

CONTAINS PROTECTIVE ORDER INFORMATION

U.S. Patent No. 8,942,252	Application of Claim Language to Source Code
Claim 1	
[1 Preamble] A method, comprising:	<p>Source Code Folders:</p> <pre>SOFTWARE_STRUCTURE = \test\demo\rules\</pre> <pre>SOFTWARE_CODE = \beads\</pre> <p>The Implicit Source Code specifies a distributed system consisting of devices that are nodes of a network (“devices”). These devices execute synchronizing rendering of content provided by a source, where each device has a rendering time corresponding to the device time when the device receives the content.</p>
[1a] a master rendering device rendering a first content stream; and;	<p>Implicit source code specifies a distributed system consisting of a plurality of devices. These devices include a master rendering device that is set up to render a first content stream. This audio and video content stream rendered by the master rendering device corresponds to a first content stream.</p> <p>Implicit source code implements a distributed system consisting of a plurality of devices. An architecture of one such distributed system comprising a plurality of devices is defined in files <code>videomulti.rule</code>, <code>videoclient.rule</code>, <code>ipaqvideo.rule</code>, <code>pcmaudioserver.rule</code>, <code>syncaudio.rule</code>, and <code>timesync.rule</code>.^{1,2} Implicit source code also implements beads of content.</p>

¹ These files are contained in folder `SOFTWARE_STRUCTURE\`

² Another similar distributed system that renders synchronized content streams is described by the folder `\2001.11.01\test\audiosync\`

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	<p>on devices that are nodes of a network. Among other services, these perform tasks including decoding and encoding content streams, receiving and transmitting content streams, synchronizing content streams, and rendering content streams.³ Each device is configured using one or more rule files and services implemented by the beads specified within the rules file.</p> <p>Among other devices, the distributed system described in the rules file includes a master rendering device that renders an audio and video content stream. The audio and video content stream rendered by the master rendering device comprises the first content stream. Specifically, the master rendering device receives an audio and video content stream at its local network port 8013 from a client device.^{5,6} As part of the rendering process, this master rendering device uses an <code>avidemux</code> bead to split the combined audio and video content stream into separate audio and video streams.^{7,8} Specifically, functions <code>Avidemux_EncodeMessageHandler</code>⁹ and <code>ChunkProcess</code>¹⁰ use the <code>avidemux</code> bead to separate the combined audio and video content stream. Once the audio and video streams have been separated, the master rendering device uses a <code>bmptorgb</code> bead to decode the received video content stream to generate a video frame.</p>

³ These files are contained in folder `SOFTWARE_CODE\`

⁴ Defined at lines 6 to 134 in file `SOFTWARE_STRUCTURE\videomulti.rule`

⁵ See line 9 in file `SOFTWARE_STRUCTURE\videomulti.rule`

⁶ See lines 7 to 79 in file `\test\demo\source.pl`

⁷ See lines 11 to 15 in file `SOFTWARE_STRUCTURE\videomulti.rule`

⁸ See file `SOFTWARE_CODE\avidemux\main\avidemux.c`

⁹ Implemented at lines 883 to 964 in file `SOFTWARE_CODE\avidemux\main\avidemux.c`

¹⁰ Implemented at lines 597 to 849 in file `SOFTWARE_CODE\avidemux\main\avidemux.c`

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	<p>RGB video frames.^{11,12} Specifically, functions <code>BmpToRgb_MessageDecodeFrame</code>,¹⁴ and <code>BmpDecoder_FrameDecode</code>¹⁵ of <code>bead</code> process the video content stream to generate the decoded RGB video frames.</p> <p>As discussed earlier, the master rendering device uses the <code>avidemux</code> bead to separate the combined audio and video content stream into separate audio and video content streams. After the audio and video content stream has been separated, the master rendering device uses an instance of the <code>fanout</code> bead to distribute the audio content stream to a plurality of processing pathways.¹⁶ The first processing pathway corresponding to <code>FanoutIndex 0</code> outputs the audio content stream using the <code>speaker</code> bead to the audio output device of the master rendering device.^{17,18}</p>
[1b] sending, from the master rendering device to a first one of a plurality of slave devices, a plurality of master rendering times	<p>As discussed earlier (<i>see</i> Claim 1, Limitation 1a), Implicit source code of a distributed system that includes a master rendering device. This master rendering device receives a combined audio and video content stream sent by a slave device. Upon receiving the combined audio and video content stream, the master rendering device uses the <code>avidemux</code> bead to separate the combined audio and video content stream into separate audio and video content streams.</p>

¹¹ See lines 16 to 20 in file `SOFTWARE_STRUCTURE\videomulti.rule`

¹² See file `SOFTWARE_CODE\bmp2rgb\main\bmp2rgb.c`

¹³ Implemented at lines 306 to 335 in file `SOFTWARE_CODE\bmp2rgb\main\bmp2rgb.c`

¹⁴ Implemented at lines 180 to 283 in file `SOFTWARE_CODE\bmp2rgb\main\bmp2rgb.c`

¹⁵ Implemented at lines 366 to 407 in file `SOFTWARE_CODE\bmp2rgb\main\bmpdecoder.c`

¹⁶ See lines 91 to 97 in file `SOFTWARE_STRUCTURE\videomulti.rule`

¹⁷ See lines 104 to 107 in file `SOFTWARE_STRUCTURE\videomulti.rule`

¹⁸ See file `SOFTWARE_CODE\speaker\main\speaker.c`

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<p>indicative of statuses of the rendering the first content stream at the master rendering device at different times;</p>	<p>separate audio and video streams. The <code>avidemux</code> bead instantiates rendering clock <code>IAudioClock</code> associated with the audio content stream. The master rendering clock <code>IAudioClock</code> generates a plurality of master rendering times that are indicative of the statuses of the rendering the combined audio and video content stream by the master rendering device at different times. Further, the source code specifies a distributed system that also includes a plurality of slave rendering devices. One of these slave rendering devices renders PCM audio content stream in synchronization with the master rendering device.²⁰ Another slave rendering device renders the video content stream in synchronization with the master rendering device.²¹ The master rendering device sends a plurality of PCM frames and the corresponding master rendering times indicative of the rendering of the first content stream by the master rendering device to the slave rendering device rendering audio content stream at port 9002.^{22,23} Similarly, the master rendering device sends a plurality of encoded video RGB video frames and the corresponding master rendering times indicative of the statuses of the rendering of the first content stream by the master rendering device to the slave rendering device rendering video content stream at port 8002.^{24,25}</p> <p>As discussed earlier (<i>see</i> Claim 1, Limitation 1a), upon receiving the</p>

¹⁹ See lines 447 to 451 in file `SOFTWARE_CODE\avidemux\main\avidemux.c`

²⁰ Defined at lines 3 to 25 in file `SOFTWARE_STRUCTURE\syncaudio.rule`

²¹ Defined at lines 7 to 35 in file `SOFTWARE_STRUCTURE\videoclient.rule`

²² See lines 123 to 127 in file `SOFTWARE_STRUCTURE\videomulti.rule`

²³ See line 4 in file `SOFTWARE_STRUCTURE\syncaudio.rule`

²⁴ See lines 123 to 127 in file `SOFTWARE_STRUCTURE\videomulti.rule`

²⁵ See line 4 in file `SOFTWARE_STRUCTURE\syncaudio.rule`

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	<p>and video content stream, the master rendering device uses the <code>avidmux</code> bead to separate the combined audio and video stream into separate audio and video streams. While processing the combined audio and video content streams, the master rendering device calls function <code>AudioPrepare</code>.²⁶ Function <code>AudioPrepare</code> initializes a rendering clock <code>IAudioClock</code> associated with the audio content stream. The master rendering clock <code>IAudioClock</code> generates a plurality of master rendering clock ticks that are indicative of the status of the rendering of the combined audio and video content stream by the master rendering device at different times.</p> <p>As discussed earlier (<i>see</i> Claim 1, Limitation 1a), the master rendering device processes the video content stream using the <code>bmptorgb</code> bead to render video frames. Once the video frame has been decoded into an RGB video frame, the master rendering device uses a <code>fanout</code> bead to distribute the decoded video frame to two processing pathways or fanouts.^{28,29} Specifically, function <code>FanOut_MessageHandler</code>³⁰ of bead <code>fanout</code> distributes decoded video frames to the two processing pathways. Within one of these processing pathways, the master rendering device uses the <code>clocksync</code> bead to encode the</p>

²⁶ Implemented at lines 389 to 477 in file `SOFTWARE_CODE\avidmux\main\avidmux.c`.

²⁷ See lines 447 to 451 in file `SOFTWARE_CODE\avidmux\main\avidmux.c`.

²⁸ See lines 21 to 25 in file `SOFTWARE_STRUCTURE\videomulti.rule`.

²⁹ See file `SOFTWARE_CODE\fanout\main\fanout.c`.

³⁰ Implemented at lines 180 to 199 in file `SOFTWARE_CODE\fanout\main\fanout.c`.

³¹ See lines 30 to 49 in file `SOFTWARE_STRUCTURE\videomulti.rule`.

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