestimator™ will not be saved and will not affect the Zestimate™. [Learn more.](#)

THIS HOME

- Home Details
- Refine value
- Graphs & data

Add by Genre

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**Seattle Food**

Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind. [www.roysrestaurant.com](http://www.roysrestaurant.com)

**Seattle Eatery**

Fresh Ingredients, Bold Flavors Wrapped in a Hawaiian State of Mind. [www.roysrestaurant.com](http://www.roysrestaurant.com)



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425-646-8088




FIG. 18

Home | Map & Search | Inside Edge | Top Cities | FAQ  
 Value Any Home | Address OR Street OR Neighborhood | City, State OR ZIP | Show/Hide Advanced Search

My Zestimator (What's Hot?)  
 7055 10th Ave, N.E. Seattle, WA 98115

1916 {

1992  
 Prev | Home Facts | Add Home | Improve Items | Other Features | Refine Comps | Summary

THIS HOME  
 Home Details  
 Refine value  
 Graphs & data

Step 5 of 5: Summary (No updates to make? Click the Next button.)

ZESTIMATE: \$555,727 / 1920

MY REFINED VALUE = \$563,177 / 1980

Back to Step 1

1982

1981

Overall Summary

Original Zestimate	\$555,727
Change Home Fact	+ \$ 1,500
Change Home Improvements	+ \$ 1,300
Your other estimated values	\$ 300
Change based on comparable homes	+ \$ 2650
<b>NEW REVISED VALUE</b>	<b>= \$563,177</b>

1930 {

Home Facts Detailed Summary

Residence:	Single Family	View:	Water (none)
# Bedrooms:	4 (3)	Garage:	Attached
# Baths:	2.5	Architectural style:	Colonial
Sq ft:	1658	Construction quality:	Good
Lot size (sq):	2956	Pool:	No
Year built:	1955		

1940 {

Total changes to home facts = \$1500

Home Improvements Detailed Summary

New Roof	+ \$900
Kitchen Remodel	+ \$1000
<b>Total home improvements</b>	<b>= \$1900</b>

1950 {

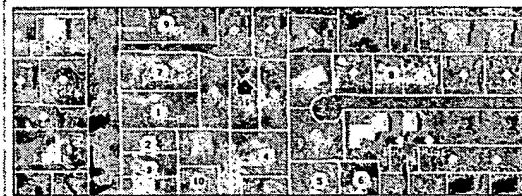
Other Values Detailed Summary

Orchard in back	+ \$700
Need new fence	\$1000
<b>Total other values</b>	<b>= + \$3000</b>

1960 {

Comparable Homes Detailed Summary

Total comps refinement = \$2650



1970 {

My Comps

Comps	Sold Price	Date Sold	Home (Sq Ft)	Lot (sq ft)	BR	BA	Home Max Ft	Lot Max Ft	Year Bld	Dist (mi)
1 814 N. Montrose, Issaquah			1313	17,002	2	3	\$120	\$120	1979	2.3
2 814 N. Montrose, Issaquah	\$285,000	10/03/05	1313	1782	2	3	\$120	\$123	1979	
3 5627 111th St, Issaquah	\$402,000	10/03/05	1313	1782	2	3	\$230	\$230	1979	
4 12016 NE 129th Place, Issaquah	\$170,000	10/03/05	1313	1782	2	3	\$250	\$250	1979	
5 2235 Bonhill, Issaquah	\$192,500	10/03/05	1575	1036	3	2	\$550	\$500	1975	
6 814 N. Montrose, Issaquah	\$249,000	10/03/05	1575	1538	3	3	\$120	\$120	1975	
7 314 N. Montrose, Issaquah	\$177,000	10/03/05	1058	1358	2	3	\$223	\$223	1975	
8 814 N. Montrose, Issaquah	\$29,500	10/03/05	1313	1782	2	3	\$60	\$80	1979	
9 814 N. Montrose, Issaquah	\$164,000	10/03/05	1313	1782	2	3	\$150	\$100	1979	
10 814 N. Montrose, Issaquah	\$373,000	10/03/05	1313	1782	2	3	\$110	\$113	1979	
11 814 N. Montrose, Issaquah	\$399,000	10/03/05	1313	1782	2	3	\$168	\$168	1979	

FIG. 19A

1930

**Overall Summary**

Original Zestimate.....	\$555,727	1920
Change Home Fact.....	+ \$ 1,500	1931
Change Home Improvements.....	+ \$ 3,300	1932
Your other estimated values.....	- \$ 300	1933
Change based on comparable homes.....	+ \$ 2650	1934
<b>NEW REVISED VALUE</b>	<b>= \$ 563,177</b>	1980

**FIG. 19B**

1940

**Home Facts Detailed Summary**

<b>Residence:</b> Single Family	<b>View:</b>	<b>Water</b> *(none)	1942
<b># Bedrooms:</b> 4 *(3)	<b>Garage:</b>	Attached	
<b># Baths:</b> 2.5	<b>Architectural style:</b> Colonial		1941
<b>Sq ft:</b> 1658	<b>Construction quality:</b> Good		
<b>Lot size (sf):</b> 2356	<b>Pool:</b> No		
<b>Year built:</b> 1955			

Total changes to home facts = \$1500 1931 \* (Previous info)

**FIG. 19C**

1950

**Home Improvements Detailed Summary**

New Roof.....	+ \$300	1951
Kitchen Remodel.....	+ \$3000	1952
<b>Total home improvements</b>	<b>= \$3300</b>	1931

**FIG. 19D**

1960

**Other Values Detailed Summary**

Orchard in back.....	+ \$700	1961
Need new fence.....	- \$1000	1962
<b>Total other values</b>	<b>= - \$300</b>	1934

**FIG. 19E**



1970 ↗

Comparable Homes Detailed Summary

Total comps refinement = \$2650 ↖ 1935

1971



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My Comps

1972

	Comparable Home	Sold Price	Date Sold	Home (Sq ft)	Lot (sq ft)	BR	BA	Home \$/sq ft	Lot \$/sq ft	Year Built	Dist (mi)
🏠	810 N Monterey Jack St 12	--	--	1313	17,082	2	3	\$120	\$120	1979	2.3
①	814 N Monterey St 1	\$185,000	10/03/05	1313	1782	2	3	\$123	\$123	1979	--
②	6427 111TH St	\$402,000	10/03/05	1313	1782	2	3	\$233	\$233	1979	--
③	13036 NE 128th Place	\$170,000	10/03/05	1313	1782	2	3	\$250	\$250	1979	--
④	2335 Bothell-	\$152,500	10/03/05	1575	1838	3	3	\$530	\$530	1975	--
⑤	814 N Monterey	\$249,000	10/03/05	1575	1838	3	3	\$120	\$120	1975	--
⑥	814 N Monterey	\$177,000	10/03/05	1358	1838	2	3	\$223	\$223	1975	--
⑦	814 N Monterey	\$29,500	10/03/05	1313	1782	2	3	\$80	\$80	1979	--
⑧	814 N Monterey	\$164,000	10/03/05	1313	1782	2	3	\$100	\$100	1979	--
⑨	814 N Monterey	\$173,000	10/03/05	1313	1782	2	3	\$118	\$118	1979	--
⑩	814 N Monterey	\$399,000	10/03/05	1313	1782	2	3	\$168	\$168	1979	--

FIG. 19F

BEST AVAILABLE COPY

Henderson County recent sales table for linear regression model

id	sq. ft.	lot size	bedrooms	bathrooms	floors	year	selling price	roof type	use code
1	1850	4345	4	2	2	1953	\$132,500	shingle	single-family
2	2220	6000	6	2	3	1965	\$201,000	shingle	single-family
3	1375	3100	3	1	1	1974	\$98,750	tile	single-family
4	1590	4575	2	2	1	1973	\$106,500	shingle	single-family
5	2280	7300	3	3	2	1948	\$251,000	shingle	single-family
6	1950	6205	2	2	1	1925	\$240,000	shingle	single-family
7	2180	7880	5	2	3	1940	\$230,000	shake	single-family
8	1675	3421	4	2	1	1975	\$74,900	shingle	single-family
9	2400	6050	6	3	2	1938	\$253,500	shingle	single-family
10	1450	3230	3	1	1	1966	\$102,000	shingle	single-family
11	1952	4912	4	2	1	1920	\$230,000	shingle	single-family
12	1475	2900	4	2	1	1964	\$111,000	shingle	single-family
13	2140	6330	5	2	2	1935	\$211,000	shingle	single-family
14	1980	3500	4	3	2	1930	\$197,900	shingle	single-family
15	2320	4250	5	3	2	1927	\$238,000	shake	single-family
16	1925	5015	4	2	2	1949	\$179,900	shingle	single-family
17	2025	4015	4	2	2	1959	\$229,900	shake	single-family

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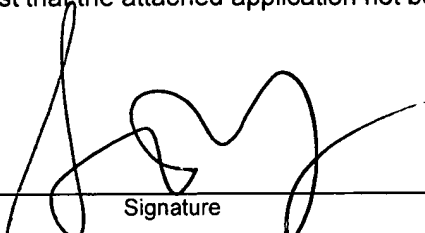
2021 2022 2023 2024 2025 2026 2027 2028 2029 2030  
FIG 20

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.

<b>NONPUBLICATION REQUEST UNDER 35 U.S.C. 122(b)(2)(B)(i)</b>	First Named Inventor	David Cheng
	Title	AUTOMATICALLY DETERMINING A CURRENT VALUE FOR A REAL ESTATE PROPERTY, SUCH AS A HOME, THAT IS TAILORED TO INPUT FROM A HUMAN USER, SUCH AS ITS OWNER
	Attorney Docket Number	569208005US

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

	February 3, 2006
_____ Signature	_____ Date
Steven D. Lawrenz	37,376
_____ Typed or printed name	_____ Registration Number, if applicable
(206) 359-8000	
_____ Telephone Number	

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing**.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant **must** notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV853117864US, on the date shown below in an envelope addressed to:  
Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22304-1450

Dated: 2/3/06 Signature:  (Attila Kovacs-Szabo)

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.

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875	Application or Docket Number <b>11347024</b>
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**APPLICATION AS FILED – PART I**  
(Column 1) (Column 2)

FOR	NUMBER FILED		NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))			
TOTAL CLAIMS (37 CFR 1.16(i))	<b>43</b>	minus 20 =	<b>* 23</b>
INDEPENDENT CLAIMS (37 CFR 1.16(h))	<b>4</b>	minus 3 =	<b>* 1</b>
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		
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			

SMALL ENTITY	
RATE (\$)	FEE (\$)
	<b>150</b>
	<b>250</b>
	<b>100</b>
X\$ 25=	<b>575</b>
X\$100=	<b>100</b>
N/A	
<b>TOTAL</b>	<b>1175</b>

OR

OTHER THAN SMALL ENTITY	
RATE (\$)	FEE (\$)
X\$50=	
X\$200=	
N/A	
<b>TOTAL</b>	

OR

\* If the difference in column 1 is less than zero, enter "0" in column 2.

**APPLICATION AS AMENDED – PART II**  
(Column 1) (Column 2) (Column 3)

	AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
		Total (37 CFR 1.16(i))	*	Minus	**
Independent (37 CFR 1.16(h))	*	Minus	***	=	
Application Size Fee (37 CFR 1.16(s))					
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY	
RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
<b>TOTAL</b>	
<b>ADD'T FEE</b>	

OR

OTHER THAN SMALL ENTITY	
RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
<b>TOTAL</b>	
<b>ADD'T FEE</b>	

OR

	AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
		Total (37 CFR 1.16(i))	*	Minus	**
Independent (37 CFR 1.16(h))	*	Minus	***	=	
Application Size Fee (37 CFR 1.16(s))					
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY	
RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
<b>TOTAL</b>	
<b>ADD'T FEE</b>	

OR

OTHER THAN SMALL ENTITY	
RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
<b>TOTAL</b>	
<b>ADD'T FEE</b>	

OR

- \* 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.

This collection of information is required by 37 CFR 1.16. 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, 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.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*