# KEY FRAME DETECTION AND SYNCHRONIZATION

*Kay Johansson, Kent Karlsson*

## DESCRIPTION OF RELATED ART

[0001] The present disclosure relates to media streams. In one example, the present invention relates to methods and apparatus for efficiently providing a media stream to a client device.

[0002] Various devices have the capability of playing media streams received from a streaming server. One example of a media stream is an Moving Picture Experts Group (MPEG) video stream. Media streams such as MPEG video streams often encode media data as a sequence of frames and provide the sequence of frames to a client device. Some frames are key frames that provide substantially all of the data needed to display an image. An MPEG I-frame is one example of a key frame. Other frames are predictive frames that provide information about differences between the predictive frame and a reference key frame.

[0003] Predictive frames such as MPEG B-frames and MPEG P-frames are smaller and more bandwidth efficient than key frames. However, predictive frames rely on key frames for information and can not be accurately displayed without information from key frames. A streaming server often has a number of media streams that it receives and maintains in its buffers. In some examples, a streaming server maintains one buffer per channel. When a client device connects to a streaming server, the streaming server provides a selected media stream to the client device. The client device can then play the media stream using a decoding mechanism.

[0004] However, mechanisms for efficiently providing media streams to client



Petitioner Disney Ex-1004, 0001

devices are limited. In many instances, media streams are provided in a manner that introduces notable delay. Consequently, the techniques of the present invention provide mechanisms for improving the ability of a streaming server to efficiently provide media streams to client devices.

5



Petitioner Disney Ex-1004, 0002

## OVERVIEW OF THE INVENTION

[0005] Mechanisms are provided for allowing a streaming server to efficiently provide frames associated with a media stream to a client device. A streaming server receives multiple media streams and identifies key frames in the media streams. When a connection request is received from a client device, a key frame is selected and provided to the client device. A client device receiving a key frame does not have to drop or inaccurately display any predictive frames prior to playing the media stream.

[0006] These and other features and advantages of the present invention will be presented in more detail in the following specification of the invention and the accompanying figures, which illustrate by way of example the principles of the invention.



Petitioner Disney Ex-1004, 0003

## BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The invention may best be understood by reference to the following description taken in conjunction with the accompanying drawings, which illustrate particular embodiments of the present invention.

[0008] Figure 1 is a diagrammatic representation showing a sequence of video stream frames.

[0009] Figure 2 is a diagrammatic representation showing another sequence of video stream frames.

[0010] Figure 3 is a diagrammatic representation showing one example of a network that can use the techniques of the present invention.

[0011] Figure 4 is a diagrammatic representation showing one example of a streaming server.

[0012] Figure 5 is a flow process diagram showing processing at a streaming server.

[0013] Figure 6 is a flow process diagram showing processing at a client device.



Petitioner Disney Ex-1004, 0004

## DESCRIPTION OF PARTICULAR EMBODIMENTS

[0014] Reference will now be made in detail to some specific examples of the invention including the best modes contemplated by the inventors for carrying out the invention. Examples of these specific embodiments are illustrated in the accompanying drawings. While the invention is described in conjunction with these specific embodiments, it will be understood that it is not intended to limit the invention to the described embodiments. On the contrary, it is intended to cover alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

[0015] For example, the techniques of the present invention will be described in the context of particular networks and particular devices. However, it should be noted that the techniques of the present invention can be applied to a variety of different networks and a variety of different devices. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. The present invention may be practiced without some or all of these specific details. In other instances, well known process operations have not been described in detail in order not to unnecessarily obscure the present invention.

[0016] Various techniques and mechanisms of the present invention will sometimes be described in singular form for clarity. However, it should be noted that some embodiments include multiple iterations of a technique or multiple instantiations of a mechanism unless noted otherwise. For example, a processor is used in a variety of contexts. However, it will be appreciated that multiple processors can also be used while remaining within the scope of the present invention unless otherwise noted. Furthermore, the techniques and mechanisms of the present invention will sometimes describe two entities as being connected. It should be noted that a connection between two entities does not necessarily mean a direct, unimpeded connection, as a variety of other entities may reside between the two entities. For example, a processor may be connected to memory, but it will be appreciated that a variety of bridges and controllers



Petitioner Disney Ex-1004, 0005

may reside between the processor and memory. Consequently, a connection does not necessarily mean a direct, unimpeded connection unless otherwise noted.

[0017] Streaming servers receive media streams such as audio and video streams from associated encoders and content providers and send the media streams to individual devices. In order to conserve network resources, media streams are typically encoded in order to allow efficient transmission.

[0018] One mechanism for encoding media streams such as video streams involves the use of key frames and predictive frames. A key frame holds substantially all of the data needed to display a video frame. A predictive frame, however, holds only change information or delta information between itself and a reference key frame. Consequently, predictive frames are typically much smaller than key frames. In general, any frame that can be displayed substantially on its own is referred to herein as a key frame. Any frame that relies on information from a reference key frame is referred to herein as a predictive frame. In many instances, many predictive frames are transmitted for every key frame transmitted. Moving Picture Experts Group (MPEG) provides some examples of encoding systems using key frames and predictive frames. MPEG and its various incarnations use I-frames as key frames and B-frames and P-frames as predictive frames.

[0019] A streaming server includes a buffer to hold media streams received from upstream sources. In some examples, a streaming server includes a first in first out (FIFO) buffer per channel of video received. When a client device requests a particular media stream from the streaming server, the streaming server begins to provide the media stream, typically by providing the oldest frame still in the buffer. A client device may request a media stream when a user is a changing a channel, launching an application, or performing some other action that initiates a request for a particular media stream or channel. Due to the relative infrequency of key frames in a video stream, the client device will most likely begin receiving predictive frames. Predictive frames rely on information from a reference key frame in order to provide a clear picture. The client device can then either begin displaying a distorted



Petitioner Disney Ex-1004, 0006

picture using predictive frame information or can simply drop the predictive frames. In either case, the user experience is poor, because the client device can not display an undistorted picture until a key frame is received. Depending on the encoding scheme, a substantial number of predictive frames may be received before any key frame is received.

[0020] Consequently, when a user initially requests a particular program or changes a channel, there is notable delay before the user can see an accurate picture. A variety of limitations contribute to the delay. The techniques of the present invention recognize that the transmission of unusable predictive frames upon a connection request is one factor that contributes to the delay.

[0021] Some available solutions rely on increasing the transmission rate to a client device when a client device connection request is received. In this manner, predictive frames and key frames are transmitted more rapidly to a client device when a client requests a media stream and a key frame is more likely to arrive sooner. However, there is still delay in transmitting a key frame. Furthermore, not all networks support this type of transmission burst and even ones that do may not want to encourage this type of possibly disruptive activity. For example, many users may request to receive a channel at the beginning of a live event. Having a large amount of burst activity may be disruptive to network operation.

[0022] In many conventional implementations, streaming servers are designed to provide large amounts of data from a variety of sources to a variety of client devices in as efficient a manner as possible. Consequently, streaming servers often perform little processing on media streams, as processing can significantly slow down operation. However, the techniques and mechanisms recognize that is it beneficial to provide more intelligence in a streaming server by adding some additional processing. By using a smart, key frame sensitive buffer in the streaming server, an initial key frame can be provided to the user when a client device requests a connection. Bandwidth is better utilized, wait time is decreased, and user experience is improved.



Petitioner Disney Ex-1004, 0007

[0023] According to various embodiments, a streaming server identifies key frames in media streams maintained in one or more buffers. When a connection request is received from a client device, a key frame is provided to the client device even if the key frame is not the first available frame. That is, a key frame is provided even if one or more predictive frames are available before the key frame. This allows a client device to receive a frame that it can display without distortion. Subsequent predictive frames can then reference the key frame. Connection requests such as channel changes or initial channel requests are handled efficiently. Although there may still be delay in transmission and delay in buffering and decoding at a client device, delay because of the receipt of unusable predictive frames is decreased as a streaming server will initially provide a usable key frame to a client device.

[0024] Figure 1 is a diagrammatic representation showing one example of a sequence of frames. According to various embodiments, a sequence of frames such as a sequence of video frames is received at a streaming server. In some embodiments, the sequence of video frames is associated with a particular channel and a buffer is assigned to each channel. Other sequences of video frames may be held in other buffers assigned to other channels. In other examples, buffers or portions of buffers are maintained for separate video streams and separate channels. In particular embodiments, key frame 101 is received early along time axis 141. One example of a key frame 101 is an I frame that includes substantially all of the data needed for a client device to display a frame of video. Key frame 101 is followed by predictive frames 103, 105, 107, 109, 111, 113, 115, and 117.

[0025] According to various embodiments, a sequence of different frames types, beginning with a key frame and ending just before a subsequence key frame, is referred to herein as a Group of Pictures (GOP). Key frame 101 and predictive frames 103, 105, 107, 109, 111, 113, 115, and 117 are associated with GOP 133 and maintained in buffer 131 or buffer portion 131. An encoding application typically determines the length and frame types included in a GOP. According to various embodiments, an encoder provides the sequence of frames to the streaming server. In some examples, a



Petitioner Disney Ex-1004, 0008

GOP is 15 frames long and includes an initial key frame such as an I frame followed by predictive frames such as B and P frames. A GOP may have a variety of lengths. An efficient length for a GOP is typically determined based upon characteristics of the video stream and bandwidth constrains. For example, a low motion scene can benefit from a longer GOP with more predictive frames. Low motion scenes do not need as many key frames. A high motion scene may benefit from a shorter GOP as more key frames may be needed to provide a good user experience.

[0026] According to various embodiments, GOP 133 is followed by GOP 137 maintained in buffer 135 or buffer portion 135. GOP 137 includes key frame 119 followed by predictive frames 121, 123, 125, 127, 129, 131, 133, and 135. In some examples, a buffer used to maintain the sequence of frames is a first in first out (FIFO) buffer. When new frames are received, the oldest frames are removed from the buffer.

[0027] When a client 151 connects, the client receives predictive frame 105 initially, followed by predictive frames 107, 109, 111, 113, 115, and 117. Client 151 receives a total of 7 predictive frames that can not be decoded properly. In some instances, the 7 predictive frames are simply dropped by a client. Only after 7 predictive frames are received does client 151 receive a key frame 119. When a client 153 connects, the client receives predictive frame 109 initially, followed by predictive frames 111, 113, 115, and 117. Client 153 receives a total of 5 predictive frames that can not be decoded correctly. In some instances, the 5 predictive frames are simply dropped by a client. Only after 5 predictive frames are received does client 153 receive a key frame 119. When a client 155 connects, the client receives predictive frame 121 initially, followed by predictive frames 123, 125, 127, 129, 131, 133, and 135. Client 155 receives a total of 8 predictive frames that can not be decoded correctly. In some instances, the 8 predictive frames are simply dropped by a client. Only after 8 predictive frames are received does client 155 receive a key frame.

[0028] Transmitting predictive frames when a client requests a connection is inefficient and contributes to a poor user experience. Consequently, the techniques of the present invention contemplate providing a key frame initially to a



Petitioner Disney Ex-1004, 0009

client when a client requests a connection.

[0029] Figure 2 is a diagrammatic representation showing another example of a sequence of frames. According to various embodiments, a sequence of frames such as a sequence of video frames is received at a streaming server. In some embodiments, the sequence of video frames is associated with a particular channel and a buffer is assigned to each channel. Other sequences of video frames may be held in other buffers assigned to other channels. In other examples, buffers or portions of buffers are maintained for separate video streams and separate channels. In particular embodiments, key frame 201 is received early along time axis 241. One example of a key frame 201 is an I frame that includes substantially all of the data needed for a client device to display a frame of video. Key frame 201 is followed by predictive frames 203, 205, 207, 209, 211, 213, 215, and 217.

[0030] According to various embodiments, a sequence of different frames types, beginning with a key frame and ending just before a subsequence key frame, is referred to herein as a Group of Pictures (GOP). Key frame 201 and predictive frames 203, 205, 207, 209, 211, 213, 215, and 217 are associated with GOP 233 and maintained in buffer 231 or buffer portion 231. An encoding application typically determines the length and frame types included in a GOP. According to various embodiments, an encoder provides the sequence of frames to the streaming server. In some examples, a GOP is 15 frames long and includes an initial key frame such as an I frame followed by predictive frames such as B and P frames. A GOP may have a variety of lengths. An efficient length for a GOP is typically determined based upon characteristics of the video stream and bandwidth constrains. For example, a low motion scene can benefit from a longer GOP with more predictive frames. Low motion scenes do not need as many key frames. A high motion scene may benefit from a shorter GOP as more key frames may be needed to provide a good user experience.

[0031] According to various embodiments, GOP 233 is followed by GOP 237 maintained in buffer 235 or buffer portion 235. GOP 237 includes key frame 219 followed by predictive frames 221, 223, 225, 227, 229, 231, 233, and



Petitioner Disney Ex-1004, 0010

235. In some examples, a buffer used to maintain the sequence of frames is a first in first out (FIFO) buffer. When newer frames are received, a corresponding number of older frames are removed from the buffer.

[0032] When a client 251 connects, the client receives no longer receives a predictive frame initially. According to various embodiments, the client 251 receives the earliest key frame available. In some instances, the earliest key frame still available in the buffer may be key frame 201. The client does not need to drop any frames or display distorted images. Instead the client 251 immediately receives a key frame that includes substantially all of the information necessary to begin playing the stream. Similarly, when client 253 requests a connection, the client receives key frame 201 initially. If key frame 201 is no longer available in the buffer, a client connecting would receive key frame 219, even if this means that predictive frames 203, 205, 207, 209, 211, 213, 215, and 217 are skipped. For example, client 255 may connect at a time that would have provided predictive frame 211, but the streaming server intelligently identifies the next available key frame as key frame 219 and provides that key frame 219 to the client 255. No predictive frames are inefficiently transmitted at the beginning of a connection request. According to various embodiments, only key frames are initially provided upon connection requests.

[0033] According to various embodiments, a streaming server performs processing on each received frame to determine which frames are key frames. Identifying key frames may involve decoding or partially decoding a frame. In other examples, key frames may be identified based upon the size of the frame, as key frames are typically much larger than predictive frames. In other examples, only a subset of frames are decoded or partially decoded. In still other examples, once a key frame is determined, the streaming server determines the GOP size N and identifies each Nth frame following a key frame as a subsequent key frame. A variety of approaches can be used to determine key frames and predictive frames. Although the techniques of the present invention contemplate efficient mechanisms for identifying key frames, the streaming server does perform some additional processing.



Petitioner Disney Ex-1004, 0011

[0034] Furthermore, the streaming server may be providing a predictive frame, such as predictive frame 213, to an already connected client while providing a key frame 219 to a new client making a connection request. This can result in a slight but typically unnoticeable time variance in the media viewed by different clients. That is, a first client may be receiving predictive frames 213, 215, and 217 while a second client may be receiving key frame 219 and predictive frames 221 and 223. The techniques of the present invention recognize that this time shift is not disruptive of a typical user experience and a streaming server is typically capable of handling providing different frames from a stream to different client devices.

[0035] Figure 3 is a diagrammatic representation showing one example of a network that can use the techniques of the present invention. Although one particular example showing particular devices is provided, it should be noted that the techniques of the present invention can be applied to a variety of streaming servers and networks. According to various embodiments, the techniques of the present invention can be used on any streaming server having a processor, memory, and the capability of identifying characteristics of frames such as frame type in media stream. According to various embodiments, a streaming server is provided with video streams from an associated encoder and handles connection requests from client devices such as computer systems, mobile phones, personal digital assistants, video receivers, and any other device having the capability of decoding a video stream.

[0036] According to various embodiments, media content is provided from a number of different sources 385. Media content may be provided from film libraries, cable companies, movie and television studios, commercial and business users, etc. and maintained at a media aggregation server 361. Any mechanism for obtaining media content from a large number of sources in order to provide the media content to mobile devices in live broadcast streams is referred to herein as a media content aggregation server. The media content aggregation server 361 may be clusters of servers located in different data centers. According to various embodiments, content provided to a media aggregation server 361 is provided in a variety of different encoding formats with



Petitioner Disney Ex-1004, 0012

numerous video and audio codecs. Media content may also be provided via satellite feed 357.

[0037] An encoder farm 371 is associated with the satellite feed 387 and can also be associated with media aggregation server 361. The encoder farm 371 can be used to process media content from satellite feed 387 as well as possibly from media aggregation server 361 into potentially numerous encoding formats. The media content may also be encoded to support a variety of data rates. The media content from media aggregation server 361 and encoder farm 371 is provided as live media to a streaming server 375. According to various embodiments, the encoder farm 371 converts video data into video streams such as MPEG video streams with key frames and predictive frames.

[0038] Possible client devices 301 include personal digital assistants (PDAs), cellular phones, personal computing devices, computer systems, television receivers, etc. According to particular embodiments, the client devices are connected to a cellular network run by a cellular service provider. Cell towers typically provide service in different areas. Alternatively, the client device can be connected to a wireless local area network (WLAN) or some other wireless network. Live media streams provided over RTSP are carried and/or encapsulated on any one of a variety of networks.

[0039] In particular embodiments, some client devices are also connected over a wireless network to a media content delivery server 331. The media content delivery server 331 is configured to allow a client device 301 to perform functions associated with accessing live media streams. For example, the media content delivery server allows a user to create an account, perform session identifier assignment, subscribe to various channels, log on, access program guide information, and obtain information about media content, etc. According to various embodiments, the media content delivery server does not deliver the actual media stream, but merely provides mechanisms for performing operations associated with accessing media.

[0040] In other implementations, it is possible that the media content delivery



Petitioner Disney Ex-1004, 0013

server also provides media clips, files, and streams. The media content delivery server is associated with a guide generator 351. The guide generator 351 obtains information from disparate sources including content providers 381 and media information sources 383. The guide generator 351 provides program guides to database 355 as well as to media content delivery server 331 to provide to mobile devices 301. The media content delivery server 331 is also associated with an abstract buy engine 341. The abstract buy engine 341 maintains subscription information associated with various client devices 301. For example, the abstract buy engine 341 tracks purchases of premium packages.

[0041] Although the various devices such as the guide generator 351, database 355, media aggregation server 361, etc. are shown as separate entities, it should be appreciated that various devices may be incorporated onto a single server. Alternatively, each device may be embodied in multiple servers or clusters of servers. According to various embodiments, the guide generator 351, database 355, media aggregation server 361, encoder farm 371, media content delivery server 331, abstract buy engine 341, and streaming server 375 are included in an entity referred to herein as a media content delivery system.

[0042] Figure 4 is a diagrammatic representation showing one example of a streaming server 421. According to various embodiments, the streaming server 421 includes a processor 401, memory 403, buffers 431, 433, 435, and 437, and a number of interfaces. In some examples, the interfaces include an encoder interface 411, a media aggregation server interface 413, and a client device interface 441. The encoder interface 411 and the media aggregation server interface 413 are operable to receive media streams such as video streams. In some examples, hundreds of video streams associated with hundreds of channels are continuously being received and maintained in buffers 431, 433, 435, and 437 before being provided to client devices through client device interface 441.

[0043] According to various embodiments, the streaming server 421 handles numerous connection requests from various client devices. Connection



Petitioner Disney Ex-1004, 0014

requests can result from a variety of user actions such as a channel change, an application launch, a program purchase, etc. In some instances, a streaming server 421 simply provides the first available frame followed by subsequent frames in response to a client device connection request. However, the techniques of the present invention contemplate an intelligent streaming server that identifies key frames in video streams and provides a key frame initially to a client device. The key frame includes substantially all the information needed for a client device to begin display a correct video frame.

[0044] According to various embodiments, buffers 431, 433, 435, and 437 are provided on a per channel basis. In other examples, buffers are provided on a per GOP basis. Although buffers 431, 433, 435, and 437 are shown as discrete entities, it should be recognized that buffers 431, 433, 435, and 437 may be individual physical buffers, portions of buffers, or combinations of multiple physical buffers. In some examples, virtual buffers are used and portions of a memory space are assigned to particular channels based on need.

[0045] Although a particular streaming server 421 is described, it should be recognized that a variety of alternative configurations are possible. For example, some modules such as a media aggregation server interface may not be needed on every server. Alternatively, the multiple client device interfaces for different types of client devices may be included. A variety of configurations are possible.

[0046] Figure 5 is a flow process diagram showing one example of streaming server processing. At 501, media streams are received. According to various embodiments, media streams are continuously being received at a streaming server. At 503, media streams are maintained in multiple buffers. At 505, key frames in media streams are identified. In some examples, identifying key frames may involve determining the video codec, the GOP size, and/or the frame size and performing decoding or partial decoding of frames. A streaming server may be able to determine key frames by identifying the start of a GOP and the GOP size and flagging each start



Petitioner Disney Ex-1004, 0015

of a GOP as a key frame. A streaming server may also identify larger frames as key frames.

[0047] Partial decoding or full decoding can also be used. At 507, a connection request from a client device is received. At 509, a key frame to initially provide to the client device is identified. In some examples, the key frame identified is the earliest key frame for the requested channel available in a buffer for the channel. At 511, the key frame and subsequent predictive and key frames are sent to the client device 511.

[0048] Figure 6 is a flow process diagram showing one example of client device processing. In some examples, a client device is a mobile device. However, it should be noted that a client device can be any device associated with a decoder that is capable of displaying a video frame. That is a client device can be any computer system, portable computing device, gaming device, mobile phone, receiver, etc. At 601, a request is received for a media stream. According to various embodiments, the request on the client device may be the result of a user action. At 603, the client device sends a connection request to the streaming server. According to various embodiments, the connection request identifies a particular program or channel. At 605, a key frame is received from the streaming server. According to various embodiments, the client device receives the key frame first before any other frames. At 607, subsequent predictive frames and key frames are received from the streaming server. At 609, the client device plays the media stream using the initial received key frame. In some examples, the client device includes a decoder that processes the video stream received from the streaming server. In other examples, a decoding device may reside between the client device and the streaming server, and the client device simply plays video data.

[0049] While the invention has been particularly shown and described with reference to specific embodiments thereof, it will be understood by those skilled in the art that changes in the form and details of the disclosed embodiments may be made without departing from the spirit or scope of the invention. It is therefore intended that the invention be interpreted to include all variations and equivalents



Petitioner Disney Ex-1004, 0016

that fall within the true spirit and scope of the present invention.



Petitioner Disney Ex-1004, 0017

## CLAIMS

What is claimed is:

1. A method, comprising:

receiving a media stream including a plurality a frames, the media stream received at a streaming server;

identifying a key frame included in the plurality of frames, wherein the plurality of frames also includes a plurality of predictive frames;

receiving a connection request from a client device, the connection request associated with the media stream;

providing the key frame to the client device in response to the connection request.

2. The method of claim 1, wherein the media stream is a video stream

3. The method of claim 1, wherein the key frame is an I-frame

4. The method of claim 1, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

5. The method of claim 1, wherein the plurality of predictive frames include P-frames and B-frames.

6. The method of claim 1, wherein the plurality of predictive frames include change information .

7. The method of claim 1, wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device.

8. The method of claim 1, wherein the video stream is associated with a channel.

9. The method of claim 1, wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.

10. The method of claim 9, wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame.



Petitioner Disney Ex-1004, 0018

11. The method of claim 9, wherein the client device is a mobile device.

12. The method of claim 1, wherein the connection request is associated with a channel change at the client device.

13. The method of claim 1, wherein the key frame is identified by performing a decoding operation on one of the plurality of frames.

14. The method of claim 1, wherein the key frame is identified based on the size of the key frame.

15. The method of claim 1, wherein the key frame is identified based on the Group of Pictures (GOP) size.

16. An apparatus, comprising:

means for receiving a media stream including a plurality a frames, the media stream received at a streaming server;

means for identifying a key frame included in the plurality of frames, wherein the plurality of frames also includes a plurality of predictive frames;

means for receiving a connection request from a client device, the connection request associated with the media stream;

means for providing the key frame to the client device in response to the connection request.

17. The apparatus of claim 16, wherein the media stream is a video stream

18. The apparatus of claim 16, wherein the key frame is an I-frame

19. The apparatus of claim 16, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

20. A computer readable medium, comprising:

computer code for receiving a media stream including a plurality a frames, the media stream received at a streaming server;

computer code for identifying a key frame included in the plurality of frames, wherein the plurality of frames also includes a plurality of predictive frames;

computer code for receiving a connection request from a client device, the connection request associated with the media stream;

computer code for providing the key frame to the client device in response to the connection request.



Petitioner Disney Ex-1004, 0019

# KEY FRAME DETECTION AND SYNCHRONIZATION


## ABSTRACT OF THE DISCLOSURE

Mechanisms are provided for allowing a streaming server to efficiently provide frames associated with a media stream to a client device. A streaming server receives multiple media streams and determines which frames in the multiple media streams are key frames. When a connection request is received from a client device, a key frame is selected and provided to the client device. A client device receiving a key frame does not have to drop any predictive frames prior to playing a media stream.




Petitioner Disney Ex-1004, 0020

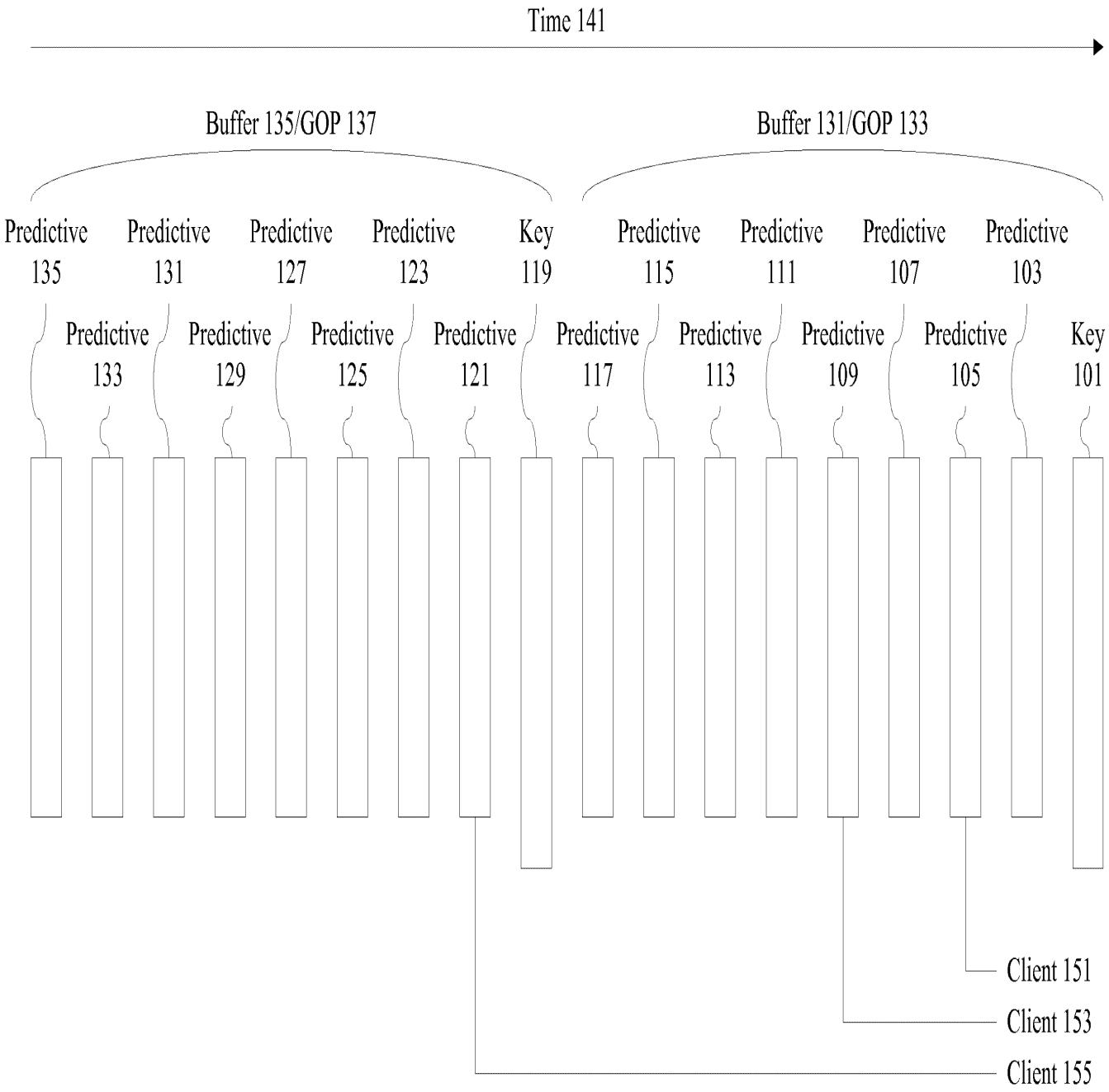

Time 141
Buffer 135/GOP 137
Buffer 131/GOP 133
Predictive 135
Predictive 131
Predictive 127
Predictive 123
Key 119
Predictive 115
Predictive 111
Predictive 107
Predictive 103
Predictive 133
Predictive 129
Predictive 125
Predictive 121
Predictive 117
Predictive 113
Predictive 109
Predictive 105
Key 101
Client 151
Client 153
Client 155

Figure 1

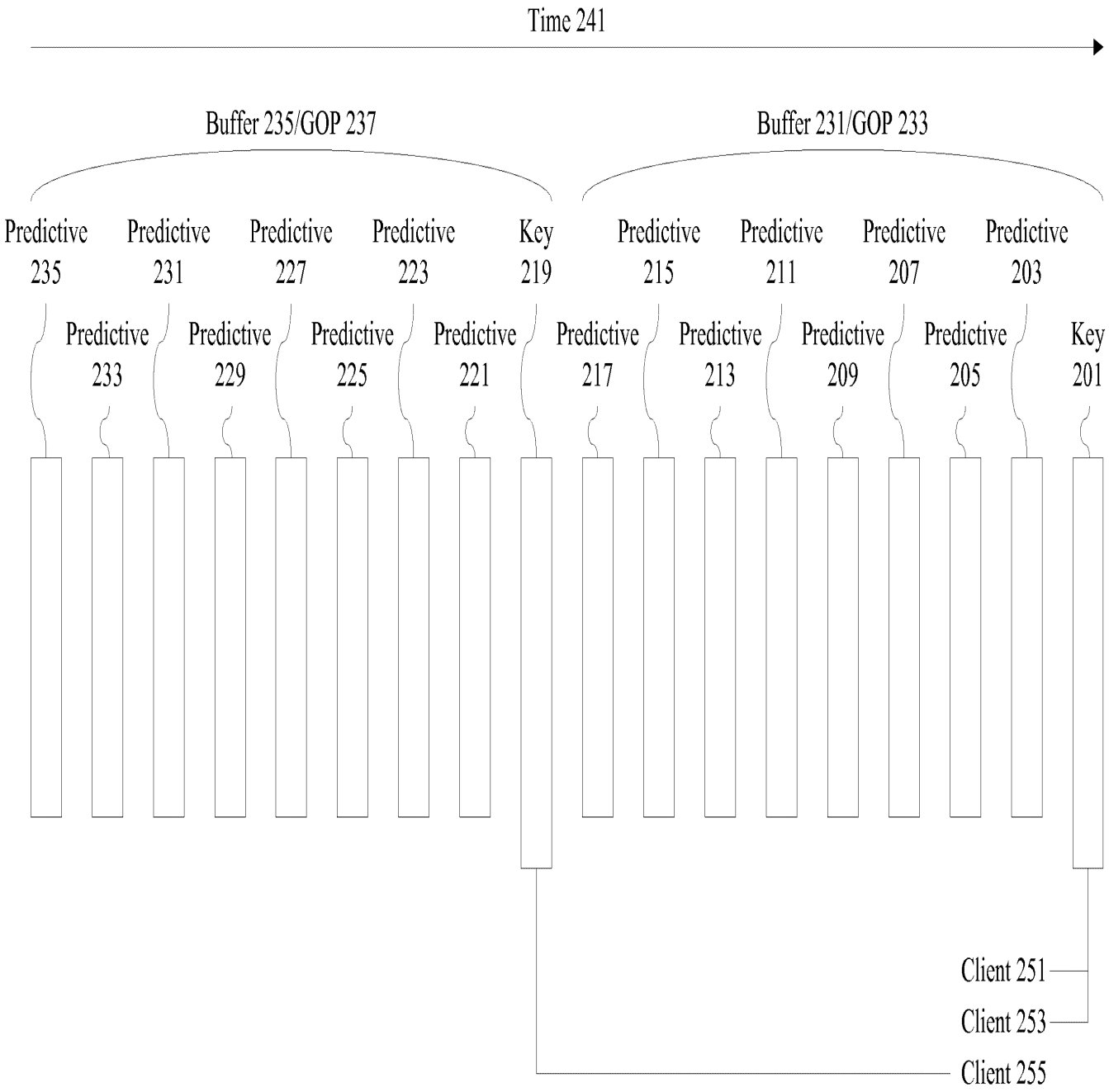

Time 241
Buffer 235/GOP 237
Buffer 231/GOP 233
Predictive 235
Predictive 231
Predictive 227
Predictive 223
Key 219
Predictive 215
Predictive 211
Predictive 207
Predictive 203
Predictive 233
Predictive 229
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Predictive 209
Predictive 205
Key 201
Client 251
Client 253
Client 255

Figure 2

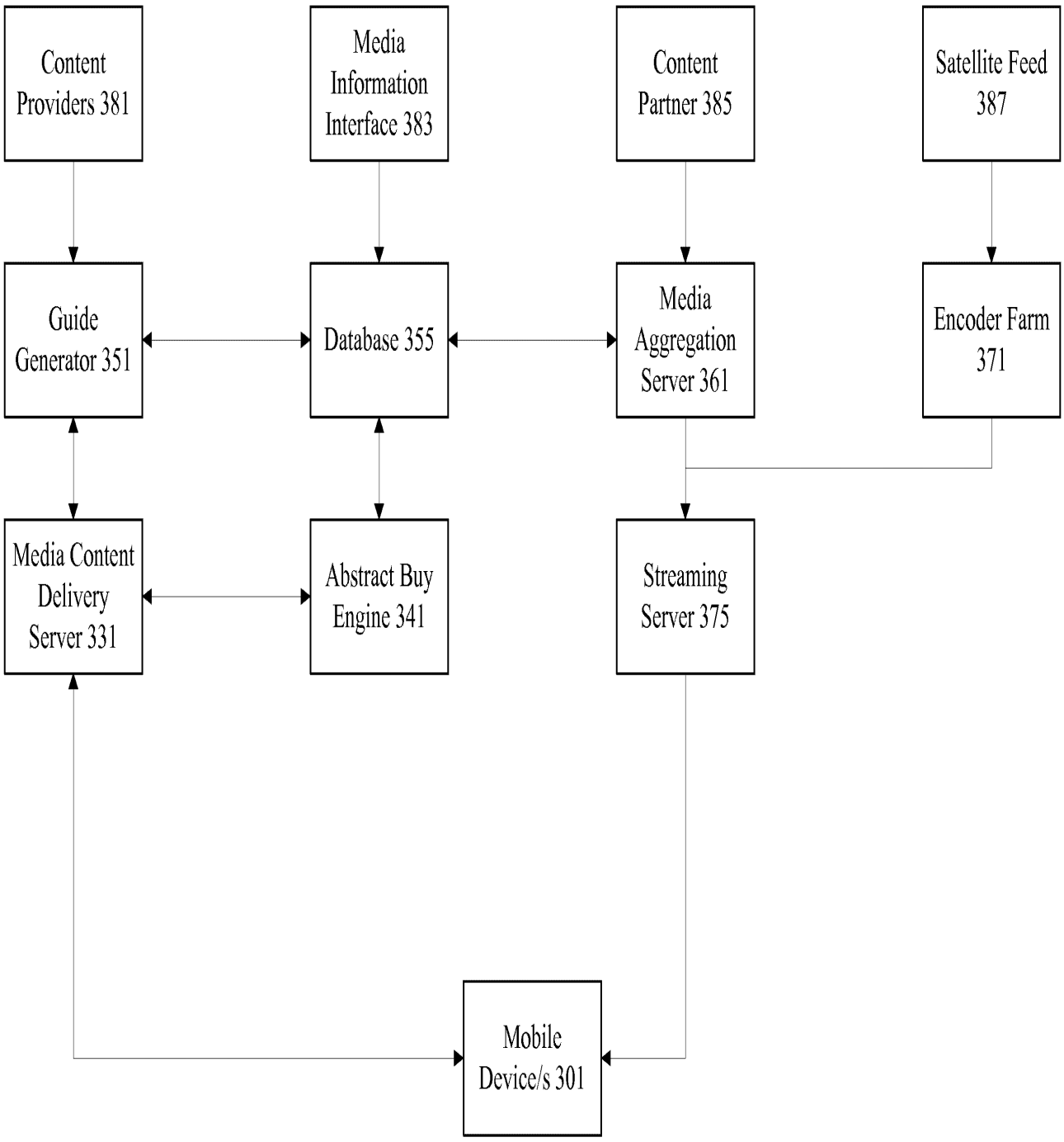

Content Providers 381
Media Information Interface 383
Content Partner 385
Satellite Feed 387
Guide Generator 351
Database 355
Media Aggregation Server 361
Encoder Farm 371
Media Content Delivery Server 331
Abstract Buy Engine 341
Streaming Server 375
Mobile Device/s 301

Figure 3

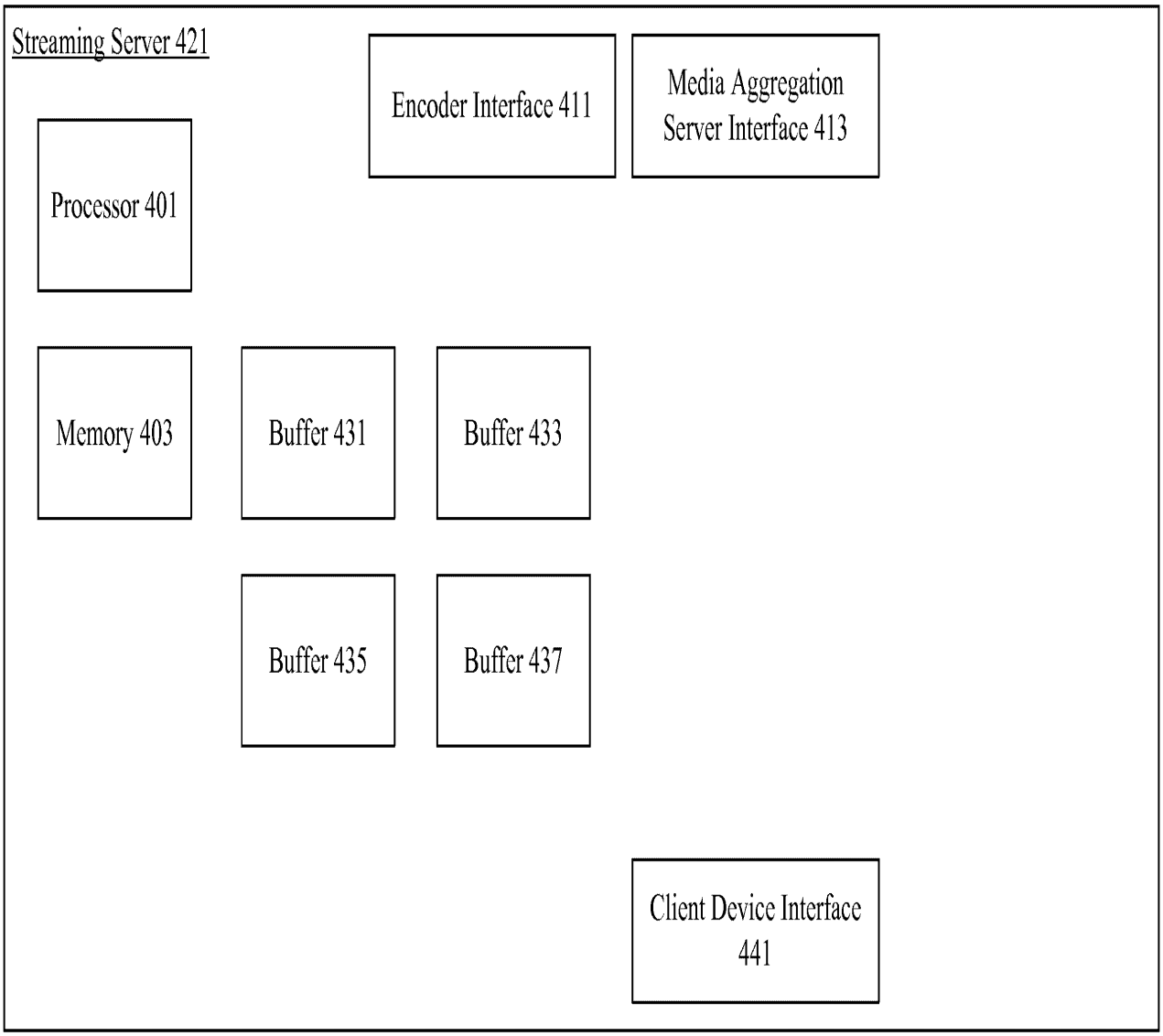

Streaming Server 421
Encoder Interface 411
Media Aggregation Server Interface 413
Processor 401
Memory 403
Buffer 431
Buffer 433
Buffer 435
Buffer 437
Client Device Interface 441

Figure 4

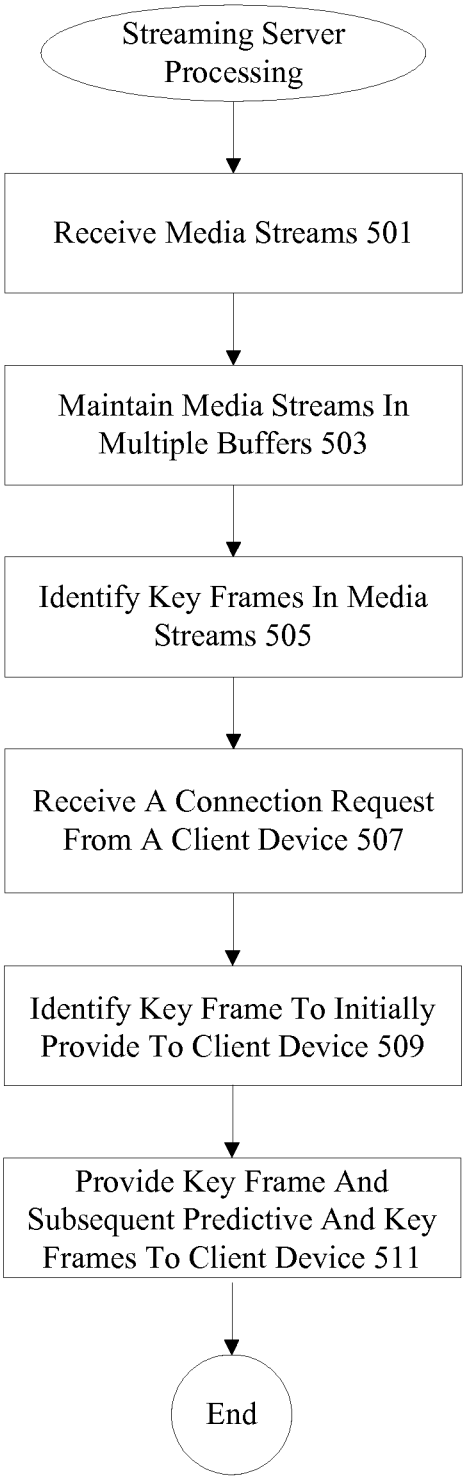

Streaming Server Processing
Receive Media Streams 501
Maintain Media Streams In Multiple Buffers 503
Identify Key Frames In Media Streams 505
Receive A Connection Request From A Client Device 507
Identify Key Frame To Initially Provide To Client Device 509
Provide Key Frame And Subsequent Predictive And Key Frames To Client Device 511
End

Figure 5

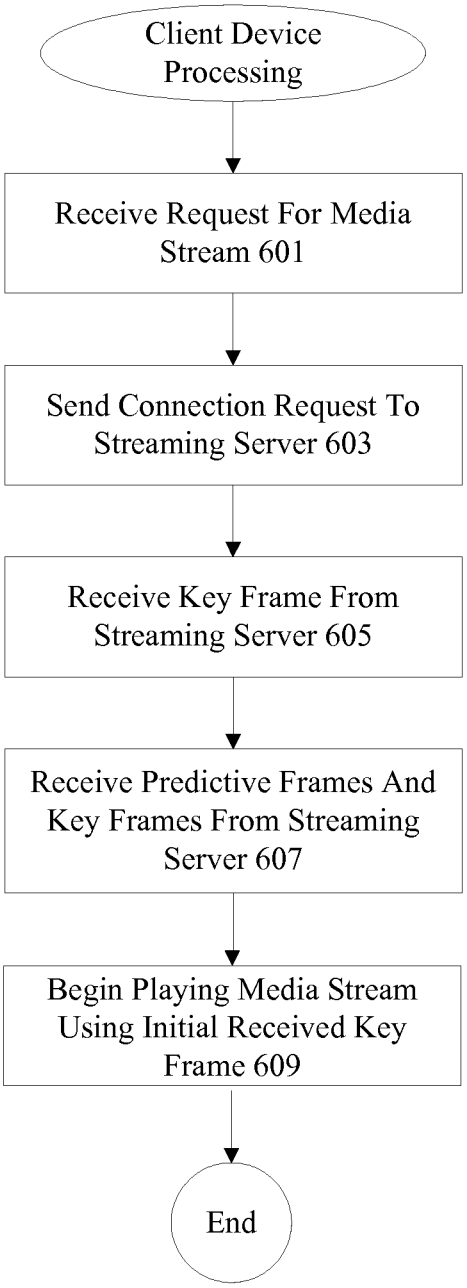

Client Device Processing
Receive Request For Media Stream 601
Send Connection Request To Streaming Server 603
Receive Key Frame From Streaming Server 605
Receive Predictive Frames And Key Frames From Streaming Server 607
Begin Playing Media Stream Using Initial Received Key Frame 609
End

Figure 6

# DECLARATION AND POWER OF ATTORNEY FOR ORIGINAL U.S. PATENT APPLICATION

As a below-named inventor, I hereby declare that:

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

I believe that 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: KEY FRAME DETECTION AND SYNCHRONIZATION the specification of which,

(check one)

1. ☒ is attached hereto.

2. ☐ was filed on _____ as U.S. Application No. _____ and was amended on _____.

3. ☐ was filed on _____ as PCT International Application No. _____ and was amended on _____.

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.

**Prior Foreign Application(s)**

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or (f), or §365(b) of any foreign application for patent or inventor's certificate listed below, or under §365(a) of any PCT international application which designated at least one country other than the United States listed below, and I have identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT International application having a filing date before that of the application on which priority is claimed:

| | | | Priority Not Claimed | Cert. Copy Attached |
|---|---|---|---|---|
| _____ (Application No.) | _____ (Country) | _____ (Filing Date) | ☐ | ☐ |
| _____ (Application No.) | _____ (Country) | _____ (Filing Date) | ☐ | ☐ |

**Power of Attorney**

And I hereby appoint the law firm of **Beyer Weaver LLP** and all practitioners who are associated with the Customer Number 022434 as my principal attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.



Petitioner Disney Ex-1004, 0027

**Direct Correspondence To:** **Customer Number 022434**

**Direct Telephone Calls To:** **Godfrey K. Kwan at telephone number (510) 663-1100**

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 section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Typewritten Full Name of Sole or First Inventor: Kay Johansson Citizenship: SWEDISH

**Inventor's signature:** [signature] **Date of Signature:** 22/1-07

Residence: (City) OAKLAND (State/Country) CA

Post Office Address: 2200 ARROWHEAD DR, OAKLAND, 94611 CA

Second Inventor: Kent Karlsson Citizenship: Sweden

**Inventor's signature:** [signature] **Date of Signature:** 22/1/2007

Residence: (City) Södertälje (State/Country) Sweden

Post Office Address: Trollvägen 5, 152 70 Södertälje



Petitioner Disney Ex-1004, 0028

PTO/SB/14 (08-05)
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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | MOBIP006 |
|---|---|---|
| | Application Number | |
| Title of Invention | Key Frame Detection and Synchronization | |

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

## Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

## Applicant Information:

**Applicant 1** Remove

**Applicant Authority** ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

| Prefix | Given Name | Middle Name | Family Name | Suffix |
|---|---|---|---|---|
| | Kay | | Johansson | |

**Residence Information (Select One)** ◉ US Residency ○ Non US Residency ○ Active US Military Service

| City | Oakland | State/Province | CA | Country of Residence[i] | US |
|---|---|---|---|---|---|

**Citizenship under 37 CFR 1.41(b)**[i] SW

**Mailing Address of Applicant:**

| Address 1 | 2200 Arrowhead Dr. | | |
|---|---|---|---|
| Address 2 | | | |
| City | Oakland | State/Province | CA |
| Postal Code | 94611 | Country[i] | US |

**Applicant 2** Remove

**Applicant Authority** ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

| Prefix | Given Name | Middle Name | Family Name | Suffix |
|---|---|---|---|---|
| | Kent | | Karlsson | |

**Residence Information (Select One)** ○ US Residency ◉ Non US Residency ○ Active US Military Service

| City | Sodertalie | Country Of Residence[i] | SE |
|---|---|---|---|

**Citizenship under 37 CFR 1.41(b)**[i] SE

**Mailing Address of Applicant:**

| Address 1 | Trollvagen 5 | | |
|---|---|---|---|
| Address 2 | | | |
| City | Sodertalie | State/Province | SE |
| Postal Code | 15270 | Country[i] | SE |

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

## Correspondence Information:

**Enter either Customer Number or complete the Correspondence Information section below.**
**For further information see 37 CFR 1.33(a).**

☐ **An Address is being provided for the correspondence Information of this application.**

PTO/SB/14 (08-05)
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| **Application Data Sheet 37 CFR 1.76** | Attorney Docket Number | MOBIP006 |
|---|---|---|
| | Application Number | |
| Title of Invention | Key Frame Detection and Synchronization | |

| **Customer Number** | 02243 | | |
|---|---|---|---|
| **Email Address** | | Add Email | Remove Email |

## Application Information:

| **Title of the Invention** | Key Frame Detection and Synchronization | | |
|---|---|---|---|
| **Attorney Docket Number** | MOBIP006 | **Small Entity Status Claimed** | ☐ |
| **Application Type** | | | |
| **Subject Matter** | | | |
| **Suggested Class (if any)** | | **Sub Class (if any)** | |
| **Suggested Technology Center (if any)** | | | |
| **Total Number of Drawing Sheets (if any)** | | **Suggested Figure for Publication (if any)** | |

**Publication Information:**

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not been 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.

## Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

| Please Select One: | ◉ Customer Number | ○ US Patent Practitioner | ○ US Representative (37 CFR 11.9) |
|---|---|---|---|
| Customer Number | 022434 | | |

## Domestic Priority Information:

This section allows for the applicant to claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c). Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

| Prior Application Status | | | Remove |
|---|---|---|---|
| Application Number | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) |
| | | | |

Additional Domestic Priority Data may be generated within this form by selecting the **Add** button. Add

## Foreign Priority Information:

PTO/SB/14 (08-05)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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| **Application Data Sheet 37 CFR 1.76** | Attorney Docket Number | MOBIP006 |
|---|---|---|
| | Application Number | |
| Title of Invention | Key Frame Detection and Synchronization | |

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove

| Application Number | Country [i] | Parent Filing Date (YYYY-MM-DD) | Priority Claimed |
|---|---|---|---|
| | | | (•) Yes ( ) No |

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

## Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

**Assignee 1** Remove

If the Assignee is an Organization check here. [X]

| | | | |
|---|---|---|---|
| Organization Name | MobiTV, Inc. | | |
| **Mailing Address Information:** | | | |
| **Address 1** | 6425 Christie Avenue | | |
| Address 2 | 5th Floor | | |
| **City** | Emeryville | **State/Province** | CA |
| **Country** [i] | US | Postal Code | 94608 |
| Phone Number | | Fax Number | |
| Email Address | | | |

Additional Assignee Data may be generated within this form by selecting the **Add** button. Add

## Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

| **Signature** | /Godfrey K. Kwan/ | | | Date (YYYY-MM-DD) | 2007-01-23 |
|---|---|---|---|---|---|
| First Name | Godfrey | Last Name | Kwan | Registration Number | 46850 |

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

# Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | |
| **Filing Date:** | |
| **Title of Invention:** | KEY FRAME DETECTION AND SYNCHRONIZATION |
| First Named Inventor/Applicant Name: | Kay Johansson |
| **Filer:** | Godfrey Kaichi Kwan/Joyce Ferreira |
| **Attorney Docket Number:** | MOBIP006/1720 |

Filed as Large Entity

**Utility Filing Fees**

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| Utility application filing | 1011 | 1 | 300 | 300 |
| Utility Search Fee | 1111 | 1 | 500 | 500 |
| Utility Examination Fee | 1311 | 1 | 200 | 200 |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| Post-Allowance-and-Post-Issuance: | | | | |
| **Extension-of-Time:** | | | | |
| **Miscellaneous:** | | | | |
| | | **Total in USD ($)** | | **1000** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 1460459 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | KEY FRAME DETECTION AND SYNCHRONIZATION |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Godfrey Kaichi Kwan/Joyce Ferreira |
| **Filer Authorized By:** | Godfrey Kaichi Kwan |
| **Attorney Docket Number:** | MOBIP006/1720 |
| **Receipt Date:** | 23-JAN-2007 |
| **Filing Date:** | |
| **Time Stamp:** | 21:36:41 |
| **Application Type:** | Utility |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment was successfully received in RAM | $1000 |
| RAM confirmation Number | 1065 |
| Deposit Account | 500388 |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:<br>Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17 | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes) | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | MOBIP006_application.pdf | 74661 | yes | 20 |
| | **Multipart Description/PDF files in .zip description** | | | | |
| | **Document Description** | | **Start** | **End** | |
| | Specification | | 1 | 17 | |
| | Claims | | 18 | 19 | |
| | Abstract | | 20 | 20 | |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Drawings | MOBIP006_drawings.pdf | 43525 | no | 6 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | Oath or Declaration filed | MOBIP006_Declaration.pdf | 75969 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 4 | Application Data Sheet | US_ADS_Form_SB_14.pdf | 1041616 | no | 4 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 5 | Fee Worksheet (PTO-06) | fee-info.pdf | 8373 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 1244144 | | |

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

PTO/SB/06 (12-04)
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# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

11/626,340

## APPLICATION AS FILED – PART I

| | (Column 1) | (Column 2) | SMALL ENTITY | | | OTHER THAN SMALL ENTITY | |
|---|---|---|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | RATE ($) | FEE ($) | | RATE ($) | FEE ($) |
| BASIC FEE (37 CFR 1.16(a), (b), or (c)) | | | | | | | 300 |
| SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | | | | | | | 500 |
| EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | | | | | | | 200 |
| TOTAL CLAIMS (37 CFR 1.16(i)) | 20 minus 20 = | | X$25= | | OR | X$50 | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | 3 minus 3 = | | X$100= | | | X$200= | |
| 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)) | | | N/A | | | N/A | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | 1000 |

## APPLICATION AS AMENDED – PART II

AMENDMENT A

| | (Column 1) | | (Column 2) | (Column 3) | SMALL ENTITY | | OR | OTHER THAN SMALL ENTITY | |
|---|---|---|---|---|---|---|---|---|---|
| | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE ($) | ADDI-TIONAL FEE ($) | | RATE ($) | ADDI-TIONAL FEE ($) |
| Total (37 CFR 1.16(i)) | * | Minus | ** | = | X = | | OR | X = | |
| Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X = | | OR | X = | |
| Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | N/A | | OR | N/A | |
| | | | | | TOTAL ADD'T FEE | | OR | TOTAL ADD'T FEE | |

AMENDMENT B

| | (Column 1) | | (Column 2) | (Column 3) | | | OR | | |
|---|---|---|---|---|---|---|---|---|---|
| | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE ($) | ADDI-TIONAL FEE ($) | | RATE ($) | ADDI-TIONAL FEE ($) |
| Total (37 CFR 1.16(i)) | * | Minus | ** | = | X = | | OR | X = | |
| Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X = | | OR | X = | |
| Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | N/A | | OR | N/A | |
| | | | | | TOTAL ADD'T FEE | | OR | TOTAL ADD'T FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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.*

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 | GRP ART UNIT | FIL FEE REC'D | ATTY.DOCKET.NO | DRAWINGS | TOT CLAIMS | IND CLAIMS |
|---|---|---|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | 2616 | 1000 | MOBIP006 | 6 | 20 | 3 |

**CONFIRMATION NO. 1023**

**FILING RECEIPT**

2243
JERRY B. HOLMES
ROUTE 1 BOX 241
HUNTINGDON, TN38344

Date Mailed: 02/13/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

**Applicant(s)**

Kay Johansson, Oakland, CA;
Kent Karlsson, Sodertalie, SWEDEN;

**Assignment For Published Patent Application**

MOBITV, INC., Emeryville, CA

**Power of Attorney:** The patent practitioners associated with Customer Number 022434

**Domestic Priority data as claimed by applicant**

**Foreign Applications**

**If Required, Foreign Filing License Granted:** 02/13/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US11/626,340**

**Projected Publication Date:** 07/24/2008

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

Key Frame Detection and Synchronization

**Preliminary Class**

## PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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## Title 37, Code of Federal Regulations, 5.11 & 5.15

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espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

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| APPL NO. | FILING OR 371 (c) DATE | ART UNIT | FIL FEE REC'D | ATTY.DOCKET NO | DRAWINGS | TOT CLMS | IND CLMS |
|---|---|---|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | 2616 | 1000 | MOBIP006 | 6 | 20 | 3 |

**CONFIRMATION NO. 1023**

2243
JERRY B. HOLMES
ROUTE 1 BOX 241
HUNTINGDON, TN 38344

**FILING RECEIPT**

*OC000000022498372*

Date Mailed: 02/13/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

**Applicant(s)**

Kay Johansson, Oakland, CA;
Kent Karlsson, Sodertalie, SWEDEN;

**Assignment For Published Patent Application**

MOBITV, INC., Emeryville, CA

**Power of Attorney:** The patent practitioners associated with Customer Number **022434**.

**Domestic Priority data as claimed by applicant**

**Foreign Applications**

**If Required, Foreign Filing License Granted:** 02/13/2007

**The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US11/626,340**

**Projected Publication Date:** 07/24/2008

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

Key Frame Detection and Synchronization

**Preliminary Class**

370

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**NOT GRANTED**

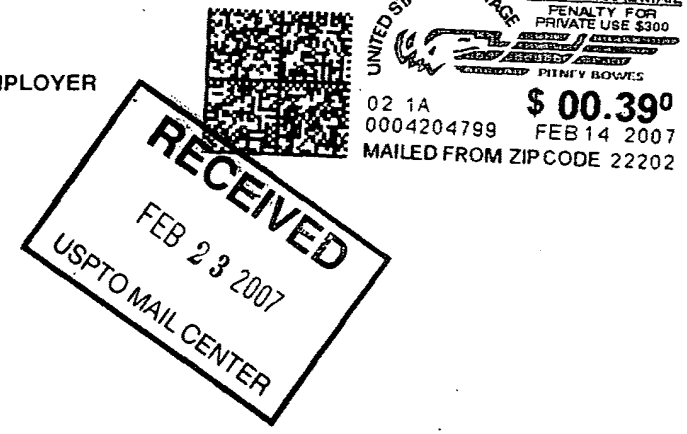
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| APPLICATION NUMBER | FILING or 371(c) DATE | GRP ART UNIT | FIL FEE REC'D | ATTY.DOCKET.NO | TOT CLAIMS | IND CLAIMS |
|---|---|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | 2616 | 1000 | MOBIP006 | 20 | 3 |

**CONFIRMATION NO. 1023**

**CORRECTED FILING RECEIPT**

22434
BEYER WEAVER LLP
P.O. BOX 70250
OAKLAND, CA94612-0250

Date Mailed: 03/06/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

**Applicant(s)**

Kay Johansson, Oakland, CA;
Kent Karlsson, Sodertalie, SWEDEN;

**Assignment For Published Patent Application**

MOBITV, INC., Emeryville, CA

**Power of Attorney:** The patent practitioners associated with Customer Number 022434

**Domestic Priority data as claimed by applicant**

**Foreign Applications**

**If Required, Foreign Filing License Granted:** 02/13/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US11/626,340**

**Projected Publication Date:** 07/24/2008

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

Key Frame Detection and Synchronization

**Preliminary Class**

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Bib Data Sheet

**CONFIRMATION NO. 1023**

| SERIAL NUMBER | FILING OR 371(c) DATE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007<br>RULE | 370 | 2616 | MOBIP006 |

**APPLICANTS**

Kay Johansson, Oakland, CA;
Kent Karlsson, Sodertalie, SWEDEN;

** CONTINUING DATA **********

** FOREIGN APPLICATIONS **********

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** 02/13/2007

| | | STATE OR COUNTRY | SHEETS DRAWING | TOTAL CLAIMS | INDEPENDENT CLAIMS |
|---|---|---|---|---|---|
| Foreign Priority claimed | ☐ yes ☐ no | CA | 6 | 20 | 3 |
| 35 USC 119 (a-d) conditions met | ☐ yes ☐ no ☐ Met after Allowance | | | | |
| Verified and Acknowledged | Examiner's Signature Initials | | | | |

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**TITLE**

Key Frame Detection and Synchronization

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**( Not for submission under 37 CFR 1.99)**

| | |
|---|---|
| Application Number | 11626340 |
| Filing Date | 2007-01-23 |
| First Named Inventor | Johansson et al. |
| Art Unit | 1023 |
| Examiner Name | Not Assigned |
| Attorney Docket Number | MOBIP006/1720-1 |

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| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( Not for submission under 37 CFR 1.99) | | |
|---|---|---|
| | Application Number | 11626340 |
| | Filing Date | 2007-01-23 |
| | First Named Inventor | Johansson et al. |
| | Art Unit | 1023 |
| | Examiner Name | Not Assigned |
| | Attorney Docket Number | MOBIP006/1720-1 |

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|---|---|---|---|
| | 1 | Keyframe Extraction, downloaded from www.cs.umd.edu/users/ogale/research/actions/keyframes.html (6 pages) | ☐ |
| | 2 | Togawa and Okuda, "Position-Based Keyframe Selection for Human Motion Animation", Proceedings of the 2005 11th Int'l Conference on Parallel and Distributed Systems, IEEE Computer Society | ☐ |

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**( Not for submission under 37 CFR 1.99)**

| | |
|---|---|
| Application Number | 11626340 |
| Filing Date | 2007-01-23 |
| First Named Inventor | Johansson et al. |
| Art Unit | 1023 |
| Examiner Name | Not Assigned |
| Attorney Docket Number | MOBIP006/1720-1 |

**CERTIFICATION STATEMENT**

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

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☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 1953615 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Godfrey Kaichi Kwan/Joyce Ferreira |
| **Filer Authorized By:** | Godfrey Kaichi Kwan |
| **Attorney Docket Number:** | MOBIP006 |
| **Receipt Date:** | 09-JUL-2007 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 19:50:58 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes) /Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Information Disclosure Statement (IDS) Filed | USPTO_IDS_FORM.pdf | 666161<br>3e2f65d66f1d2145fc74e53bbdd728c269fbd016 | no | 4 |
| **Warnings:** | | | | | |

| Information: | | | | | |
|---|---|---|---|---|---|
| A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems. | | | | | |
| 2 | NPL Documents | NPL_1.pdf | 241085<br>a2aed0257fa6b2ee54985cdc4646c8c151f35f1d | no | 4 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | NPL Documents | NPL_2.pdf | 1967650<br>e3f520e26c24d026f657a2c6875a3fafa6203b37 | no | 6 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| **Total Files Size (in bytes):** | | | 2874896 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006 |

CONFIRMATION NO. 1023

22434
BEYER WEAVER LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

**PUBLICATION NOTICE**




Date Mailed: 07/24/2008

**Title:**Key Frame Detection and Synchronization

**Publication No.**US-2008-0175273-A1
**Publication Date:**07/24/2008

## NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

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Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



Petitioner Disney Ex-1004, 0056

| Form 1449 (Modified)<br><br>**Information Disclosure Statement By Applicant**<br><br>(Use Several Sheets if Necessary) | **Atty Docket No.:** | MOBIP006/1720-1 |
|---|---|---|
| | **Application No.:** | 11/626,340 |
| | **Applicant** | JOHANSSON, Kay, et al. |
| | **Filing Date** | January 23, 2007 |
| | **Group** | 2616 |
| | **Conf. No.** | 1023 |
| | | Page 1 of 1 |
| | **Submitted on:** | October 30, 2008 |

**U.S. Patent Documents**

| Examiner Initial | No. | Patent No. | Date | Patentee | Class | Sub-class | Filing Date |
|---|---|---|---|---|---|---|---|
| | 1. | 20050190781 A1 | 09/01/05 | GREEN, et al. | | | |
| | 2. | 20060136581 A1 | 06/22/06 | SMITH | | | |
| | 3. | | | | | | |
| | 4. | | | | | | |

**Foreign Patent or Published Foreign Patent Application**

| Examiner Initial | | Document No. | Publication Date | Country or Patent Office | Class | Sub-Class | Translation Yes | Translation No |
|---|---|---|---|---|---|---|---|---|
| | 5. | | | | | | | |
| | 6. | | | | | | | |
| | 7. | | | | | | | |
| | 8. | | | | | | | |

**Other Documents**

| Examiner Initial | No. | Author, Title, Place (e.g. Journal) of Publication, Date |
|---|---|---|
| | 9. | PCT Notification of Transmittal of the International Search Report and the Written Opinion of the International Searching Authority, or the Declaration, April 25, 2008 International Application No. PCT/US 08/51065 (Attorney Docket No. MOBIP006WO) |
| | 10. | |
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| Examiner | Date Considered |
|---|---|
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Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| In re application of: JOHANSSON, Kay, et al | Attorney Docket No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: William George Trost IV |
| Filed: January 23, 2007 | Group: 2616 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation No.: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on October 30, 2008.

Signed: /Latonia Ervin/
Latonia Ervin

# INFORMATION DISCLOSURE STATEMENT IN RESPONSE TO CORRESPONDING FOREIGN SEARCH REPORT OR FOREIGN OFFICE ACTION

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

Dear Sir:

The reference(s) identified in the attached PTO Form 1449 (copies of non-U.S. references are attached) may be material to the examination of the above-identified patent application. These reference(s) were cited in a corresponding PCT application. A copy of the International Search Report and Written Opinion which was dated April 25, 2008 is attached herewith. These reference(s) are identified in compliance with the applicant's duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. Accordingly, the Examiner is requested to make the identified reference(s) of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that additional information (material to the examination of this application) does not exist or that the identified reference(s) constitute prior art.



Petitioner Disney Ex-1004, 0058

In view of the foregoing, it is respectfully submitted that no fee is due in conjunction with the filing of this Information Disclosure Statement. However, should the Commissioner determine that additional fees are required for filing the present Information Disclosure Statement, the Commissioner is hereby authorized to charge any such fees to our Deposit Account Number 504480 (Order No. MOBIP006).

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan/

G. Audrey Kwan
Registration No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250



Petitioner Disney Ex-1004, 0059

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 4208947 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Godfrey Audrey Kwan/Latonia Ervin |
| **Filer Authorized By:** | Godfrey Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006/1720-1 |
| **Receipt Date:** | 30-OCT-2008 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 18:11:22 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Information Disclosure Statement (IDS) Filed (SB/08) | MOBIP006_1449FormIDS.pdf | 26007<br>dd512753856aebab7e36b070aa4b2e55bd05dd85 | no | 1 |

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| **Warnings:** | |
| **Information:** | |

| This is not an USPTO supplied IDS fillable form | | | | | |
|---|---|---|---|---|---|
| 2 | Information Disclosure Statement Letter | MOBIP006_IDSForeignSearch.pdf | 23955<br>34d0375ab55a82d03420f71fe524505c0cb95e81 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | NPL Documents | MOBIP006WO_ISR_WO.pdf | 233883<br>0064f17b45041f79ed4f1239a97fa947780d4409 | no | 5 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 283845 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PLUS Search Results for S/N 11626340, Searched Wed Sep 16 11:13:33 EDT 2009

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

5719786 99
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6760378 99
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4058044 76
4081068 76
4086469 76
4132142 76
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4174652 76
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4189743 76
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006/1720-1 | 1023 |

22434 7590 10/02/2009

Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| **ART UNIT** | **PAPER NUMBER** |
| 2416 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 10/02/2009 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@wavsip.com



Petitioner Disney Ex-1004, 0063

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2416 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 January 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Information Disclosure Statement*

1. Regarding the information disclosure statement (IDS) submitted on July 9, 2007, the entry identified by "Keyframe Extraction, downloaded from www.cs.umd.edu/users/ogale/research/actions/keyframes.html (6 pages)" does not indicate a date. Appropriate correction is required.

### *Claim Rejections - 35 USC § 101*

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. **Claims 1-15** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-15 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. Claims 1-15 recite methods that are broad enough that the claim could be completely performed mentally, verbally or without a machine nor is any

transformation apparent. For example, the claimed method in Claim 1 includes the steps of “receiving a media stream …”, “identifying a key frame …”, “receiving a connection request …”, and “providing the key frame …”, which are broad enough that these steps could be completely performed mentally, verbally or without a machine nor is any transformation apparent.

Thus, the method claims 1-15 (1) are not tied to a particular machine (such as a particular apparatus) by identifying the apparatus that accomplishes the method steps or (2) do not transform underlying subject matter (such as article or material) to a different state or thing. Thus, claims 1-15 are non-statutory.

4. **Claim 20** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The preamble in Claim 20 recites, "a computer readable medium", yet the body recites "computer code" separately. There is no relationship between “computer readable medium” in the preamble and “computer code” in the body of the claim. Thus, the preamble is not given patentable weight and therefore, “computer codes” in the body of the claim is merely computer instruction per se, which is non-statuary.

In particular, Claim 20 recites an abstract idea, computer instructions per se, which is a judicially recognized exception to the list of statutory subject matters enumerated in Section 101. With respect to an abstract idea, a man-made tangible embodiment thereof with a real world use is considered to be evidence of a practical application of such abstract idea and would render such man-made tangible potentially eligible statutory subject matter. However, in this case, claim 20 is not directed to a

man-made tangible embodiment of an abstract idea. That is, the scope of the presently claimed "program" can range from paper on which the program is written, to a program simply contemplated and memorized by a person. Therefore, claim 20 is rejected under Section 101 as non-statutory subject matter.

5. **Claim 20** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter since it fails to be limited to embodiments which fall within a statutory category.

**Claim 20** recites, "a **computer readable medium,** comprising computer code" in line 1-2.

It is noted that applicant fails to provide antecedent basis for the claim terminology "computer readable medium" intended to be covered within the meaning in the disclosure. Since the applicant fails to provide antecedent basis to limit the specific statutory embodiments, "computer readable medium" belongs to the intrinsic non-statutory embodiments such as carrier signal, radio wave, light wave, and transmission medium/media.

Transmission media in the context of this disclosure cover "***carrier signal, radio wave, light wave, transmission medium/media***", which are not a Manufacture within the meaning of 101, and electrical connections, optical coaxial cables, copper wire and fiber optics fibers, on which the program is still unavailable to the processor. In such embodiments, the program is still unable to act as a computer component and have its functionality realized. Thus, claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field,

define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Thus, the claim is also non-statutory.

In view of the above analysis, claim 20 is ineligible for patent protection as failing to be limited to embodiments which fall within a statutory category.

### *Claim Objections*

6. **Claims 1, 16 and 20** are objected to because of the following informalities: all three claims recite the phrase "including a plurality a frames", which appears to be a typographical error. Appropriate correction is required.

### *Specification*

7. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is a lack of proper antecedent support for the term "computer readable medium" as recited in Claim 20.

### *Claim Rejections - 35 USC § 102*

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. **Claims 16-17, 19, 1-2, 4, 6-7, and 13-14** are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Publication No. 2007/0044128 A1 to Witt.

10. **As to Claim 16**, Witt discloses an apparatus, comprising:

means for receiving a media stream (Fig. 4, "server 30" and paragraph 33, disclosing that the "streaming server 30 receives a video data stream from video source 28", thus disclosing means for receiving a media stream) including a plurality [of] frames (Figs. 2A/B and 3A/B, disclosing a video data stream including a plurality of frames), the media stream received at a streaming server (Fig. 4, “server 30” and paragraph 33);

means for identifying a key frame included in the plurality of frames (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32” identifies key frames included in the plurality of frames), wherein the plurality of frames also includes a plurality of predictive frames (Figs. 2A/B and 3A/B and paragraphs 3, 29 and 30, disclosing "delta frames", i.e., "predictive frames");

means for receiving a connection request (Fig. 4, “broadcaster 38") from a client device (Fig. 4, “client 40 and paragraph 33, disclosing the “broadcaster 38” receiving a “request signal” from the “client 40”), the connection request associated with the media stream (paragraph 33, disclosing the “broadcaster 38” sending a processed data stream associated with the connection request received from the client 40);

means for providing the key frame to the client device in response to the connection request (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending only the first key frame to the client device after the connection request was received).

11. **As to Claim 17**, please note that Witt discloses the apparatus as in the parent claim 16.

Witt further discloses wherein the media stream is a video stream (Figs. 2A/B and 3A/B and paragraphs 29 and 30, disclosing video stream).

12. **As to Claim 19**, please note that Witt discloses the apparatus as in the parent claim 16.

Witt further discloses wherein the key frame includes substantially all of the data needed to display a video frame on the client device (paragraphs 3 and 6, disclosing a “key frame” that serves as the reference frame containing "a relatively high amount of data compared to delta frames", i.e., including substantially all of the data needed to display a video frame).

13. **As to Claim 1**, please see rejection for Claim 16, which recites the same limitations.

14. **As to Claim 2**, please see rejection for Claim 17, which recites the same limitations.

15. **As to Claim 4**, please see rejection for Claim 19, which recites the same limitations.

16. **As to Claim 6**, please note that Witt discloses the method as in the parent claim 1.

Witt further discloses wherein the plurality of predictive frames include change information (Figs. 2A/B and 3A/B, disclosing plurality of predictive frames; paragraph 3, disclosing predictive frames including change information).

17. **As to Claim 7**, please note that Witt discloses the method as in the parent claim 1.

Witt further discloses wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending a key frame first after the connection request has been received, i.e., before any predictive frames are provided to the client device).

18. **As to Claim 13**, please note that Witt discloses the method as in the parent claim 1.

Witt further discloses wherein the key frame is identified by performing a decoding operation on one of the plurality of frames (paragraphs 33 and 34, disclosing determining a key frame by “analyzing the … structure of the data in the received video data”, thus disclosing wherein the key frame is identified by performing a decoding operation).

19. **As to Claim 14**, please note that Witt discloses the method as in the parent claim 1.

Witt further discloses wherein the key frame is identified based on the size of the key frame (paragraph 6, disclosing that the key frame contains more data than delta/predictive frames; paragraphs 33 and 34, disclosing determining a key frame by "analyzing the quantity … of the data in the received video data", thus disclosing wherein the key frame is identified based on the size of the key frame).

### *Claim Rejections - 35 USC § 103*

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

21. **Claims 3, 5, 8-10, 12, 15, 18 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al.

22. **As to Claim 3**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the key frame is an I-frame.

Toebes discloses wherein the key frame is an I-frame (paragraph 9, disclosing "I-frames").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been

in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

23. **As to Claim 5**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the plurality of predictive frames include P-frames and B-frames.

Toebes discloses wherein the plurality of predictive frames include P-frames and B-frames. (paragraph 9, disclosing "P-frames" and "B-frames").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

24. **As to Claim 8**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the video stream is associated with a channel.

Toebes discloses wherein the video stream is associated with a channel. (paragraph 21, disclosing distributing "at least one of the video channels ... as video stream", thus disclosing wherein the video stream is associated with a channel).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in

conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

25. **As to Claim 9**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.

Toebes discloses wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream (paragraphs 22 and 31, disclosing "distribution buffers 468, 484 and 540", i.e., FIFO buffer to maintain the video stream), wherein the FIFO buffer includes a new frame end and an old frame end (paragraphs 22 and 31, disclosing the "distribution buffers" contain I-frames and control and media data, thus disclosing and teaching new/old frame ends).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

26. **As to Claim 10**, please note that Witt and Toebes disclose and teach the method as in the parent claim 9.

Witt further discloses wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending a key frame first after the connection request has been received “even when a next frame schedule for delivery to the client device is a predictive frame”).

27. **As to Claim 12**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the connection request is associated with a channel change at the client device.

Toebes discloses wherein the connection request is associated with a channel change at the client device (paragraphs 2 and 6, disclosing connection request being associated with a channel change at the client device).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

28. **As to Claim 15**, please note that Witt discloses the method as in the parent claim 1.

Witt discloses wherein the key frame is identified based on the size of the received video data (paragraphs 33 and 34)

Witt does not expressly disclose based on the GOP size.

Toebes discloses based on the GOP size (paragraph 7, disclosing "the catch up time could be up to an entire GOP or frame set time", thus disclosing based on the GOP size).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. In particular, Toebes and Witt can be combined to teach and disclose "wherein the key frame is identified based on the GOP size". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

29. **As to Claim 18**, please see rejection for Claim 3, which recites the same limitations.

30. **As to Claim 20**, Witt discloses a method, comprising:

receiving a media stream (Fig. 4, "server 30" and paragraph 33, disclosing that the "streaming server 30 receives a video data stream from video source 28", thus disclosing means for receiving a media stream) including a plurality [of] frames (Figs. 2A/B and 3A/B, disclosing a video data stream including a plurality of frames), the media stream received at a streaming server (Fig. 4, "server 30" and paragraph 33);

identifying a key frame included in the plurality of frames (Fig. 4, "key/delta frame determinator 32" and paragraph 33, disclosing that the "key/delta frame determinator 32" identifies key frames included in the plurality of frames), wherein the plurality of

frames also includes a plurality of predictive frames (Figs. 2A/B and 3A/B and paragraphs 3, 29 and 30, disclosing "delta frames", i.e., "predictive frames");

receiving a connection request (Fig. 4, “broadcaster 38") from a client device (Fig. 4, “client 40 and paragraph 33, disclosing the “broadcaster 38” receiving a “request signal” from the “client 40”), the connection request associated with the media stream (paragraph 33, disclosing the “broadcaster 38” sending a processed data stream associated with the connection request received from the client 40);

providing the key frame to the client device in response to the connection request (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending only the first key frame to the client device after the connection request was received).

Witt does not expressly disclose a computer readable medium, comprising computer code for executing particular tasks.

Toebes discloses a computer readable medium, comprising computer code for executing particular tasks (paragraph 20, disclosing computer instructions in a memory).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

31. **Claims 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al., further in view of U.S. Patent Publication No. 2007/0242666 A1 to Barrett

32. **As to Claim 11**, please note that Witt and Toebes disclose and teach the method as in the parent claim 9.

Witt and Toebes do not expressly disclose wherein the client device is a mobile device.

Barrett discloses wherein the client device is a mobile device. (paragraph 48 disclosing a wireless "transceiver").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Barrett, in conjunction with the teachings of Witt and Toebes. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11; Barrett, paragraphs 1, 6, and 7).

## ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on (571)272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2416

/Ian N. Moore/
Primary Examiner, Art Unit 2416

| Notice of References Cited | Application/Control No. 11/626,340 | Applicant(s)/Patent Under Reexamination JOHANSSON ET AL. | |
|---|---|---|---|
| | Examiner PETER CHENG | Art Unit 2416 | Page 1 of 1 |

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| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
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| * | B | US-2007/0277219 | 11-2007 | Toebes et al. | 725/139 |
| * | C | US-2007/0242666 | 10-2007 | Barrett, Timothy Alan | 370/389 |
| | D | US- | | | |
| | E | US- | | | |
| | F | US- | | | |
| | G | US- | | | |
| | H | US- | | | |
| | I | US- | | | |
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| | L | US- | | | |
| | M | US- | | | |

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

**( Not for submission under 37 CFR 1.99)**

| | |
|---|---|
| Application Number | 11626340 |
| Filing Date | 2007-01-23 |
| First Named Inventor | Johansson et al. |
| Art Unit | 1023 |
| Examiner Name | Not Assigned |
| Attorney Docket Number | MOBIP006/1720-1 |

**U.S.PATENTS** Remove

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| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( Not for submission under 37 CFR 1.99) | | |
|---|---|---|
| | Application Number | 11626340 |
| | Filing Date | 2007-01-23 |
| | First Named Inventor | Johansson et al. |
| | Art Unit | 1023 |
| | Examiner Name | Not Assigned |
| | Attorney Docket Number | MOBIP006/1720-1 |

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|---|---|---|---|
| | 1 | Keyframe Extraction, downloaded from www.cs.umd.edu/users/ogale/research/actions/keyframes.html (6 pages) | ☐ |
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**EXAMINER SIGNATURE**

| Examiner Signature | /Chitang Peter Cheng/ | Date Considered | 09/16/2009 |
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| Form 1449 (Modified)<br><br>**Information Disclosure Statement By Applicant**<br><br>(Use Several Sheets if Necessary) | **Atty Docket No.:** | MOBIP006/1720-1 |
|---|---|---|
| | **Application No.:** | 11/626,340 |
| | **Applicant** | JOHANSSON, Kay, et al. |
| | **Filing Date** | January 23, 2007 |
| | **Group** | 2616 |
| | **Conf. No.** | 1023 |
| | | Page 1 of 1 |
| | **Submitted on:** | October 30, 2008 |

**U.S. Patent Documents**

| Examiner Initial | No. | Patent No. | Date | Patentee | Class | Sub-class | Filing Date |
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| | 1. | 20050190781 A1 | 09/01/05 | GREEN, et al. | | | |
| | 2. | 20060136581 A1 | 06/22/06 | SMITH | | | |
| | 3. | | | | | | |
| | 4. | | | | | | |

**Foreign Patent or Published Foreign Patent Application**

| Examiner Initial | | Document No. | Publication Date | Country or Patent Office | Class | Sub-Class | Translation Yes | Translation No |
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| | 5. | | | | | | | |
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**Other Documents**

| Examiner Initial | No. | Author, Title, Place (e.g. Journal) of Publication, Date |
|---|---|---|
| | 9. | PCT Notification of Transmittal of the International Search Report and the Written Opinion of the International Searching Authority, or the Declaration, April 25, 2008 International Application No. PCT/US 08/51065 (Attorney Docket No. MOBIP006WO) |
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| Examiner | /Chitang Peter Cheng/ | Date Considered | 09/16/2009 |
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /P.C

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2416 |

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| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
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| Final | Original | 09/21/2009 | | | | | | | | |
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| | 20 | ✓ | | | | | | | | |



Petitioner Disney Ex-1004, 0084

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2416 |

| SEARCHED | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |

| SEARCH NOTES | | |
|---|---|---|
| Search Notes | Date | Examiner |
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/2009 | pc |

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**CONFIRMATION NO. 1023**

| SERIAL NUMBER | FILING or 371(c) DATE<br>RULE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | 370 | 2416 | MOBIP006/1720-1 |

**APPLICANTS**

Kay Johansson, Oakland, CA;
Kent Karlsson, Sodertalie, SWEDEN;

**** CONTINUING DATA ***************************

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
02/13/2007

| Foreign Priority claimed | 35 USC 119(a-d) conditions met | Verified and Acknowledged | Met after Allowance | STATE OR COUNTRY | SHEETS DRAWINGS | TOTAL CLAIMS | INDEPENDENT CLAIMS |
|---|---|---|---|---|---|---|---|
| ☐ Yes ☑ No | ☐ Yes ☑ No | /PETER CHENG/ Examiner's Signature | ☐ Initials | CA | 6 | 20 | 3 |

**ADDRESS**

Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250
UNITED STATES

**TITLE**

Key Frame Detection and Synchronization

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## EAST Search History

### EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| S1 | 4 | "20050190781" or "20060136581" | US-PGPUB; USPAT | ADJ | ON | 2009/09/16 19:10 |
| S2 | 1 | "20080175273" | US-PGPUB; USPAT | ADJ | ON | 2009/09/16 19:22 |
| S3 | 1 | "10587649" | US-PGPUB; USPAT | ADJ | ON | 2009/09/17 12:40 |
| S4 | 0 | "2005063413" | US-PGPUB; USPAT | ADJ | ON | 2009/09/17 14:44 |
| S5 | 1 | "20050063413" | US-PGPUB; USPAT | ADJ | ON | 2009/09/17 14:44 |
| S6 | 1 | ("6617984").PN. | USPAT; USOCR | OR | OFF | 2009/09/17 14:45 |
| S7 | 3283 | (370/503).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:00 |
| S8 | 2050 | (370/509).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:01 |
| S9 | 593 | (370/510).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:02 |
| S10 | 35 | (370/511).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:03 |
| S11 | 195 | (370/512).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:03 |



Petitioner Disney Ex-1004, 0087

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|---|---|---|---|---|---|---|
| S12 | 158 | (370/513).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:03 |
| S13 | 197 | (370/395.64).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:04 |
| S14 | 11010 | (709/203).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:04 |
| S15 | 338 | (709/209).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:04 |
| S16 | 1115 | (709/208).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2009/09/17 15:04 |
| S17 | 38 | ((referenc$3 or base or key or common) near5 frame or i $1frame) with (first or before) with (connect $3 or channel) near5 (switch$3 or request $3) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:10 |



Petitioner Disney Ex-1004, 0088

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|---|---|---|---|---|---|---|
| S18 | 42 | ((referenc$3 or base or key or common) near5 frame or i $1frame) with (first or before or prior) with (connect$3 or channel) near5 (switch $3 or request$3) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:11 |
| S19 | 115 | ((referenc$3 or base or key or common) near5 frame or i $1frame) with (first or before or prior) with (connect$3 or channel) near5 (switch $3 or request$3) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:11 |
| S20 | 6802 | ((referenc$3 or base or key or common) near5 frame or i $1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:12 |
| S21 | 413 | ((referenc$3 or base or key or common) near5 frame or i $1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) and "386". clas. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:12 |



Petitioner Disney Ex-1004, 0089

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| S22 | 330 | ((referenc$3 or base or key or common) near5 frame or i $1frame) with (first or before or prior) with ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) and "386". clas. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:14 |
| S23 | 12 | S7 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:15 |
| S24 | 12 | S8 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:15 |
| S25 | 4 | S9 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:15 |
| S26 | 0 | S10 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:15 |



Petitioner Disney Ex-1004, 0090

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| S27 | 0 | S10 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:16 |
| S28 | 3 | S10 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:16 |
| S29 | 5 | S11 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:16 |
| S30 | 2 | S12 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:16 |
| S31 | 0 | S13 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:17 |



Petitioner Disney Ex-1004, 0091

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|---|---|---|---|---|---|---|
| S32 | 16 | S13 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:17 |
| S33 | 15 | S14 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:17 |
| S34 | 108 | S14 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:17 |
| S35 | 6 | S15 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:18 |
| S36 | 12 | S16 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2009/09/17 15:18 |

**9/21/2009 7:01:52 PM**
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Petitioner Disney Ex-1004, 0092

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2416 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on December 2, 2009.

Signed: /Latonia Ervin/
Latonia Ervin

# ***OFFICE ACTION RESPONSE***

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

Please consider the following remarks and arguments in response to the Office Action mailed October 2, 2009.

**Amendments to the Specification** begin on page 2 of this paper.

**Amendments to the Claims** are reflected in the listing of claims, which begin on page 3 of this paper.

**Remarks/Arguments** begin on page 6 of this paper.



Petitioner Disney Ex-1004, 0093

## IN THE SPECIFICATION

Please amend paragraph [0049] in the Specification in the following manner for clarification purposes. The amendment is believed to introduce no new matter.

[0049] While the invention has been particularly shown and described with reference to specific embodiments thereof, it will be understood by those skilled in the art that changes in the form and details of the disclosed embodiments may be made without departing from the spirit or scope of the invention. For example, various techniques may be implemented using computer code embodied on computer readable storage media such as magnetic disks, flash memory, and optical disks. It is therefore intended that the invention be interpreted to include all variations and equivalents that fall within the true spirit and scope of the present invention.



Petitioner Disney Ex-1004, 0094

**IN THE CLAIMS**

What is claimed is:

1. (Currently Amended) A method, comprising:

receiving a media stream including a plurality of ~~a~~ frames comprising a key frame and a plurality of predictive frames, the media stream received at a streaming server;

identifying the ~~a~~ key frame included in the plurality of frames using a processor included in the streaming server~~, wherein the plurality of frames also includes a plurality of predictive frames~~;

receiving a connection request from a client device, the connection request associated with the media stream;

providing the key frame to the client device in response to the connection request, wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame.

2. (Original) The method of claim 1, wherein the media stream is a video stream

3. (Original) The method of claim 1, wherein the key frame is an I-frame

4. (Original) The method of claim 1, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

5. (Original) The method of claim 1, wherein the plurality of predictive frames include P-frames and B-frames.

6. (Currently Amended) The method of claim 1, wherein the key frame in the media stream is provided to the client device at the same time a predictive frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices.~~wherein the plurality of predictive frames include change information~~.

7. (Original) The method of claim 1, wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device.

8. (Original) The method of claim 1, wherein the video stream is associated with a channel.



Petitioner Disney Ex-1004, 0095

9. (Original) The method of claim 1, wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.

10. (Original) The method of claim 9, wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame.

11. (Original) The method of claim 9, wherein the client device is a mobile device.

12. (Original) The method of claim 1, wherein the connection request is associated with a channel change at the client device.

13. (Original) The method of claim 1, wherein the key frame is identified by performing a decoding operation on one of the plurality of frames.

14. (Original) The method of claim 1, wherein the key frame is identified based on the size of the key frame.

15. (Original) The method of claim 1, wherein the key frame is identified based on the Group of Pictures (GOP) size.

16. (Currently Amended) An apparatus, comprising:

means for receiving a media stream including a plurality of ~~a~~ frames comprising a key frame and a plurality of predictive frames, the media stream received at a streaming server;

means for identifying the ~~a~~ key frame included in the plurality of frames using a processor included in the streaming server~~, wherein the plurality of frames also includes a plurality of predictive frames~~;

means for receiving a connection request from a client device, the connection request associated with the media stream;

means for providing the same key frame to the client device in response to the connection request, wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame.

17. (Original) The apparatus of claim 16, wherein the media stream is a video stream

18. (Original) The apparatus of claim 16, wherein the key frame is an I-frame

19. (Original) The apparatus of claim 16, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

20. (Currently Amended) A computer readable storage medium having computer code embodied therein, the computer readable storage medium comprising:



Petitioner Disney Ex-1004, 0096

computer code for receiving a media stream including a plurality of ~~a~~ frames comprising a key frame and a plurality of predictive frames, the media stream received at a streaming server;

computer code for identifying the ~~a~~ key frame included in the plurality of frames using a processor included in the streaming server~~, wherein the plurality of frames also includes a plurality of predictive frames~~;

computer code for receiving a connection request from a client device, the connection request associated with the media stream;

computer code for providing the same key frame to the client device in response to the connection request, wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame.



Petitioner Disney Ex-1004, 0097

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| In re application of: JOHANSSON, Kay, et al | Attorney Docket No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Chi Tang P. Cheng |
| Filed: January 23, 2007 | Group: 2416 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation No.: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on December 2, 2009.

Signed: /Latonia Ervin/
Latonia Ervin

# INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

The reference(s) identified in the attached PTO Form 1449 (copies of non-U.S. references are attached) may be material to examination of the above-identified patent application. Applicants identify the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make the identified reference(s) of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that the reference(s) indeed constitutes prior art.

This Information Disclosure Statement is being filed after the mailing date of the first Office Action on the merits, or after three months from the filing date of this application, whichever event occurred last, but it is believed before the mailing date of either: (i) a final action under §1.113 or (ii) a notice of allowance under §1.311, whichever occurs first.



Petitioner Disney Ex-1004, 0098

Accompanying this Information Disclosure Statement is the fee set forth in 37 CFR 1.17(p). However, if it is determined that additional fees are due or if an overpayment was made, the Commissioner is hereby authorized to charge or credit any such fees to Deposit Account 504480 (Order No. MOBIP006).

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan/

G. Audrey Kwan
Registration No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250



Petitioner Disney Ex-1004, 0099

| Form 1449 (Modified)<br><br>**Information Disclosure Statement By Applicant**<br><br>(Use Several Sheets if Necessary) | **Atty Docket No.:** | MOBIP006/1720-1 |
|---|---|---|
| | **Application No.:** | 11/626,340 |
| | **Applicant** | JOHANSSON, Kay, et al. |
| | **Filing Date** | January 23, 2007 |
| | **Group** | 2416 |
| | **Conf. No.** | 1023 |
| | | Page 1 of 1 |
| | **Submitted on:** | December 2, 2009 |

**U.S. Patent Documents**

| Examiner Initial | No. | Patent No. | Date | Patentee | Class | Sub-class | Filing Date |
|---|---|---|---|---|---|---|---|
| | 1. | | | | | | |
| | 2. | | | | | | |
| | 3. | | | | | | |
| | 4. | | | | | | |

**Foreign Patent or Published Foreign Patent Application**

| Examiner Initial | | Document No. | Publication Date | Country or Patent Office | Class | Sub-Class | Translation Yes | Translation No |
|---|---|---|---|---|---|---|---|---|
| | 5. | | | | | | | |
| | 6. | | | | | | | |
| | 7. | | | | | | | |
| | 8. | | | | | | | |

**Other Documents**

| Examiner Initial | No. | Author, Title, Place (e.g. Journal) of Publication, Date |
|---|---|---|
| | 9. | "Keyframe Extraction for Obtaining Pose Sequences," Keyframe Detection, found at http://www.cs.umd.edu/users/ogale/research/actions/keyframes.html printed June 21, 2007. |
| | 10. | |
| | 11. | |
| | 12. | |
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| | 16. | |
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| Examiner | Date Considered |
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| | |

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Godfrey Audrey Kwan/Latonia Ervin |
| **Attorney Docket Number:** | MOBIP006/1720-1 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| Submission- Information Disclosure Stmt | 1806 | 1 | 180 | 180 |
| | | **Total in USD ($)** | | **180** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 6561365 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Godfrey Audrey Kwan/Latonia Ervin |
| **Filer Authorized By:** | Godfrey Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006/1720-1 |
| **Receipt Date:** | 02-DEC-2009 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 19:26:47 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Deposit Account |
| Payment was successfully received in RAM | $180 |
| RAM confirmation Number | 7657 |
| Deposit Account | 504480 |
| Authorized User | |

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | MOBIP006_Amendment_120209.pdf | 100753<br>9f8209531a527edb38f30be19ef3ae06073f0c14 | yes | 8 |

**Multipart Description/PDF files in .zip description**

| Document Description | Start | End |
|---|---|---|
| Amendment/Req. Reconsideration-After Non-Final Reject | 1 | 1 |
| Specification | 2 | 2 |
| Claims | 3 | 4 |
| Applicant Arguments/Remarks Made in an Amendment | 5 | 8 |

**Warnings:**

**Information:**

| | | | | | |
|---|---|---|---|---|---|
| 2 | Transmittal Letter | MOBIP006_IDS_Trans.pdf | 66772<br>3468ce236eb73217e6abd637efdec83000572943 | no | 2 |

**Warnings:**

**Information:**

| | | | | | |
|---|---|---|---|---|---|
| 3 | Information Disclosure Statement (IDS) Filed (SB/08) | MOBIP006_1449_IDS_120209.pdf | 69947<br>5e5eb616ac4d92f220257266302f8ab767fe8b31 | no | 1 |

**Warnings:**

**Information:**

This is not an USPTO supplied IDS fillable form

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|---|---|---|---|---|---|
| 4 | NPL Documents | Keyframe_Extraction.pdf | 1965416<br>03f84415610d59e3bc17969cd58a4fbf149bf3c4 | no | 6 |

**Warnings:**

**Information:**

| | | | | | |
|---|---|---|---|---|---|
| 5 | Fee Worksheet (PTO-875) | fee-info.pdf | 30082<br>24febf9dd6715a9ae1a0670a36a499bd29ef0a26 | no | 2 |

**Warnings:**

**Information:**

| | |
|---|---|
| **Total Files Size (in bytes):** | 2232970 |

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**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

## REMARKS/ARGUMENTS

Claims 1-20 are pending. Claims 1-15 and 20 are rejected under 35 U.S.C. 101 because the claims do not meet statutory subject matter requirements. Claims 1, 16, and 20 have been amended to facilitate prosecution. More specifically, claim 1 has been amended to recite "identifying the key frame included in the plurality of frames using a processor included in the streaming server." The recitations of claim 1 are believed sufficiently tied to a particular machine or apparatus. In this example, the recitations are tied to a processor included in a streaming server. Claim 20 has been amended to recite "a computer readable storage medium having computer code embodied therein." The amendment to the claims is believed to preclude carrier waves. The Specification has also been amended for clarification purposes.

The independent claims including claims 1, 16, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Witt (2007/0044128). Witt states "[0033] FIG. 4 is a block diagram of the system according to invention principles. The streaming server 30 receives a video data stream from video source 28. In providing the video data in the system format, the server 30 begins by sending a signal to a key/delta frame determinator 32. The key/delta frame determinator determines if the received video data is either a key frame or a delta frame by analyzing the quantity and structure of the data in the received video data. If the video data is a key frame, the key/delta frame determinator 32 forwards the key frame to both a key frame encoder 36 and a delta frame encoder 34. Delta frame encoder 40 converts the received key frame into a corresponding delta frame. The conversion may be accomplished by constructing the preceding frame and encoding the difference between the current frame and the previous frame (as shown in FIGS. 1A-1C). The key frame encoder encodes the key frame. If key frame/delta frame determinator 32 determines that the received video data is a delta frame, the delta frame is forwarded to delta frame encoder 34. The encoded key and delta frames are forwarded by the key frame encoder 36 and delta frame encoder 34, respectively, to a broadcaster 38 which generates the data stream as depicted in FIG. 2B. Upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40. The broadcaster will continue to transmit the stream without any subsequent key frames until a request for the video stream is received from another client. At that time, the next key frame in the stream is inserted into the transmitted stream and the broadcaster continues to transmit the



Petitioner Disney Ex-1004, 0106

stream of delta frames without any subsequent key frames. Each time a new request for the video stream is received, the broadcaster 38 will insert the next key frame and then continue to transmit all delta frames. Subsequent key frames will only be transmitted immediately after receipt of a request signal from a client otherwise, the data stream will consist of delta frames."

To facilitate prosecution, the independent claims have been amended. The independent claims now recite "wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame." This amendment is supported throughout the Specification and Drawings. For example, "[0023] According to various embodiments, a streaming server identifies key frames in media streams maintained in one or more buffers. When a connection request is received from a client device, a key frame is provided to the client device even if the key frame is not the first available frame. That is, a key frame is provided even if one or more predictive frames are available before the key frame."

Furthermore, the same key frame received at the streaming server is the key frame provided to the client device. By contrast, Witt does not provide the same key frame. Witt provides a newly encoded frame. Witt states, "If the video data is a key frame, the key/delta frame determinator 32 forwards the key frame to both a key frame encoder 36 and a delta frame encoder 34. Delta frame encoder 40 converts the received key frame into a corresponding delta frame. The conversion may be accomplished by constructing the preceding frame and encoding the difference between the current frame and the previous frame (as shown in FIGS. 1A-1C). The key frame encoder encodes the key frame." That is, Witt encodes a new key frame to provide to the user and does not provide the same key frame to the user.

Dependent claim 6 has also been amended to facilitate prosecution. Dependent claim 6 has been amended to recite "wherein the key frame in the media stream is provided to the client device at the same time a predictive frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices." This amendment is supported in the Specification and Drawings. For example, "[0034] Furthermore, the streaming server may be providing a predictive frame, such as predictive frame 213, to an already connected client while providing a key frame 219 to a new client making a connection request. This can result in a slight but typically unnoticeable time variance in the media viewed by different



Petitioner Disney Ex-1004, 0107

clients. That is, a first client may be receiving predictive frames 213, 215, and 217 while a second client may be receiving key frame 219 and predictive frames 221 and 223. The techniques of the present invention recognize that this time shift is not disruptive of a typical user experience and a streaming server is typically capable of handling providing different frames from a stream to different client devices."

The materials cited by the Examiner do not teach or suggest any capabilities for providing time variant streams of the same media stream to different devices.

In light of the above remarks, the rejections to the independent claims are believed overcome for at least the reasons noted above. Applicants' Representative believes that all pending claims are allowable in their present form. If the Examiner has any questions or concerns for Applicants' Representative, the Examiner is encouraged to contact the Undersigned at the number provided below.

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan/

G. Audrey Kwan
Reg. No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100



Petitioner Disney Ex-1004, 0108

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Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@wavsip.com



Petitioner Disney Ex-1004, 0109

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement (IDS) submitted on December 2, 2009 is hereby considered by the examiner.

### *Response to Arguments*

2. Please note that the previously issued objection with respect to Claims 1, 16 and 20 is hereby withdrawn.

3. Please note that the objection with respect to the claimed subject matter "a computer readable storage medium having computer code embodied therein" is maintained because the Specification continues not to have support for this limitation.

4. Please be advised that the previously issued Section 101 rejection with respect to Claim 20 based on the grounds that it recited no more than an example of an abstract idea, i.e., computer code, is hereby withdrawn.

5. Please be advised that the previously issued Section 101 rejection with respect to Claim 20 based on the grounds that the recited subject matter embodied nonstatutory matter, i.e., carrier signals, carrier waves, and the like, is maintained.

6. Please be advised that the Section 101 rejection with respect to Claims 1-15 is hereby withdrawn.

7. Applicant's arguments filed December 2, 2009 with respect to the Section 102 rejection pertaining to Claims 1, 16 and 20 have been fully considered but they are not persuasive.

Applicant argues that the cited reference Witt does not disclose the newly amended limitation:

"wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame"

because Witt does not disclose providing "the same key frame" (page 7).

The examiner respectfully disagrees. As further set forth in the rejection for Claim 16 below, Witt does indeed disclose providing, in response to a client request for data, the same key frame received in the original, unprocessed stream (paragraph 30). In particular, Witt teaches processing a data stream containing both key and predictive frames by taking each key frame and replacing it with that key frame itself and by a predictive frame that is created in reference to the previously received key frame. When a client request for data is received, the first key frame in the reconstituted data stream immediately following the data request will be provided, such key frame being the same key frame as in the original stream. Please see rejection below for further details.

Applicant's arguments filed December 2, 2009 with respect to the Section 102 rejection pertaining to Claim 6 is moot in light of the new grounds of rejection set forth below.

***Claim Rejections - 35 USC § 101***

8. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. **Claim 20** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter since it fails to be limited to embodiments which fall within a statutory category.

**Claim 20** recites, "a **computer readable medium,** comprising computer code" in line 1-2.

It is noted that applicant fails to provide antecedent basis for the claim terminology "computer readable medium" intended to be covered within the meaning in the disclosure. Since the applicant fails to provide antecedent basis to limit the specific statutory embodiments, "computer readable medium" belongs to the intrinsic non-statutory embodiments such as carrier signal, radio wave, light wave, and transmission medium/media.

Transmission media in the context of this disclosure cover "***carrier signal, radio wave, light wave, transmission medium/media***", which are not a Manufacture within the meaning of 101, and electrical connections, optical coaxial cables, copper wire and fiber optics fibers, on which the program is still unavailable to the processor. In such embodiments, the program is still unable to act as a computer component and have its functionality realized. Thus, claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field,

define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Thus, the claim is also non-statutory.

In view of the above analysis, claim 20 is ineligible for patent protection as failing to be limited to embodiments which fall within a statutory category.

### *Specification*

10. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is a lack of proper antecedent support for the term "computer readable storage medium having computer code embodied therein" as recited in Claim 20.

### *Claim Rejections - 35 USC § 102*

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. **Claims 16-17, 19, 1-2, 4, 7, and 13-14** are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Publication No. 2007/0044128 A1 to Witt.

13. **As to Claim 16**, Witt discloses an apparatus, comprising:

means for receiving a media stream (Fig. 4, "server 30" and paragraph 33, disclosing that the "streaming server 30 receives a video data stream from video source 28", thus disclosing means for receiving a media stream) including a plurality of frames (Figs. 2A/B and 3A/B, disclosing a video data stream including a plurality of frames) comprising a key frame and a plurality of predictive frames (Figs. 2A/B and 3A/B and paragraphs 3, 29 and 30, disclosing that the media stream includes both "key frames" and "delta frames", i.e., "predictive frames"), the media stream received at a streaming server (Fig. 4, "server 30" included in "processor" and paragraph 33, disclosing receiving a media stream at a "server 30" that is included in a "processor", such "processor" disclosing a "streaming server");

means for identifying the key frame included in the plurality of frames (Fig. 4, "key/delta frame determinator 32" and paragraph 33, disclosing that the "key/delta frame determinator 32" identifies the key frames included in the plurality of frames) using a processor included in the streaming server (Fig. 4, disclosing a "key/delta frame determinator 32" included in "processor", and paragraph 33, disclosing that the "key/delta frame determinator 32" identifies the key frames included in the plurality of frames, thus disclosing "using a processor included in the streaming server");

means for receiving a connection request (Fig. 4, "broadcaster 38") from a client device (Fig. 4, "client 40" and paragraph 33, disclosing the "broadcaster 38" receiving a

“request signal” from the “client 40”), the connection request associated with the media stream (paragraph 33, disclosing the “broadcaster 38” sending a processed data stream associated with the connection request received from the client 40);

means for providing the same key frame (paragraph 30, disclosing that "the system provides the video data stream 18 in a format which duplicates key frames as both key frames 2 and delta frames 12", thus teaching that when a key frame in the original media stream is encountered, such key frame is "duplicated" as both (i) a key frame that is unchanged in content and (ii) an "introduced delta frame" that is "representative of the data enclosed within the previous key frame”, i.e., the “introduced delta frame” is created in reference to the previously received key frame, thus creating a newly reconstituted data stream, wherein each key frame is reproduced identically; paragraph 31 and 32, disclosing that when a client request is received, the key frame in the newly reconstituted data stream is provided to the client and in light of the teachings in paragraph 30, it is clear that this provided key frame is the “same key frame” as in the original data stream) to the client device in response to the connection request (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending only the first key frame to the client device after the connection request was received),

wherein the key frame provided to the client device is the same key frame received at the streaming server (paragraph 30, disclosing that "the system provides the video data stream 18 in a format which duplicates key frames as both key frames 2 and delta frames 12", thus teaching that when a key frame in the original media stream is

encountered, such key frame is "duplicated" as both (i) a key frame that is unchanged in content and (ii) an "introduced delta frame" that is "representative of the data enclosed within the previous key frame", i.e., the "introduced delta frame" is created in reference to the previously received key frame, thus creating a newly reconstituted data stream, wherein each key frame is reproduced identically; paragraph 31 and 32, disclosing that when a client request is received, the key frame in the newly reconstituted data stream is provided to the client and in light of the teachings in paragraph 30, it is clear that this provided key frame is the "same key frame" as in the original data stream), wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame (Fig. 5, "transmit first key frame after request and subsequent delta frames S160", and paragraph 31, disclosing providing the key frame first to the client, since a "single key frame is required for a client to decide a received video data stream", thus disclosing providing the key frame first even if predictive frames are available before such key frame).

14. **As to Claim 17**, please note that Witt discloses the apparatus as in the parent claim 16.

Witt further discloses wherein the media stream is a video stream (Figs. 2A/B and 3A/B and paragraphs 29 and 30, disclosing video stream).

15. **As to Claim 19**, please note that Witt discloses the apparatus as in the parent claim 16.

Witt further discloses wherein the key frame includes substantially all of the data needed to display a video frame on the client device (paragraphs 3 and 6, disclosing a

“key frame” that serves as the reference frame containing "a relatively high amount of data compared to delta frames", i.e., including substantially all of the data needed to display a video frame).

16. **As to Claim 1**, please see rejection for Claim 16, which recites the same limitations.

17. **As to Claim 2**, please see rejection for Claim 17, which recites the same limitations.

18. **As to Claim 4**, please see rejection for Claim 19, which recites the same limitations.

19. **As to Claim 7**, please note that Witt discloses the method as in the parent claim 1.

Witt further discloses wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending a key frame first after the connection request has been received, i.e., before any predictive frames are provided to the client device).

20. **As to Claim 13**, please note that Witt discloses the method as in the parent claim 1.

Witt further discloses wherein the key frame is identified by performing a decoding operation on one of the plurality of frames (paragraphs 33 and 34, disclosing determining a key frame by “analyzing the … structure of the data in the received video

data", thus disclosing wherein the key frame is identified by performing a decoding operation).

21. **As to Claim 14**, please note that Witt discloses the method as in the parent claim 1.

Witt further discloses wherein the key frame is identified based on the size of the key frame (paragraph 6, disclosing that the key frame contains more data than delta/predictive frames; paragraphs 33 and 34, disclosing determining a key frame by "analyzing the quantity … of the data in the received video data", thus disclosing wherein the key frame is identified based on the size of the key frame).

### *Claim Rejections - 35 USC § 103*

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

23. **Claims 3, 5, 8-10, 12, 15, 18 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al.

24. **As to Claim 3**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the key frame is an I-frame.

Toebes discloses wherein the key frame is an I-frame (paragraph 9, disclosing "I-frames").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

25. **As to Claim 5**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the plurality of predictive frames include P-frames and B-frames.

Toebes discloses wherein the plurality of predictive frames include P-frames and B-frames. (paragraph 9, disclosing "P-frames" and "B-frames").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

26. **As to Claim 8**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the video stream is associated with a channel.

Toebes discloses wherein the video stream is associated with a channel. (paragraph 21, disclosing distributing "at least one of the video channels ... as video stream", thus disclosing wherein the video stream is associated with a channel).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

27. **As to Claim 9**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.

Toebes discloses wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream (paragraphs 22 and 31, disclosing "distribution buffers 468, 484 and 540", i.e., FIFO buffer to maintain the video stream), wherein the FIFO buffer includes a new frame end and an old frame end (paragraphs 22 and 31, disclosing the "distribution buffers" contain I-frames and control and media data, thus disclosing and teaching new/old frame ends).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been

in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

28. **As to Claim 10**, please note that Witt and Toebes disclose and teach the method as in the parent claim 9.

Witt further discloses wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending a key frame first after the connection request has been received “even when a next frame schedule for delivery to the client device is a predictive frame”).

29. **As to Claim 12**, please note that Witt discloses the method as in the parent claim 1.

Witt does not expressly disclose wherein the connection request is associated with a channel change at the client device.

Toebes discloses wherein the connection request is associated with a channel change at the client device (paragraphs 2 and 6, disclosing connection request being associated with a channel change at the client device).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

30. **As to Claim 15**, please note that Witt discloses the method as in the parent claim 1.

Witt discloses wherein the key frame is identified based on the size of the received video data (paragraphs 33 and 34)

Witt does not expressly disclose based on the GOP size.

Toebes discloses based on the GOP size (paragraph 7, disclosing "the catch up time could be up to an entire GOP or frame set time", thus disclosing based on the GOP size).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. In particular, Toebes and Witt can be combined to teach and disclose "wherein the key frame is identified based on the GOP size". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

31. **As to Claim 18**, please see rejection for Claim 3, which recites the same limitations.

32. **As to Claim 20**, Witt discloses a method, comprising:

receiving a media stream (Fig. 4, "server 30" and paragraph 33, disclosing that the "streaming server 30 receives a video data stream from video source 28", thus disclosing means for receiving a media stream) including a plurality [of] frames (Figs.

2A/B and 3A/B, disclosing a video data stream including a plurality of frames), the media stream received at a streaming server (Fig. 4, “server 30” and paragraph 33);

identifying a key frame included in the plurality of frames (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32” identifies key frames included in the plurality of frames), wherein the plurality of frames also includes a plurality of predictive frames (Figs. 2A/B and 3A/B and paragraphs 3, 29 and 30, disclosing "delta frames", i.e., "predictive frames");

receiving a connection request (Fig. 4, “broadcaster 38") from a client device (Fig. 4, “client 40 and paragraph 33, disclosing the “broadcaster 38” receiving a “request signal” from the “client 40”), the connection request associated with the media stream (paragraph 33, disclosing the “broadcaster 38” sending a processed data stream associated with the connection request received from the client 40);

providing the key frame to the client device in response to the connection request (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending only the first key frame to the client device after the connection request was received).

Witt does not expressly disclose a computer readable storage medium having computer code embodied therein.

Toebes discloses a computer readable storage medium having computer code embodied therein (paragraph 20, disclosing computer instructions in a memory).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in

conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

33. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0116437 A1 to Pun et al.

34. **As to Claim 6**, please note that Witt discloses the method as in the parent claim 1.

Witt discloses key frames and predictive frames (Figs. 2 and 3, disclosing key and predictive frames).

Witt does not expressly disclose wherein a first frame in the media stream is provided to the client device at the same time a second frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices.

Pun discloses wherein a first frame in the media stream is provided to the client device at the same time a second frame in the media stream is provided to a second client device already connected to the streaming server (paragraph 6, disclosing that the same “encoder”, i.e., “streaming server”, can provide the same "replicas or copies of the compressed bit stream”, i.e., the same MPEG transport stream containing the key and delta frame, for example, to “multiple decoders located at different locations”, i.e.,

multiple “client devices”, for decoding at the “multiple decoders” “at different times”, thus disclosing and teaching that the same data stream can be distributed to different client devices at different times and therefore, a first frame can be received at a client device while a different, second frame is being received at another client device), wherein the streaming server handles the time variance in the media stream viewed by different client devices (paragraph 6, disclosing distributing the same data stream to different client devices for “decoding at different times”, thus disclosing "handing the time variance in the media stream viewed by different client devices").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Pun, in conjunction with the teachings of Witt. In particular, Pun and Witt can be combined to disclose and teach “wherein the key frame in the media stream is provided to the client device at the same time a predictive frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices.” The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Pun, paragraphs 3, 15-16).

35. **Claims 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al., further in view of U.S. Patent Publication No. 2007/0242666 A1 to Barrett

36. **As to Claim 11**, please note that Witt and Toebes disclose and teach the method as in the parent claim 9.

Witt and Toebes do not expressly disclose wherein the client device is a mobile device.

Barrett discloses wherein the client device is a mobile device. (paragraph 48 disclosing a wireless "transceiver").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Barrett, in conjunction with the teachings of Witt and Toebes. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11; Barrett, paragraphs 1, 6, and 7).

***Conclusion***

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on (571)272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Ian N. Moore/

Primary Examiner, Art Unit 2463

| Notice of References Cited | Application/Control No. 11/626,340 | Applicant(s)/Patent Under Reexamination JOHANSSON ET AL. | |
|---|---|---|---|
| | Examiner PETER CHENG | Art Unit 2463 | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|---|---|---|---|---|
| * | A | US-2007/0116437 | 05-2007 | PUN et al. | 386/111 |
| | B | US- | | | |
| | C | US- | | | |
| | D | US- | | | |
| | E | US- | | | |
| | F | US- | | | |
| | G | US- | | | |
| | H | US- | | | |
| | I | US- | | | |
| | J | US- | | | |
| | K | US- | | | |
| | L | US- | | | |
| | M | US- | | | |

**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
|---|---|---|---|---|---|---|
| | N | | | | | |
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| | P | | | | | |
| | Q | | | | | |
| | R | | | | | |
| | S | | | | | |
| | T | | | | | |

**NON-PATENT DOCUMENTS**

| * | | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
| | U | |
| | V | |
| | W | |
| | X | |

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



Petitioner Disney Ex-1004, 0130

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | | | | | | | |
| | 1 | ✓ | ✓ | | | | | | | |
| | 2 | ✓ | ✓ | | | | | | | |
| | 3 | ✓ | ✓ | | | | | | | |
| | 4 | ✓ | ✓ | | | | | | | |
| | 5 | ✓ | ✓ | | | | | | | |
| | 6 | ✓ | ✓ | | | | | | | |
| | 7 | ✓ | ✓ | | | | | | | |
| | 8 | ✓ | ✓ | | | | | | | |
| | 9 | ✓ | ✓ | | | | | | | |
| | 10 | ✓ | ✓ | | | | | | | |
| | 11 | ✓ | ✓ | | | | | | | |
| | 12 | ✓ | ✓ | | | | | | | |
| | 13 | ✓ | ✓ | | | | | | | |
| | 14 | ✓ | ✓ | | | | | | | |
| | 15 | ✓ | ✓ | | | | | | | |
| | 16 | ✓ | ✓ | | | | | | | |
| | 17 | ✓ | ✓ | | | | | | | |
| | 18 | ✓ | ✓ | | | | | | | |
| | 19 | ✓ | ✓ | | | | | | | |
| | 20 | ✓ | ✓ | | | | | | | |



Petitioner Disney Ex-1004, 0131

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

## SEARCHED

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |

## SEARCH NOTES

| Search Notes | Date | Examiner |
|---|---|---|
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 (updated 3/9/2010) | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/2009 (updated 3/9/2010) | pc |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| | | | |

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| S37 | 923 | ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) and (multiple or plurality) with (users or receivers or transceivers or client) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 13:28 |
| S38 | 55 | ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) same (multiple or plurality) with (users or receivers or transceivers or client) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 13:29 |



Petitioner Disney Ex-1004, 0133

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|---|---|---|---|---|---|---|
| S40 | 460 | ((referenc$3 or base or key or common) near5 frame or i$1frame) with ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) with (simultaneous$3 or "same" near1 time) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 14:07 |
| S43 | 2 | ((referenc$3 or base or key or common) near5 frame or i$1frame) with ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) with (simultaneous$3 or "same" near1 time) same (multiple or plurality) with (client $3 or user$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 16:24 |
| S44 | 53 | duplicate with (stream or frame) same ((referenc$3 or base or key or common) near5 frame or i$1frame) same ((predict$3 or intermedia$4 or chang$3 or delta) near5 frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 16:34 |
| S45 | 0 | uni$1cast$3 with users with (plurality or multiple) same ((referenc$3 or base or key or common) near5 frame or i$1frame) same ((predict$3 or intermedia$4 or chang$3 or delta) near5 frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 16:38 |



Petitioner Disney Ex-1004, 0134

| | | | | | | |
|---|---|---|---|---|---|---|
| S46 | 6 | uni$1cast$3 with users with (plurality or multiple) and ((referenc$3 or base or key or common) near5 frame or i$1frame) same ((predict$3 or intermedia$4 or chang$3 or delta) near5 frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 16:38 |
| S47 | 1 | uni$1cast$3 with (plurality or multiple) same time with (differen$3 or varian$3) and ((referenc$3 or base or key or common) near5 frame or i$1frame) same ((predict$3 or intermedia$4 or chang$3 or delta) near5 frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 16:42 |
| S48 | 159 | stream$3 with (plurality or multiple) same time with (differen$3 or varian$3) and ((referenc$3 or base or key or common) near5 frame or i$1frame) same ((predict$3 or intermedia$4 or chang$3 or delta) near5 frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 16:42 |
| S49 | 3417 | (370/503).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:00 |



Petitioner Disney Ex-1004, 0135

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|---|---|---|---|---|---|---|
| S50 | 12 | S49 and ((referenc $3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:00 |
| S51 | 2087 | (370/509).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:00 |
| S52 | 13 | S51 and ((referenc $3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:00 |
| S53 | 599 | (370/510).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:01 |
| S54 | 4 | S53 and ((referenc $3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:01 |



Petitioner Disney Ex-1004, 0136

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|---|---|---|---|---|---|---|
| S55 | 35 | (370/511).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:01 |
| S56 | 3 | S55 and ((referenc $3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:01 |
| S57 | 207 | (370/512).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:01 |
| S58 | 5 | S57 and ((referenc $3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:01 |
| S59 | 162 | (370/513).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:02 |



Petitioner Disney Ex-1004, 0137

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|---|---|---|---|---|---|---|
| S60 | 2 | S59 and ((referenc $3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:02 |
| S61 | 206 | (370/395.64).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:02 |
| S62 | 19 | S61 and ((referenc $3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:02 |
| S63 | 12007 | (709/203).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:02 |
| S64 | 16 | S63 and ((referenc $3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:02 |



Petitioner Disney Ex-1004, 0138

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|---|---|---|---|---|---|---|
| S65 | 119 | S63 and ((referenc $3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:03 |
| S66 | 362 | (709/209).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:03 |
| S67 | 6 | S66 and ((referenc $3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:03 |
| S68 | 1176 | (709/208).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/03/09 18:03 |
| S69 | 12 | S68 and ((referenc $3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/03/09 18:03 |

**EAST Search History (Interference)**

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**3/9/2010 6:05:17 PM**
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| Form 1449 (Modified)<br><br>**Information Disclosure Statement By Applicant**<br><br>(Use Several Sheets if Necessary) | **Atty Docket No.:** | MOBIP006/1720-1 |
|---|---|---|
| | **Application No.:** | 11/626,340 |
| | **Applicant** | JOHANSSON, Kay, et al. |
| | **Filing Date** | January 23, 2007 |
| | **Group** | 2416 |
| | **Conf. No.** | 1023 |
| | | Page 1 of 1 |
| | **Submitted on:** | December 2, 2009 |

**U.S. Patent Documents**

| Examiner Initial | No. | Patent No. | Date | Patentee | Class | Sub-class | Filing Date |
|---|---|---|---|---|---|---|---|
| | 1. | | | | | | |
| | 2. | | | | | | |
| | 3. | | | | | | |
| | 4. | | | | | | |

**Foreign Patent or Published Foreign Patent Application**

| Examiner Initial | | Document No. | Publication Date | Country or Patent Office | Class | Sub-Class | Translation Yes | Translation No |
|---|---|---|---|---|---|---|---|---|
| | 5. | | | | | | | |
| | 6. | | | | | | | |
| | 7. | | | | | | | |
| | 8. | | | | | | | |

**Other Documents**

| Examiner Initial | No. | Author, Title, Place (e.g. Journal) of Publication, Date |
|---|---|---|
| | 9. | "Keyframe Extraction for Obtaining Pose Sequences," Keyframe Detection, found at http://www.cs.umd.edu/users/ogale/research/actions/keyframes.html printed June 21, 2007. |
| | 10. | |
| | 11. | |
| | 12. | |
| | 13. | |
| | 14. | |
| | 15. | |
| | 16. | |
| | 17. | |
| | 18. | |

| Examiner | /Chitang Peter Cheng/ | Date Considered | 03/09/2010 |
|---|---|---|---|

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /P.C

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop AF, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on May 25, 2010.

Signed: /Latonia Ervin/
Latonia Ervin

# ***FINAL OFFICE ACTION RESPONSE***

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

Please consider the following remarks and arguments in response to the Final Office Action mailed March 25, 2010.

**Amendments to the Claims** are shown in the listing of claims, which begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.



Petitioner Disney Ex-1004, 0141

## IN THE CLAIMS

What is claimed is:

1. (Previously Presented) A method, comprising:

receiving a media stream including a plurality of frames comprising a key frame and a plurality of predictive frames, the media stream received at a streaming server;

identifying the key frame included in the plurality of frames using a processor included in the streaming server;

receiving a connection request from a client device, the connection request associated with the media stream;

providing the key frame to the client device in response to the connection request, wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame.

2. (Original) The method of claim 1, wherein the media stream is a video stream

3. (Original) The method of claim 1, wherein the key frame is an I-frame

4. (Original) The method of claim 1, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

5. (Original) The method of claim 1, wherein the plurality of predictive frames include P-frames and B-frames.

6. (Previously Presented) The method of claim 1, wherein the key frame in the media stream is provided to the client device at the same time a predictive frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices.

7. (Original) The method of claim 1, wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device.

8. (Original) The method of claim 1, wherein the video stream is associated with a channel.

9. (Original) The method of claim 1, wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.



Petitioner Disney Ex-1004, 0142

10. (Original) The method of claim 9, wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame.

11. (Original) The method of claim 9, wherein the client device is a mobile device.

12. (Original) The method of claim 1, wherein the connection request is associated with a channel change at the client device.

13. (Original) The method of claim 1, wherein the key frame is identified by performing a decoding operation on one of the plurality of frames.

14. (Original) The method of claim 1, wherein the key frame is identified based on the size of the key frame.

15. (Original) The method of claim 1, wherein the key frame is identified based on the Group of Pictures (GOP) size.

16. (Previously Presented) An apparatus, comprising:

means for receiving a media stream including a plurality of frames comprising a key frame and a plurality of predictive frames, the media stream received at a streaming server;

means for identifying the key frame included in the plurality of frames using a processor included in the streaming server;

means for receiving a connection request from a client device, the connection request associated with the media stream;

means for providing the same key frame to the client device in response to the connection request, wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame.

17. (Original) The apparatus of claim 16, wherein the media stream is a video stream

18. (Original) The apparatus of claim 16, wherein the key frame is an I-frame

19. (Original) The apparatus of claim 16, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

20. (Canceled)

21. (New) A streaming server, comprising:

a server interface configured to receive a media stream including a plurality of ~~a~~ frames comprising a key frame and a plurality of predictive frames;

a processor configured to identify the key frame included in the plurality of frames using a processor included in the streaming server;



Petitioner Disney Ex-1004, 0143

a client interface configured to receive a connection request from a client device, the connection request associated with the media stream;

wherein the processor is further configured to provide the same key frame to the client device in response to the connection request, wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame.

22. (New) The apparatus of claim 21, wherein the media stream is a video stream

23. (New) The apparatus of claim 21, wherein the key frame is an I-frame

24. (New) The apparatus of claim 21, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.



Petitioner Disney Ex-1004, 0144

## REMARKS/ARGUMENTS

Claims 1-19 and 21-24 are pending. Claims 21-24 are new and correspond to currently pending claims. Support for claims 21-24 can be found in the original Claims, Specification, and Drawings. For example, claim 21 is supported by original Claims 1 and 16 along with paragraph [0042] which states "According to various embodiments, the streaming server 421 includes a processor 401, memory 403, buffers 431, 433, 435, and 437, and a number of interfaces. In some examples, the interfaces include an encoder interface 411, a media aggregation server interface 413, and a client device interface 441." No new matter has been added and no new search is believed necessary.

In the previous Office Action, claims 1 and 16 were objected to for informalities and claims 1-19 were rejected under 35 U.S.C. 101. In light of amendments and remarks in the previous Office Action, these objections and rejections have been withdrawn. To facilitate prosecution, claim 20 has been canceled.

The independent claims including claims 1, 16, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Witt (2007/0044128). Witt describes prior art video data streams and video data streams according to "invention principles." Witt describes a prior art video data stream transmitted to a client device in paragraph [0029]. "FIG. 2A is an illustrative view of the Video Data Stream. The key frames 2 and delta frames 12 described in FIG. 1 are encoded into a digital video stream 18. Encoded digital video stream 18 contains frequent periodic key frames 2. The key frames 2 are periodically placed between delta frames 12 to allow a user to access the video stream 18 from a desired start point. When a user desires to view a transmission at a point for which the data is encoded as a delta frame 12, the viewer is either directed to the closest key frame 2 or constructs the desired start frame from the previous key frame 2 and subsequent delta frames 12." [0029] As noted, prior art systems transmit a data stream to a client and the client device locates the closest key frame or constructs the desired start frame. The video data stream sent from the server is sent with key frames and delta frames without selection and rearrangement.

Witt also describes video data streams according to "invention principles" in paragraph [0030]. "While this feature may provide a higher quality viewing experience the compression



Petitioner Disney Ex-1004, 0145

rate is low. A higher data compression rate is desired in multiple situations, particularly streaming video. Therefore, the system provides the video data stream 18 in a format which duplicaties key frames as both key frames 2 and delta frames 12. As such, the transmission of the multimedia stream is tailored to minimize the bandwidth utilization of the client to which the stream is transmitted. FIG. 2B is an illustrative view of the video data stream 10 according to invention principles. To provide the flexibility of distributing the video data stream with a single key frame 2 per client request (as will be described in greater detail in reference to FIGS. 3A and 3B) each key frame is also encoded as a delta frame and the delta frame 12 is introduced into the stream 10 following each key frame. The introduced delta frame 12 is representative of the data enclosed within the previous key frame 2. In the system, the first key frame 2 of the video data stream 10 need not be duplicated as a delta frame 12 for client access cannot begin before that point, thus calling for a filtering of key frames 2."

The server in Witt performs processing to reencode a key frame as a key frame and a delta frame in order to "minimize bandwidth utilization" and provide a "higher data compression rate." The "delta frame 12 is representative of the data enclosed within the previous key frame 2." [0030]. This mechanism is reiterated throughout the Witt Specification. "The video data processor receives the video data stream. The processor then encodes key frames within the video data stream as both key frames and delta frames and encodes delta frames within the video data stream as delta frames." (Summary) "The key/delta frame determinator determines if the received video data is either a key frame or a delta frame by analyzing the quantity and structure of the data in the received video data. If the video data is a key frame, the key/delta frame determinator 32 forwards the key frame to both a key frame encoder 36 and a delta frame encoder 34. Delta frame encoder 40 converts the received key frame into a corresponding delta frame." [0033]

The Examiner may argue that Figure 3A-3B in Witt show a streaming server providing a key frame followed by delta frames to a client. It is acknowledged that Figures 3A-3B do show a key frame K1 followed by delta frames as well as a key frame K9 when another client connects. However, it is respectfully submitted that these key frames K1 and K9 are not the "same key frame received at the streaming server," as Witt performs processing on the key frame received at the streaming server to convert it into a key frame and a delta frame. The key frame transmitted to the client from the streaming server in Witt is not the same key frame received at the streaming server. There may be some ambiguous language in Witt that the Examiner may



Petitioner Disney Ex-1004, 0146

point to, but Witt unequivocally and repeatedly states that to minimize bandwidth utilization and to provide a higher data compression rate, a key frame is reencoded as a key frame and a delta frame. Transmitting the same key frame does not minimize bandwidth utilization and provide a higher data compression rate.

By contrast, the independent claims recite "providing the key frame to the client device in response to the connection request, wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame."

In light of the above remarks, the rejections to the independent claims are believed overcome for at least the reasons noted above. Applicants' Representative believes that all pending claims are allowable in their present form. If the Examiner has any questions or concerns for Applicants' Representative, the Examiner is encouraged to contact the Undersigned at the number provided below.

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan/

G. Audrey Kwan
Reg. No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100
akwan@wavsip.com



Petitioner Disney Ex-1004, 0147

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Godfrey Audrey Kwan/Latonia Ervin |
| **Attorney Docket Number:** | MOBIP006/1720-1 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| Claims in excess of 20 | 1202 | 3 | 52 | 156 |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| | | | **Total in USD ($)** | **156** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 7687164 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Godfrey Audrey Kwan/Latonia Ervin |
| **Filer Authorized By:** | Godfrey Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006/1720-1 |
| **Receipt Date:** | 25-MAY-2010 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 19:55:43 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Deposit Account |
| Payment was successfully received in RAM | $156 |
| RAM confirmation Number | 5368 |
| Deposit Account | 504480 |
| Authorized User | |

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | MOBIP006_Amendment_052510.pdf | 94455<br>f85f4b31cf3cfd8c7d8053aec51c06bf03948282 | yes | 7 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Amendment After Final | 1 | 1 |
| | Claims | 2 | 4 |
| | Applicant Arguments/Remarks Made in an Amendment | 5 | 7 |

**Warnings:**

**Information:**

| | | | | | |
|---|---|---|---|---|---|
| 2 | Fee Worksheet (PTO-875) | fee-info.pdf | 29961<br>4247a5bfdc8d2be362e7657c680934779e0621b5 | no | 2 |

**Warnings:**

**Information:**

| **Total Files Size (in bytes):** | 124416 |
|---|---|

**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.**

**<u>New Applications Under 35 U.S.C. 111</u>**
**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.**

**<u>National Stage of an International Application under 35 U.S.C. 371</u>**
**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.**

**<u>New International Application Filed with the USPTO as a Receiving Office</u>**
**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.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. 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.

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| | (Column 1) | (Column 2) | SMALL ENTITY ☐ | | OR | OTHER THAN SMALL ENTITY | |
|---|---|---|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | RATE ($) | FEE ($) | | RATE ($) | FEE ($) |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT | 05/25/2010 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * 23 | Minus | ** 20 | = 3 | X $ = | | OR | X $52= | 156 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $220= | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | **156** |

| AMENDMENT | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/JACQULYN L. WILLIAMS/

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.*

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006/1720-1 | 1023 |

22434 7590 06/03/2010

Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| **ART UNIT** | **PAPER NUMBER** |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 06/03/2010 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@wavsip.com



Petitioner Disney Ex-1004, 0153

CONTINUATION of 3. NOTE: Claim 20 has been cancelled and Claims 21-24 have been added. These claim amendments will not be entered because they would require further consideration and/or search.

CONTINUATION of 11. does NOT place the application in condition for allowance because:

Applicant argues on pages 6-7 of the Response that the cited reference, namely, Witt, does not disclose or teach the limitation “wherein the key frame provided to the client device is the same key frame received at the streaming server”. The reason for this, Applicant argues, is that the method disclosed in Witt "performs processing on the key frame received at the streaming server to convert it into a key frame and a delta frame" and Applicant contends that the resulting, "convert[ed]" key frame is "not the same key frame received at the streaming server". As for support for this contention, Applicant states that one of the alleged objects and goals of the invention in Witt is to "minimize bandwidth utilization and to provide a higher data compression rate" and that in light of this, "transmitting the same key frame does not minimize bandwidth utilization and provide a higher data compression rate.”

The examiner respectfully disagrees. While one of the general purposes of the invention disclosed in Witt is to more efficiently utilize bandwidth, one of the specific objectives of the invention is to reduce the number of times that key frames are

transmitted to a requesting client, since key frames generally "contain a relatively high amount of data compared to delta [i.e., predictive] frames" (paragraph 6). Therefore, in the case that a key frame is encountered in the requested video data stream and if the receiving client has already received a previous key frame for the requested video stream, Witt provides for the transmission of a "delta frame" “encoded” from such just-received key frame (see Fig. 5), which is less data-laden, instead of such just-received key frame itself (paragraph 31, “when a single client request is received … a single key frame ... is provided followed by subsequent delta frames ... The subsequent key frames are filtered and discarded, as the client does not require the transmission of these additional key frames”).

Witt, however, does not contemplate completely eliminating the transmission of key frames and in fact, provides for the transmission of key frames, as certain cases necessitate. In particular, when a connection request has been received at the “broadcaster 38”, in order to provide a starting frame of reference to the requesting client (which has not yet received any key frame), Witt provides for the transmission of a key frame (paragraphs 31-33, disclosing transmitting the "first key frame" and "subsequent reference frames to the client"). This transmitted key frame is a "duplicate” of the key frame contained in the video data stream (paragraph 30 and Figs. 2a/b and 3a/b, disclosing "the system provides the video data stream in a format which duplicates key frames as both key frames and delta frames"). Therefore, in light of the above, the key frame transmitted to the requesting client in response to the connection request "is

the same key frame received at the streaming server", as recited in Claim 1.

Furthermore, Applicant's contention that "transmitting the same key frame does not minimize bandwidth utilization and provide a higher data compression rate" is not entirely relevant because the invention in Witt provides for the transmission of just such "same" key frame to the requesting client because the process of video encoding/decoding using key and predictive frames necessitates the providing of a starting reference "key" frame.

For the reasons above, Applicant's arguments are not persuasive and the rejection is maintained.

/Ian N. Moore/

Primary Examiner, Art Unit 2463

| **Advisory Action Before the Filing of an Appeal Brief** | **Application No.** 11/626,340 | **Applicant(s)** JOHANSSON ET AL. | |
|---|---|---|---|
| | **Examiner** PETER CHENG | **Art Unit** 2463 | |

***--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

THE REPLY FILED 25 May 2010 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.
   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See continuation sheet*. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☒ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *1-20*.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See continuation sheet.
12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

/Ian N. Moore/
Primary Examiner, Art Unit 2463



Petitioner Disney Ex-1004, 0157

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop AF, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on May 25, 2010.

Signed: /Latonia Ervin/
Latonia Ervin

# ***FINAL OFFICE ACTION RESPONSE***

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

Please consider the following remarks and arguments in response to the Final Office Action mailed March 25, 2010.

**Amendments to the Claims** are shown in the listing of claims, which begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.

DO NOT ENTER: /P.C./
05/28/2010



Petitioner Disney Ex-1004, 0158

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (08/08)
Approved for use through 08/31/2008. OMB 0651-0031
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 contains a valid OMB control number.

# REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
## (Submitted Only via EFS-Web)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Application Number | 11626340 | Filing Date | 2007-01-23 | Docket Number (if applicable) | MOBIP006/1720-1 | Art Unit | 2463 |
| First Named Inventor | Kay Johansson | | | Examiner Name | Chi Tang P. Cheng | | |

**This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.**
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

### SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the orde in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

### MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

### FEES

**The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 504480

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (08/08)
Approved for use through 08/31/2008. OMB 0651-0031
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 contains a valid OMB control number.

| Signature of Registered U.S. Patent Practitioner | | | |
|---|---|---|---|
| Signature | /Audrey Kwan/ | Date (YYYY-MM-DD) | 2010-06-24 |
| Name | G. Audrey Kwan | Registration Number | 46850 |

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is t file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Tim will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions fo 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.

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# Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the informatio solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop RCE, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on June 24, 2010.

Signed: /Latonia Ervin/
Latonia Ervin

# ***PRELIMINARY AMENDMENT***

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

Please consider the following preliminary remarks and arguments filed concurrently with a Request for Continued Examination.

**Amendments to the Claims** are shown in the listing of claims, which begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.



Petitioner Disney Ex-1004, 0162

## IN THE CLAIMS

What is claimed is:

1. (Currently Amended) A method, comprising:

receiving a media stream including a plurality of frames ~~comprising a key frame and a plurality of predictive frames~~, the media stream received at a streaming server and maintained in a channel buffer;

~~identifying the key frame included in the plurality of frames using a processor included in the streaming server;~~

receiving a connection request corresponding to a channel change from a client device, the connection request associated with the media stream;

identifying a key frame included in the plurality of frames and a plurality of predictive frames preceding the key frame by using a processor included in the streaming server;

disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer;

transmitting ~~providing~~ the key frame to the client device in response to the connection request corresponding to the channel change~~, wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame~~.

2. (Original) The method of claim 1, wherein the media stream is a video stream

3. (Original) The method of claim 1, wherein the key frame is an I-frame

4. (Original) The method of claim 1, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

5. (Original) The method of claim 1, wherein the plurality of predictive frames include P-frames and B-frames.

6. (Previously Presented) The method of claim 1, wherein the key frame in the media stream is provided to the client device at the same time a predictive frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices.

7. (Original) The method of claim 1, wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device.



Petitioner Disney Ex-1004, 0163

8. (Original) The method of claim 1, wherein the video stream is associated with a channel.

9. (Original) The method of claim 1, wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.

10. (Original) The method of claim 9, wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame.

11. (Original) The method of claim 9, wherein the client device is a mobile device.

12. (Canceled)

13. (Original) The method of claim 1, wherein the key frame is identified by performing a decoding operation on one of the plurality of frames.

14. (Original) The method of claim 1, wherein the key frame is identified based on the size of the key frame.

15. (Original) The method of claim 1, wherein the key frame is identified based on the Group of Pictures (GOP) size.

16. (Currently Amended) An apparatus, comprising:

means for receiving a media stream including a plurality of frames ~~comprising a key frame and a plurality of predictive frames~~, the media stream received at a streaming server and maintained in a channel buffer;

~~means for identifying the key frame included in the plurality of frames using a processor included in the streaming server;~~

means for receiving a connection request corresponding to a channel change from a client device, the connection request associated with the media stream;

means for identifying a key frame included in the plurality of frames and a plurality of predictive frames preceding the key frame by decoding or partially decoding the plurality of frames;

means for disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer;

means for transmitting ~~providing~~ the key frame to the client device in response to the connection request, ~~wherein the key frame provided to the client device is the same key frame received at the streaming server, wherein the key frame is provided first to the client device even if one or more predictive frames are available before the key frame~~.

17. (Original) The apparatus of claim 16, wherein the media stream is a video stream



Petitioner Disney Ex-1004, 0164

18. (Original) The apparatus of claim 16, wherein the key frame is an I-frame

19. (Original) The apparatus of claim 16, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

20. (Canceled)

21. (New) A streaming server, comprising:

a server interface configured to receive a media stream including a plurality of frames;

a client interface configured to receive a connection request corresponding to a channel change from a client device, the connection request associated with the media stream;

a processor configured to identify a key frame and a plurality of predictive frames preceding the key frame in the media stream and disregard the plurality of predictive frames maintained in a channel buffer;

wherein the processor is further configured to provide the key frame to the client device in response to the connection request even if the plurality of predictive frames are available before the key frame.

22. (New) The apparatus of claim 21, wherein the media stream is a video stream

23. (New) The apparatus of claim 21, wherein the key frame is an I-frame

24. (New) The apparatus of claim 21, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.



Petitioner Disney Ex-1004, 0165

## REMARKS/ARGUMENTS

Claims 1-11, 13-19 and 21-24 are pending. In a previous Office Action, claims 1 and 16 were objected to for informalities and claims 1-19 were rejected under 35 U.S.C. 101. In light of amendments and remarks in a previous Office Action Response, these objections and rejections have been withdrawn. To facilitate prosecution, claims 12 and 20 have been canceled.

The independent claims including claims 1 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Witt (2007/0044128). Witt describes prior art video data streams and video data streams according to "invention principles." Witt describes a prior art video data stream transmitted to a client device in paragraph [0029]. "FIG. 2A is an illustrative view of the Video Data Stream. The key frames 2 and delta frames 12 described in FIG. 1 are encoded into a digital video stream 18. Encoded digital video stream 18 contains frequent periodic key frames 2. The key frames 2 are periodically placed between delta frames 12 to allow a user to access the video stream 18 from a desired start point. When a user desires to view a transmission at a point for which the data is encoded as a delta frame 12, the viewer is either directed to the closest key frame 2 or constructs the desired start frame from the previous key frame 2 and subsequent delta frames 12." [0029] As noted, prior art systems transmit a data stream to a client and the client device locates the closest key frame or constructs the desired start frame. The video data stream sent from the server is sent with key frames and delta frames without selection and rearrangement.

Witt also describes video data streams according to "invention principles" in paragraph [0030]. "While this feature may provide a higher quality viewing experience the compression rate is low. A higher data compression rate is desired in multiple situations, particularly streaming video. Therefore, the system provides the video data stream 18 in a format which duplicaties key frames as both key frames 2 and delta frames 12. As such, the transmission of the multimedia stream is tailored to minimize the bandwidth utilization of the client to which the stream is transmitted. FIG. 2B is an illustrative view of the video data stream 10 according to invention principles. To provide the flexibility of distributing the video data stream with a single key frame 2 per client request (as will be described in greater detail in reference to FIGS. 3A and 3B) each key frame is also encoded as a delta frame and the delta frame 12 is introduced into the stream 10 following each key frame. The introduced delta frame 12 is representative of the data



Petitioner Disney Ex-1004, 0166

enclosed within the previous key frame 2. In the system, the first key frame 2 of the video data stream 10 need not be duplicated as a delta frame 12 for client access cannot begin before that point, thus calling for a filtering of key frames 2."

To facilitate prosecution, claims 1 and 16 have been amended. Claims 1 and 16 have been amended to recite "receiving a connection request corresponding to a channel change from a client device, the connection request associated with the media stream; identifying a key frame included in the plurality of frames and a plurality of predictive frames preceding the key frame by using a processor included in the streaming server; disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer." Dependent claim 12 has been canceled.

The amendments are believed supported by the original Claims, Specification, and Drawings. For example, "According to various embodiments, the streaming server 421 handles numerous connection requests from various client devices. Connection requests can result from a variety of user actions such as a channel change, an application launch, a program purchase, etc. In some instances, a streaming server 421 simply provides the first available frame followed by subsequent frames in response to a client device connection request. However, the techniques of the present invention contemplate an intelligent streaming server that identifies key frames in video streams and provides a key frame initially to a client device. The key frame includes substantially all the information needed for a client device to begin display a correct video frame." [0043]

"In some instances, the earliest key frame still available in the buffer may be key frame 201. The client does not need to drop any frames or display distorted images. Instead the client 251 immediately receives a key frame that includes substantially all of the information necessary to begin playing the stream. Similarly, when client 253 requests a connection, the client receives key frame 201 initially. If key frame 201 is no longer available in the buffer, a client connecting would receive key frame 219, even if this means that predictive frames 203, 205, 207, 209, 211, 213, 215, and 217 are skipped. For example, client 255 may connect at a time that would have provided predictive frame 211, but the streaming server intelligently identifies the next available key frame as key frame 219 and provides that key frame 219 to the client 255. No predictive frames are inefficiently transmitted at the beginning of a connection request. According to various embodiments, only key frames are initially provided upon connection requests." [0032]



Petitioner Disney Ex-1004, 0167

Independent claim 16 further recites identifying the key frame "by decoding or partially decoding the plurality of frames." This amendment is supported by the original Claims, Specification, and Drawings. For example, "According to various embodiments, a streaming server performs processing on each received frame to determine which frames are key frames. Identifying key frames may involve decoding or partially decoding a frame. In other examples, key frames may be identified based upon the size of the frame, as key frames are typically much larger than predictive frames. In other examples, only a subset of frames are decoded or partially decoded." [0033]

New claim 21 corresponds to amended claims 1 and 16 and has additional recitations supported by the original Claims, Specification, and Drawings. For example, claim 21 is supported by original Claims 1 and 16 along with paragraph [0042] which states "According to various embodiments, the streaming server 421 includes a processor 401, memory 403, buffers 431, 433, 435, and 437, and a number of interfaces. In some examples, the interfaces include an encoder interface 411, a media aggregation server interface 413, and a client device interface 441."

None of the materials cited by the Examiner teach or suggest disregarding a plurality of predictive frames preceding the key frame maintained in the channel buffer. In fact, the material cited by the Examiner does not appear to have any predictive frames preceding the key frame maintained in a channel buffer because the key frame is the first frame in a stream maintained in the Witt system. Furthermore, none of the materials cited by the Examiner teach or suggest decoding or partially decoding a frame to identify a key frame. Still furthermore, none of the materials cited by the Examiner teach or suggest transmitting the key frame to the client device in response to the connection request corresponding to the channel change.



Petitioner Disney Ex-1004, 0168

## CONCLUSION

In light of the above remarks, the rejections to the independent claims are believed overcome for at least the reasons noted above. Applicants' Representative believes that all pending claims are allowable in their present form. If the Examiner has any questions or concerns for Applicants' Representative, the Examiner is encouraged to contact the Undersigned at the number provided below.

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan/

G. Audrey Kwan
Reg. No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100
akwan@wavsip.com



Petitioner Disney Ex-1004, 0169

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Godfrey Audrey Kwan/Latonia Ervin |
| **Attorney Docket Number:** | MOBIP006/1720-1 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| Request for continued examination | 1801 | 1 | 810 | 810 |
| | | **Total in USD ($)** | | **810** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 7885576 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Godfrey Audrey Kwan/Latonia Ervin |
| **Filer Authorized By:** | Godfrey Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006/1720-1 |
| **Receipt Date:** | 24-JUN-2010 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 15:01:47 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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| Submitted with Payment | yes |
| Payment Type | Deposit Account |
| Payment was successfully received in RAM | $810 |
| RAM confirmation Number | 1278 |
| Deposit Account | 504480 |
| Authorized User | |

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Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Request for Continued Examination (RCE) | MOBIP006_RCE.pdf | 781788<br>7019eb4a82139574852fb3e5a9ff1eba4aae4ed8 | no | 3 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | | MOBIP006_pamd_062410.pdf | 100343<br>868f8607d4953291fbd6955fd0ff5ba8c6e087c4 | yes | 8 |

| Multipart Description/PDF files in .zip description | | |
|---|---|---|
| **Document Description** | **Start** | **End** |
| Amendment Submitted/Entered with Filing of CPA/RCE | 1 | 1 |
| Claims | 2 | 4 |
| Applicant Arguments/Remarks Made in an Amendment | 5 | 8 |

| | | | | | |
|---|---|---|---|---|---|
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | Fee Worksheet (PTO-875) | fee-info.pdf | 30250<br>761129d10eee3936d7f48c95a6278c838399fa59 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | | **Total Files Size (in bytes):** | 912381 | |

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**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

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PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| | (Column 1) | (Column 2) | SMALL ENTITY ☐ | | OR | OTHER THAN SMALL ENTITY | |
|---|---|---|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | RATE ($) | FEE ($) | | RATE ($) | FEE ($) |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT | 06/24/2010 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * 22 | Minus | ** 23 | = 0 | X $ = | | OR | X $52= | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $220= | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/EVELYN G. NIMMONS/

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.**

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006/1720-1 | 1023 |

22434 7590 08/06/2010

Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| **ART UNIT** | **PAPER NUMBER** |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 08/06/2010 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@wavsip.com



Petitioner Disney Ex-1004, 0176

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-11,13-19 and 21-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-19 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/24/2010 has been entered.

### *Response to Arguments*

2. The previously issued Section 101 rejection for Claim 20 is hereby withdrawn due to the cancellation of Claim 20.

3. The previously issued objection to the Specification in connection with the recited matter in Claim 20 is hereby withdrawn due to the cancellation of Claim 20.

4. Applicant's arguments with respect to the prior art rejection, on pages 5-7 have been fully considered but they are either moot or not persuasive.

In particular, Applicant argues that none of the cited prior art taught or disclosed "disregarding a plurality of predictive frames preceding the key frame maintained in the channel buffer". (page 7) This argument is moot in light of the rejection for Claim 1 set forth below, which cites the references Witt and Toebes, which discloses “maintained in a channel buffer".

Applicant further argues that the cited references fail to disclose or teach "decoding or partially decoding a frame to identify a key frame" (page 7). The examiner disagrees. Paragraph 33 of the reference Witt discloses "analyzing the quantity and structure of the data in the received video data" in order to determine whether a received frame is a key frame or a delta/predictive frame. To one of ordinary skill in the art, this teaching would disclose "decoding or partially decoding a frame to identify a key frame".

Applicant also further argues that the cited references fail to disclose or teach "transmitting the key frame to the client device in response to the connection request corresponding to the channel change" (page 7). This argument is moot in light of the rejection for Claim 1 set forth below, which cites the references Witt and Toebes. Please see rejection below for details.

***Claim Objections***

5. With respect to claim 16, the claim limitation "means for identifying a key frame included in the plurality of frames and a plurality of predictive frames preceding the key frame by decoding or partially decoding the plurality of frames" uses the phrase "means for" or "step for", but it is modified by some structure, material, or acts recited in the claim. It is unclear whether the recited structure, material, or acts are sufficient for performing the claimed function which would preclude application of 35 U.S.C. 112, sixth paragraph, because it would appear that, to one of ordinary skill in the art, the

functional language above would be sufficient to teach the performing of the claimed function.

If applicant wishes to have the claim limitation treated under 35 U.S.C. 112, sixth paragraph, applicant is required to amend the claim so that the phrase “means for” or “step for” is clearly **not** modified by sufficient structure, material, or acts for performing the claimed function.

If applicant does **not** wish to have the claim limitation treated under 35 U.S.C. 112, sixth paragraph, applicant is required to amend the claim so that it will clearly not be a means (or step) plus function limitation (e.g., deleting the phrase “means for” or “step for”).

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 16-19, 1-5, 7-10, 13-15 and 21-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al.

3. **As to Claim 16**, Witt discloses an apparatus, comprising:

means for receiving a media stream (Fig. 4, "server 30" and paragraph 33, disclosing that the "streaming server 30 receives a video data stream from video source

28", thus disclosing means for receiving a media stream) including a plurality of frames (Figs. 2A/B and 3A/B, disclosing a video data stream including a plurality of frames), the media stream received at a streaming server (Fig. 4, “server 30” included in “processor" and paragraph 33, disclosing receiving a media stream at a "server 30” that is included in a “processor”, such “processor” disclosing a “streaming server”);

means for receiving a connection request (Fig. 4, “broadcaster 38") from a client device (Fig. 4, “client 40” and paragraph 33, disclosing the “broadcaster 38” receiving a “request signal” from the “client 40”), the connection request associated with the media stream (paragraph 33, disclosing the “broadcaster 38” sending a processed data stream associated with the connection request received from the client 40);

means for identifying a key frame included in the plurality of frames (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32” identifies the key frames included in the plurality of frames) and a plurality of predictive frames preceding the key frame (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32 determines if the received video data is either a key frame or a delta frame [i.e., a "predictive frame"]"; see Figs. 2 and 3, disclosing plurality of delta frames that precede each key frame and paragraph 33, disclosing that “upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40”; thus all of the above teaching “identifying a plurality of predictive frames preceding the key frame”) by decoding or partially decoding the plurality of frames (Fig. 4, disclosing a

“key/delta frame determinator 32” that is located inside “processor”; paragraph 33, disclosing that the “key/delta frame determinator 32 determines if the received video data is either a key frame or a delta frame [i.e., a "predictive frame"] by analyzing the quantity and structure of the data in the received video data"; thus all of the above teaching “by decoding or partially decoding the plurality of frames”);

means for (Fig. 4, “broadcaster 38”) disregarding the plurality of predictive frames preceding the key frame (Figs. 2 and 3, disclosing plurality of delta frames that precede each key frame; also see Fig. 5: “transmit first key frame after request and subsequent delta frames S160” and paragraph 33, disclosing that “upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40”; thus all of the above teaching "disregarding the plurality of predictive frames preceding the key frame”)

means for transmitting the same key frame (paragraph 30, disclosing that "the system provides the video data stream 18 in a format which duplicates key frames as both key frames 2 and delta frames 12", thus teaching that when a key frame in the original media stream is encountered, such key frame is "duplicated" as both (i) a key frame that is unchanged in content and (ii) an "introduced delta frame" that is "representative of the data enclosed within the previous key frame”, i.e., the “introduced delta frame” is created in reference to the previously received key frame, thus creating a newly reconstituted data stream, wherein each key frame is reproduced identically; paragraph 31 and 32, disclosing that when a client request is received, the key frame in

the newly reconstituted data stream is provided to the client and in light of the teachings in paragraph 30, it is clear that this provided key frame is the “same key frame” as in the original data stream) to the client device in response to the connection request (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending only the first key frame to the client device after the connection request was received).

Witt does not expressly disclose “maintained in a channel buffer” and “corresponding to a channel change”.

Toebes discloses “maintained in a channel buffer” (paragraphs 22 and 31, disclosing a “distribution buffer 468 configured to store and retrieve video stream data”, i.e., “maintained in a channel buffer”) and “corresponding to a channel change”. (paragraph 32, disclosing changing ”from channel-A 510 to channel-B 520”).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. In particular, Toebes and Witt are combinable to disclose and teach “means for receiving a media stream including a plurality of frames, the media stream received at a streaming server and maintained in a channel buffer", “means for receiving a connection request corresponding to a channel change from a client device, the connection request associated with the media stream” and “means for disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer”. The suggestion or motivation would have been in order to ensure a

more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

4. **As to Claim 17**, please note that Witt and Toebes disclose and teach the apparatus as in the parent claim 16.

Witt further discloses wherein the media stream is a video stream (Figs. 2A/B and 3A/B and paragraphs 29 and 30, disclosing video stream).

5. **As to Claim 18**, please note that Witt and Toebes disclose and teach the apparatus as in the parent claim 16.

Witt does not expressly disclose wherein the key frame is an I-frame.

Toebes discloses wherein the key frame is an I-frame (paragraph 9, disclosing "I-frames").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

6. **As to Claim 19**, please note that Witt and Toebes disclose and teach the apparatus as in the parent claim 16.

Witt further discloses wherein the key frame includes substantially all of the data needed to display a video frame on the client device (paragraphs 3 and 6, disclosing a "key frame" that serves as the reference frame containing "a relatively high amount of

data compared to delta frames", i.e., including substantially all of the data needed to display a video frame).

7. **As to Claim 1**, please see rejection for Claim 16, since the method is taught by the apparatus in Claim 16.

8. **As to Claim 2**, please see rejection for Claim 17, which recites the same limitations.

9. **As to Claim 3**, please see rejection for Claim 18, which recites the same limitations.

10. **As to Claim 4**, please see rejection for Claim 19, which recites the same limitations.

11. **As to Claim 5**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt does not expressly disclose wherein the plurality of predictive frames include P-frames and B-frames.

Toebes discloses wherein the plurality of predictive frames include P-frames and B-frames. (paragraph 9, disclosing "P-frames" and "B-frames").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

12. **As to Claim 7**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt further discloses wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending a key frame first after the connection request has been received, i.e., before any predictive frames are provided to the client device).

13. **As to Claim 8**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt does not expressly disclose wherein the video stream is associated with a channel.

Toebes discloses wherein the video stream is associated with a channel. (paragraph 21, disclosing distributing "at least one of the video channels ... as video stream", thus disclosing wherein the video stream is associated with a channel).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

14. **As to Claim 9**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt does not expressly disclose wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.

Toebes discloses wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream (paragraphs 22 and 31, disclosing "distribution buffers 468, 484 and 540", i.e., FIFO buffer to maintain the video stream), wherein the FIFO buffer includes a new frame end and an old frame end (paragraphs 22 and 31, disclosing the "distribution buffers" contain I-frames and control and media data, thus disclosing and teaching new/old frame ends).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

15. **As to Claim 10**, please note that Witt and Toebes disclose and teach the method as in the parent claim 9.

Witt further discloses wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending a key frame first after the connection request has been received "even when a next frame schedule for delivery to the client device is a predictive frame").

16. **As to Claim 13**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt further discloses wherein the key frame is identified by performing a decoding operation on one of the plurality of frames (paragraphs 33 and 34, disclosing determining a key frame by "analyzing the … structure of the data in the received video data", thus disclosing wherein the key frame is identified by performing a decoding operation).

17. **As to Claim 14**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt further discloses wherein the key frame is identified based on the size of the key frame (paragraph 6, disclosing that the key frame contains more data than delta/predictive frames; paragraphs 33 and 34, disclosing determining a key frame by "analyzing the quantity … of the data in the received video data", thus disclosing wherein the key frame is identified based on the size of the key frame).

18. **As to Claim 15**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt discloses wherein the key frame is identified based on the size of the received video data (paragraphs 33 and 34)

Witt does not expressly disclose based on the GOP size.

Toebes discloses based on the GOP size (paragraph 7, disclosing "the catch up time could be up to an entire GOP or frame set time", thus disclosing based on the GOP size).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. In particular, Toebes and Witt can be combined to teach and disclose "wherein the key frame is identified based on the GOP size". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

19. **As to Claim 21**, Witt discloses a streaming server (Fig. 4, "processor" in combination with "broadcaster 38", disclosing "streaming server"), comprising:

a server interface (Fig. 4, "server 30") configured to receive a media stream (Fig. 4, "server 30" and paragraph 33, disclosing that the "streaming server 30 receives a video data stream from video source 28", thus disclosing means for receiving a media stream) including a plurality of frames (Figs. 2A/B and 3A/B, disclosing a video data stream including a plurality of frames), the media stream received at a streaming server (Fig. 4, "server 30" included in "processor" and paragraph 33, disclosing receiving a media stream at a "server 30" that is included in a "processor", such "processor" disclosing a "streaming server");

a client interface (Fig. 4, "broadcaster 38") configured to receive a connection request (Fig. 4, "broadcaster 38") from a client device (Fig. 4, "client 40" and paragraph 33, disclosing the "broadcaster 38" receiving a "request signal" from the "client 40"), the connection request associated with the media stream (paragraph 33, disclosing the

“broadcaster 38” sending a processed data stream associated with the connection request received from the client 40);

a processor (Fig. 4, “processor” comprising “key/delta frame determinator 32”) configured to identify a key frame included in the plurality of frames (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32” identifies the key frames included in the plurality of frames) and a plurality of predictive frames preceding the key frame (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32 determines if the received video data is either a key frame or a delta frame [i.e., a "predictive frame"]"; see Figs. 2 and 3, disclosing plurality of delta frames that precede each key frame and paragraph 33, disclosing that “upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40”; thus all of the above teaching “identifying a plurality of predictive frames preceding the key frame”) by decoding or partially decoding the plurality of frames (Fig. 4, disclosing a “key/delta frame determinator 32” that is located inside “processor”; paragraph 33, disclosing that the “key/delta frame determinator 32 determines if the received video data is either a key frame or a delta frame [i.e., a "predictive frame"] by analyzing the quantity and structure of the data in the received video data"; thus all of the above teaching “by decoding or partially decoding the plurality of frames”)

and disregard the plurality of predictive frames preceding the key frame (Figs. 2 and 3, disclosing plurality of delta frames that precede each key frame; also see Fig. 5:

“transmit first key frame after request and subsequent delta frames S160” and paragraph 33, disclosing that “upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40”; thus all of the above teaching "disregarding the plurality of predictive frames preceding the key frame”);

wherein the processor (Fig. 4, “processor” in combination with "broadcaster 38", disclosing a "processor") is further configured to provide the key frame to the client device in response to the connection request even if the plurality of predictive frames are available before the key frame (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending only the first key frame to the client device after the connection request was received “even if the plurality of predictive frames are available before the key frame”).

Witt does not expressly disclose “maintained in a channel buffer” and “corresponding to a channel change”.

Toebes discloses “maintained in a channel buffer” (paragraphs 22 and 31, disclosing a “distribution buffer 468 configured to store and retrieve video stream data”, i.e., “maintained in a channel buffer”) and “corresponding to a channel change”. (paragraph 32, disclosing changing ”from channel-A 510 to channel-B 520”).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. In particular, Toebes and Witt are combinable to

disclose and teach "a client interface configured to receive a connection request corresponding to a channel change from a client device, the connection request associated with the media stream" and "a processor configured to identify a key frame and a plurality of predictive frames preceding the key frame in the media stream and disregard the plurality of predictive frames maintained in the channel buffer". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

20. **As to Claim 22**, please see rejection for Claim 17, which recites the same limitations.

21. **As to Claim 23**, please see rejection for Claim 18, which recites the same limitations.

22. **As to Claim 24**, please see rejection for Claim 19, which recites the same limitations.

23. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al., further in view of U.S. Patent Publication No. 2007/0116437 A1 to Pun et al.

24. **As to Claim 6**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt discloses key frames and predictive frames (Figs. 2 and 3, disclosing key and predictive frames).

Witt does not expressly disclose wherein a first frame in the media stream is provided to the client device at the same time a second frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices.

Pun discloses wherein a first frame in the media stream is provided to the client device at the same time a second frame in the media stream is provided to a second client device already connected to the streaming server (paragraph 6, disclosing that the same “encoder”, i.e., “streaming server”, can provide the same "replicas or copies of the compressed bit stream”, i.e., the same MPEG transport stream containing the key and delta frame, for example, to “multiple decoders located at different locations”, i.e., multiple “client devices”, for decoding at the “multiple decoders” “at different times”, thus disclosing and teaching that the same data stream can be distributed to different client devices at different times and therefore, a first frame can be received at a client device while a different, second frame is being received at another client device), wherein the streaming server handles the time variance in the media stream viewed by different client devices (paragraph 6, disclosing distributing the same data stream to different client devices for “decoding at different times”, thus disclosing "handing the time variance in the media stream viewed by different client devices").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Pun, in conjunction with the teachings of Witt. In particular, Pun and Witt can be combined to disclose and teach "wherein the key frame in the media stream is provided to the client device at the same time a predictive frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices." The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Pun, paragraphs 3, 15-16).

25. **Claims 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al., further in view of U.S. Patent Publication No. 2007/0242666 A1 to Barrett

26. **As to Claim 11**, please note that Witt and Toebes disclose and teach the method as in the parent claim 9.

Witt and Toebes do not expressly disclose wherein the client device is a mobile device.

Barrett discloses wherein the client device is a mobile device. (paragraph 48 disclosing a wireless "transceiver").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Barrett, in

conjunction with the teachings of Witt and Toebes. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11; Barrett, paragraphs 1, 6, and 7).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on (571)272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Derrick W Ferris/

Supervisory Patent Examiner, Art Unit 2463

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | | | | | | |
| | 1 | ✓ | ✓ | ✓ | | | | | | |
| | 2 | ✓ | ✓ | ✓ | | | | | | |
| | 3 | ✓ | ✓ | ✓ | | | | | | |
| | 4 | ✓ | ✓ | ✓ | | | | | | |
| | 5 | ✓ | ✓ | ✓ | | | | | | |
| | 6 | ✓ | ✓ | ✓ | | | | | | |
| | 7 | ✓ | ✓ | ✓ | | | | | | |
| | 8 | ✓ | ✓ | ✓ | | | | | | |
| | 9 | ✓ | ✓ | ✓ | | | | | | |
| | 10 | ✓ | ✓ | ✓ | | | | | | |
| | 11 | ✓ | ✓ | ✓ | | | | | | |
| | 12 | ✓ | ✓ | - | | | | | | |
| | 13 | ✓ | ✓ | ✓ | | | | | | |
| | 14 | ✓ | ✓ | ✓ | | | | | | |
| | 15 | ✓ | ✓ | ✓ | | | | | | |
| | 16 | ✓ | ✓ | ✓ | | | | | | |
| | 17 | ✓ | ✓ | ✓ | | | | | | |
| | 18 | ✓ | ✓ | ✓ | | | | | | |
| | 19 | ✓ | ✓ | ✓ | | | | | | |
| | 20 | ✓ | ✓ | - | | | | | | |
| | 21 | | | ✓ | | | | | | |
| | 22 | | | ✓ | | | | | | |
| | 23 | | | ✓ | | | | | | |
| | 24 | | | ✓ | | | | | | |

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

## SEARCHED

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |
| ABOVE | UPDATED | 7/31/2010 | PC |

## SEARCH NOTES

| Search Notes | Date | Examiner |
|---|---|---|
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 (updated 3/9/2010) | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/2009 (updated 3/9/2010 and 7/31/2010) | pc |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| | | | |

## EAST Search History

### EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L1 | 1 | "20080175273" | US-PGPUB; USPAT | ADJ | ON | 2010/07/31 14:25 |
| L2 | 73 | ((referenc$3 or base or key or common) near5 frame or i $1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) same (multiple or plurality) with (users or receivers or transceivers or client) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:36 |
| L3 | 55 | duplicate with (stream or frame) same ((referenc$3 or base or key or common) near5 frame or i $1frame) same ((predict$3 or intermedia$4 or chang $3 or delta) near5 frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:37 |
| L4 | 6 | uni$1cast$3 with users with (plurality or multiple) and ((referenc$3 or base or key or common) near5 frame or i $1frame) same ((predict$3 or intermedia$4 or chang $3 or delta) near5 frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:37 |



Petitioner Disney Ex-1004, 0199

| | | | | | | |
|---|---|---|---|---|---|---|
| L5 | 167 | stream$3 with (plurality or multiple) same time with (differen$3 or varian $3) and ((referenc$3 or base or key or common) near5 frame or i$1frame) same ((predict$3 or intermedia$4 or chang $3 or delta) near5 frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:37 |
| L6 | 3575 | (370/503).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:38 |
| L7 | 12 | L6 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:38 |
| L8 | 2129 | (370/509).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:38 |
| L9 | 13 | L8 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:38 |
| L10 | 607 | (370/510).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:38 |



Petitioner Disney Ex-1004, 0200

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|---|---|---|---|---|---|---|
| L11 | 4 | L10 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:38 |
| L12 | 36 | (370/511).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:38 |
| L13 | 3 | L12 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:38 |
| L15 | 219 | (370/512).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:39 |
| L16 | 5 | L15 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:39 |
| L17 | 167 | (370/513).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:39 |



Petitioner Disney Ex-1004, 0201

| | | | | | | |
|---|---|---|---|---|---|---|
| L18 | 2 | L17 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:39 |
| L19 | 210 | (370/395.64).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:40 |
| L20 | 20 | L19 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:40 |
| L21 | 12959 | (709/203).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:40 |
| L22 | 19 | L21 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:40 |
| L23 | 396 | (709/209).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:40 |



Petitioner Disney Ex-1004, 0202

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|---|---|---|---|---|---|---|
| L24 | 6 | L23 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:40 |
| L25 | 1244 | (709/208).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/07/31 14:40 |
| L26 | 12 | L25 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang $3 or delta) with frame or b$1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/07/31 14:40 |

**EAST Search History (Interference)**

<This search history is empty>

**7/31/2010 2:41:31 PM**
**C:\Documents and Settings\pcheng\My Documents\EAST\Workspaces\11626340.wsp**



Petitioner Disney Ex-1004, 0203

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on November 9, 2010.

Signed: /Latonia Ervin/
Latonia Ervin

# ***OFFICE ACTION RESPONSE***

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

Please consider the following amendments and remarks in response to the Office Action mailed August 6, 2010.

**Amendments to the Claims** are shown in the listing of claims, which begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.



Petitioner Disney Ex-1004, 0204

## IN THE CLAIMS

What is claimed is:

1. (Previously Presented) A method, comprising:

receiving a media stream including a plurality of frames, the media stream received at a streaming server and maintained in a channel buffer;

receiving a connection request corresponding to a channel change from a client device, the connection request associated with the media stream;

identifying a key frame included in the plurality of frames and a plurality of predictive frames preceding the key frame by using a processor included in the streaming server;

disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer;

transmitting the key frame to the client device in response to the connection request corresponding to the channel change.

2. (Original) The method of claim 1, wherein the media stream is a video stream

3. (Original) The method of claim 1, wherein the key frame is an I-frame

4. (Original) The method of claim 1, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

5. (Original) The method of claim 1, wherein the plurality of predictive frames include P-frames and B-frames.

6. (Previously Presented) The method of claim 1, wherein the key frame in the media stream is provided to the client device at the same time a predictive frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the time variance in the media stream viewed by different client devices.

7. (Original) The method of claim 1, wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device.

8. (Original) The method of claim 1, wherein the video stream is associated with a channel.

9. (Original) The method of claim 1, wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.



Petitioner Disney Ex-1004, 0205

10. (Original) The method of claim 9, wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame.

11. (Original) The method of claim 9, wherein the client device is a mobile device.

12. (Canceled)

13. (Original) The method of claim 1, wherein the key frame is identified by performing a decoding operation on one of the plurality of frames.

14. (Original) The method of claim 1, wherein the key frame is identified based on the size of the key frame.

15. (Original) The method of claim 1, wherein the key frame is identified based on the Group of Pictures (GOP) size.

16. (Currently Amended) An apparatus, comprising:

means for receiving a media stream including a plurality of frames, the media stream received at a streaming server and maintained in a channel buffer;

means for receiving a connection request corresponding to a channel change from a client device, the connection request associated with the media stream;

means for identifying a key frame included in the plurality of frames and a plurality of predictive frames preceding the key frame ~~by decoding or partially decoding the plurality of frames~~;

means for disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer;

means for transmitting the key frame to the client device in response to the connection request[[,]].

17. (Original) The apparatus of claim 16, wherein the media stream is a video stream

18. (Original) The apparatus of claim 16, wherein the key frame is an I-frame

19. (Original) The apparatus of claim 16, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.

20. (Canceled)

21. (Previously Presented) A streaming server, comprising:

a server interface configured to receive a media stream including a plurality of frames;

a client interface configured to receive a connection request corresponding to a channel change from a client device, the connection request associated with the media stream;



Petitioner Disney Ex-1004, 0206

a processor configured to identify a key frame and a plurality of predictive frames preceding the key frame in the media stream and disregard the plurality of predictive frames maintained in a channel buffer;

wherein the processor is further configured to provide the key frame to the client device in response to the connection request even if the plurality of predictive frames are available before the key frame.

22. (Previously Presented) The apparatus of claim 21, wherein the media stream is a video stream

23. (Previously Presented) The apparatus of claim 21, wherein the key frame is an I-frame

24. (Previously Presented) The apparatus of claim 21, wherein the key frame includes substantially all of the data needed to display a video frame on the client device.



Petitioner Disney Ex-1004, 0207

## REMARKS/ARGUMENTS

Claims 1-11, 13-19 and 21-24 are pending. Claim 16 was objected to under 35 U.S.C. 112(6). Claim 16 has been amended to overcome this objection. In the previous Office Action, the independent claims were rejected under 35 U.S.C. 102(e) as being anticipated by Witt (2007/0044128). In light of the previous Office Action Response, the Examiner is now rejecting the independent claims under 35 U.S.C. 103(a) as being anticipated by Witt in view of Toebes (2007/0277219).

Witt describes prior art video data streams and video data streams according to "invention principles." Witt describes a prior art video data stream transmitted to a client device in paragraph [0029]. "FIG. 2A is an illustrative view of the Video Data Stream. The key frames 2 and delta frames 12 described in FIG. 1 are encoded into a digital video stream 18. Encoded digital video stream 18 contains frequent periodic key frames 2. The key frames 2 are periodically placed between delta frames 12 to allow a user to access the video stream 18 from a desired start point. When a user desires to view a transmission at a point for which the data is encoded as a delta frame 12, the viewer is either directed to the closest key frame 2 or constructs the desired start frame from the previous key frame 2 and subsequent delta frames 12." [0029] As noted, prior art systems transmit a data stream to a client and the client device locates the closest key frame or constructs the desired start frame. The video data stream sent from the server is sent with key frames and delta frames without selection and rearrangement.

Witt also describes video data streams according to "invention principles" in paragraph [0030]. "While this feature may provide a higher quality viewing experience the compression rate is low. A higher data compression rate is desired in multiple situations, particularly streaming video. Therefore, the system provides the video data stream 18 in a format which duplicaties key frames as both key frames 2 and delta frames 12. As such, the transmission of the multimedia stream is tailored to minimize the bandwidth utilization of the client to which the stream is transmitted. FIG. 2B is an illustrative view of the video data stream 10 according to invention principles. To provide the flexibility of distributing the video data stream with a single key frame 2 per client request (as will be described in greater detail in reference to FIGS. 3A and 3B) each key frame is also encoded as a delta frame and the delta frame 12 is introduced into the stream 10 following each key frame. The introduced delta frame 12 is representative of the data



Petitioner Disney Ex-1004, 0208

enclosed within the previous key frame 2. In the system, the first key frame 2 of the video data stream 10 need not be duplicated as a delta frame 12 for client access cannot begin before that point, thus calling for a filtering of key frames 2."

Toebes states "[0031] Distribution buffer 540 receives and distributes a particular, user selected video stream, in order to limit the bandwidth needed by a downstream portion of a network. For example, distribution buffer 540 may be a particular embodiment of either distribution buffer 468 or distribution buffer 484. Distribution buffer 540 may receive a sequence of media frame sets 542 each comprising a media frames having a particular frame type 544 and identified by a frame index 546. The contents of distribution buffer 540 may be modified based on a changing user selection. The contents of distribution buffer 450 then may be provided through DSLAM 480 and through RG 490 to user STB 402. Alternatively, distribution buffer 484 may receive the video/media stream directly, and the contents of distribution buffer 484 may be modified based on a changing user selection. The contents of distribution buffer 484 then may be provided through RG 490 to user STB 402. Distribution buffer 450 may be considered a cached data stream since the video stream from broadcast feed 440 is queued prior to decoding by user STB 402. The alterability of distribution buffer 450 provides an opportunity to insert a generated independent frame (I-Frame) in a proper position and route subsequent dependent data frames into distribution buffer 450 to provide reduction of a channel selection transition delay."

The Examiner acknowledges that Witt does not disclose receiving a connection request "corresponding to a channel change." It is respectfully submitted that the materials cited by the Examiner in Toebes actually teach away from using the mechanisms recited in the independent claims in the context of a channel change.

The independent claims explicitly recite "receiving a connection request corresponding to a channel change from a client device" and "disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer" during the context of a channel change. By contrast, Toebes explicitly indicates that the plurality of predictive frames should not be disregarded and should be used instead to generate a new independent media frame. "[0023] A Pseudo-Set Top Box (P-STB) 470 may communicate with AG 464 through a connection 472, where P-STB 470 is configured to receive and process at least one video channel (442, 444, 446) from video stream 404. P-STB 470 may have a local or uncached connection with AG 464 in order to minimize delays caused by caching. As disclosed, P-STB 470 can include all of the



Petitioner Disney Ex-1004, 0209

capabilities of user STB 402, with full access to an uncached video stream as a subscriber. In this manner, P-STB 470 will be "ahead" of the processing and decoding of a user STB 402. P-STB may include a codec (encoder/decoder) 474, a processor 476, and/or a memory 478. Codec 474 receives the video stream and decodes the video stream into a current media state comprising at least one of current video image data, current audio sound data, and/or control information configured to regulate or modify the output of the decoded video stream. Codec 474 may then encode the current state of the sequentially decoded/processed media frames to produce an independent media frame corresponding to the decoded current state. Codec 474 may be compliant with a particular standard including H.222, H.262, and/or an MPEG video encoding and decoding standard." [0023]

In this same manner, Toebes teaches away from sending the same "key frame" in the context of a channel change because it emphasizes the importance of generating a new key frame. It is acknowledged that in various contexts, such as the beginning of a transmission, the same key frame is transmitted to a client. However, the materials cited by the Examiner do not sufficiently teach or suggest and in fact may teach away from sending the same "key frame" to the client in the context of a channel change. Toebes emphasizes that generating an independent frame is important, e.g. "generated independent frame as if the decoder had been receiving the newly selected channel all along" [0035], "Once the current independent frame (C-Frame) is generated, flow 600 continues with retrieving the C-Frame and the recorded insertion position from the memory, if stored temporarily, and sending the information back to the distribution network to a distribution buffer configured to store and retrieve a queued version of the video stream in operation 614. Flow 600 continues with merging the generated independent frame into the distribution buffer at the insertion position to form a modified second channel cached data stream in operation 616," [0036] "These benefits may be especially pronounced when using a large Group of Pictures (GOP) where the broadcasted frame set may include a long chain of dependent data frames. Also, when using an encrypted multicast transport stream (e.g. encrypted MPEG), the requesting STB can display un-encrypted or "in the clear" generated independent frames from the P-STB without decryption delays." [0037]

Consequently, the materials cited by the Examiner do not sufficiently teach or suggest and may in fact teach away from "disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer" and transmitting the same "key frame to the client



Petitioner Disney Ex-1004, 0210

device in response to the connection request corresponding to the channel change" in the context of a channel change.

In light of the above remarks, the rejections to the independent claims are believed overcome for at least the reasons noted above. Applicants' Representative believes that all pending claims are allowable in their present form. If the Examiner has any questions or concerns for Applicants' Representative, the Examiner is encouraged to contact the Undersigned at the number provided below. If any unpaid fees are due, the Commissioner is authorized to charge such fees to Deposit Account 504480 (Order No. MOBIP006),

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan/

Avery Audrey Kwan
Reg. No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100
akwan@wavsip.com



Petitioner Disney Ex-1004, 0211

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Avery Audrey Kwan/Latonia Ervin |
| **Attorney Docket Number:** | MOBIP006/1720-1 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |
| Extension - 1 month with $0 paid | 1251 | 1 | 130 | 130 |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| | | | **Total in USD ($)** | **130** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 8802484 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Avery Audrey Kwan/Latonia Ervin |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006/1720-1 |
| **Receipt Date:** | 09-NOV-2010 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 17:04:29 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Deposit Account |
| Payment was successfully received in RAM | $130 |
| RAM confirmation Number | 3684 |
| Deposit Account | 504480 |
| Authorized User | |

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | MOBIP006_Amd_110910.pdf | 99890<br>ac6e672db0cc384001a2fb0591c01e199d4705f5 | yes | 8 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Amendment/Req. Reconsideration-After Non-Final Reject | 1 | 1 |
| | Claims | 2 | 4 |
| | Amendment/Req. Reconsideration-After Non-Final Reject | 5 | 8 |

**Warnings:**

**Information:**

| | | | | | |
|---|---|---|---|---|---|
| 2 | Fee Worksheet (PTO-875) | fee-info.pdf | 29914<br>10386bf1e656b782d08520a277488b2a93f146f2 | no | 2 |

**Warnings:**

**Information:**

| Total Files Size (in bytes): | 129804 |
|---|---|

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**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. 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.

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT | 11/09/2010 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * 22 | Minus | ** 23 | = 0 | X $ = | | OR | X $52= | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $220= | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/FREDERICK E. BRISCOE/

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.**

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006/1720-1 | 1023 |

22434 7590 12/23/2010

Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| **ART UNIT** | **PAPER NUMBER** |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 12/23/2010 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@wavsip.com



Petitioner Disney Ex-1004, 0217

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *09 November 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-11,13-19 and 21-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-19 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. The previously issued objection for Claim 16 is hereby withdrawn.

2. Applicant's arguments filed November 9, 2010 have been fully considered but they are not persuasive.

In particular, Applicant argues that the cited reference Toebes "actually teach[es] away from using the mechanisms recited in the independent claims in the context of a channel change" (page 6) because Toebes, allegedly, "explicitly indicates that the plurality of predictive frames should not be disregarded and should be used instead to generate a new independent media frame" (page 6).

This argument is not persuasive. Based on Applicant's argument referenced above, Applicant appears to be indicating that Toebes is being cited as teaching the feature of disregarding a plurality of predictive frames preceding the key frame. It is not. As set forth in the rejection below, it is the reference Witt that is cited as teaching this feature and it is noted here that Applicant has not addressed the merits of Witt with respect to this feature. It is also not clear why the generation of a new independent media frame allegedly taught by Toebes would render the cited teachings of Toebes (i.e., channel changes and channel buffer) inconsistent with and uncombinable with Witt. Therefore, Applicant's argument above is not deemed to be relevant and is not persuasive.

Applicant further argues that Toebes “teach[es] away from sending the same "key frame" to the client in the context of a channel change” allegedly because “Toebes emphasizes that generating an independent frame is important” (page 7), and in support thereof a series of citations to Toebes were provided (page 7).

This argument is not persuasive and furthermore, does not appear to be relevant to the limitation at issue, i.e., sending the key frame to the client in response to a channel change. It is not clear why the emphasis on the importance of generating independent/key frames allegedly found in Toebes would be inconsistent with and would "teach away from" the feature of sending the same key frame in response to a connection/channel change request. More importantly, as similarly mentioned above, Toebes is not being cited as teaching the feature of sending the "same key frame" in response to a channel change request, which appears to be what Applicant is implying. Instead, the office action is clear that Witt is being cited as teaching sending the same key frame in response to a connection request, which is a teaching that is combinable with Toebes’ disclosure of a channel change feature, to teach the limitation at issue above. Also, in response to applicant's argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., “same key frames”) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant is informed that Witt is cited as the base reference whose teachings are to be modified by the cited teachings of Toebes (i.e., with respect to channel buffer and channel changes) and not the other way around. There is sufficient motivation to combine the cited teachings of these two references, as set forth in the office action below. The office action does not require that all features of Toebes be combinable with Witt, which Applicant appears to be asserting in its response. Finally, Applicant's arguments to the effect that the teachings of Toebes in general are not combinable with Witt, is also not convincing because Applicant's reasons therefor (i.e., the alleged use of predictive frames to generate new independent frames and the "emphasis" on the importance of generating independent frames) do not appear to be relevant to the issue.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 16-19, 1-5, 7-10, 13-15 and 21-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al.

3. **As to Claim 16**, Witt discloses an apparatus, comprising:

means for receiving a media stream (Fig. 4, "server 30" and paragraph 33, disclosing that the "streaming server 30 receives a video data stream from video source

28", thus disclosing means for receiving a media stream) including a plurality of frames (Figs. 2A/B and 3A/B, disclosing a video data stream including a plurality of frames), the media stream received at a streaming server (Fig. 4, “server 30” included in “processor" and paragraph 33, disclosing receiving a media stream at a "server 30” that is included in a “processor”, such “processor” disclosing a “streaming server”);

means for receiving a connection request (Fig. 4, “broadcaster 38") from a client device (Fig. 4, “client 40” and paragraph 33, disclosing the “broadcaster 38” receiving a “request signal” from the “client 40”), the connection request associated with the media stream (paragraph 33, disclosing the “broadcaster 38” sending a processed data stream associated with the connection request received from the client 40);

means for identifying a key frame included in the plurality of frames (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32” identifies the key frames included in the plurality of frames) and a plurality of predictive frames preceding the key frame (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32 determines if the received video data is either a key frame or a delta frame [i.e., a "predictive frame"]"; see Figs. 2 and 3, disclosing plurality of delta frames that precede each key frame and paragraph 33, disclosing that “upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40”, teaching to one of ordinary skill in the art that the broadcaster 38 will determine whether a frame received after the request signal but before receiving a first key frame is a

predictive/delta frame and if so, disregard and wait for receipt of the first key frame post-request-signal, thus teaching "identifying a plurality of predictive frames preceding the key frame"; thus all of the above teaching "identifying a plurality of predictive frames preceding the key frame") by decoding or partially decoding the plurality of frames (Fig. 4, disclosing a "key/delta frame determinator 32" that is located inside "processor"; paragraph 33, disclosing that the "key/delta frame determinator 32 determines if the received video data is either a key frame or a delta frame [i.e., a "predictive frame"] by analyzing the quantity and structure of the data in the received video data"; thus all of the above teaching "by decoding or partially decoding the plurality of frames");

means for (Fig. 4, "broadcaster 38") disregarding the plurality of predictive frames preceding the key frame (Figs. 2 and 3, disclosing plurality of delta frames that precede each key frame; also see Fig. 5: "transmit first key frame after request and subsequent delta frames S160" and paragraph 33, disclosing that "upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40"; thus all of the above teaching "disregarding the plurality of predictive frames preceding the key frame")

means for transmitting the [same] key frame (paragraph 30, disclosing that "the system provides the video data stream 18 in a format which duplicates key frames as both key frames 2 and delta frames 12", thus teaching that when a key frame in the original media stream is encountered, such key frame is "duplicated" as both (i) a key frame that is unchanged in content and (ii) an "introduced delta frame" that is

"representative of the data enclosed within the previous key frame", i.e., the "introduced delta frame" is created in reference to the previously received key frame, thus creating a newly reconstituted data stream, wherein each key frame is reproduced identically; paragraphs 31 and 32, disclosing that when a client request is received, the key frame in the newly reconstituted data stream is provided to the client and in light of the teachings in paragraphs 30 and 33, it is clear that this provided key frame is the "same key frame" as in the original data stream and is the first key frame after the receipt of the request signal) to the client device in response to the connection request (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending only the first key frame to the client device after the connection request was received).

Witt does not expressly disclose "maintained in a channel buffer" and "corresponding to a channel change".

Toebes discloses "maintained in a channel buffer" (paragraphs 22 and 31, disclosing a "distribution buffer 468 configured to store and retrieve video stream data", i.e., "maintained in a channel buffer") and "corresponding to a channel change". (paragraph 32, disclosing changing "from channel-A 510 to channel-B 520").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. In particular, Toebes and Witt are combinable to disclose and teach "means for receiving a media stream including a plurality of frames, the media stream received at a streaming server and maintained in a channel buffer",

"means for receiving a connection request corresponding to a channel change from a client device, the connection request associated with the media stream" and "means for disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

4. **As to Claim 17**, please note that Witt and Toebes disclose and teach the apparatus as in the parent claim 16.

Witt further discloses wherein the media stream is a video stream (Figs. 2A/B and 3A/B and paragraphs 29 and 30, disclosing video stream).

5. **As to Claim 18**, please note that Witt and Toebes disclose and teach the apparatus as in the parent claim 16.

Witt does not expressly disclose wherein the key frame is an I-frame.

Toebes discloses wherein the key frame is an I-frame (paragraph 9, disclosing "I-frames").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

6. **As to Claim 19**, please note that Witt and Toebes disclose and teach the apparatus as in the parent claim 16.

Witt further discloses wherein the key frame includes substantially all of the data needed to display a video frame on the client device (paragraphs 3 and 6, disclosing a “key frame” that serves as the reference frame containing "a relatively high amount of data compared to delta frames", i.e., including substantially all of the data needed to display a video frame).

7. **As to Claim 1**, please see rejection for Claim 16, since the method is taught by the apparatus in Claim 16.

8. **As to Claim 2**, please see rejection for Claim 17, which recites the same limitations.

9. **As to Claim 3**, please see rejection for Claim 18, which recites the same limitations.

10. **As to Claim 4**, please see rejection for Claim 19, which recites the same limitations.

11. **As to Claim 5**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt does not expressly disclose wherein the plurality of predictive frames include P-frames and B-frames.

Toebes discloses wherein the plurality of predictive frames include P-frames and B-frames. (paragraph 9, disclosing "P-frames” and “B-frames”).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been

in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

12. **As to Claim 7**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt further discloses wherein the key frame is provided to the client device in response to the connection request before any predictive frames are provided to the client device (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending a key frame first after the connection request has been received, i.e., before any predictive frames are provided to the client device).

13. **As to Claim 8**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt does not expressly disclose wherein the video stream is associated with a channel.

Toebes discloses wherein the video stream is associated with a channel. (paragraph 21, disclosing distributing "at least one of the video channels ... as video stream", thus disclosing wherein the video stream is associated with a channel).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

14. **As to Claim 9**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt does not expressly disclose wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream, wherein the FIFO buffer includes a new frame end and an old frame end.

Toebes discloses wherein the streaming server includes a first in first out (FIFO) buffer to maintain the video stream (paragraphs 22 and 31, disclosing "distribution buffers 468, 484 and 540", i.e., FIFO buffer to maintain the video stream), wherein the FIFO buffer includes a new frame end and an old frame end (paragraphs 22 and 31, disclosing the "distribution buffers" contain I-frames and control and media data, thus disclosing and teaching new/old frame ends).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

15. **As to Claim 10**, please note that Witt and Toebes disclose and teach the method as in the parent claim 9.

Witt further discloses wherein the key frame is provided to the client device first in response to the connection request even when a next frame scheduled for delivery to the client device is a predictive frame (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending a key

frame first after the connection request has been received "even when a next frame schedule for delivery to the client device is a predictive frame").

16. **As to Claim 13**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt further discloses wherein the key frame is identified by performing a decoding operation on one of the plurality of frames (paragraphs 33 and 34, disclosing determining a key frame by "analyzing the … structure of the data in the received video data", thus disclosing wherein the key frame is identified by performing a decoding operation).

17. **As to Claim 14**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt further discloses wherein the key frame is identified based on the size of the key frame (paragraph 6, disclosing that the key frame contains more data than delta/predictive frames; paragraphs 33 and 34, disclosing determining a key frame by "analyzing the quantity … of the data in the received video data", thus disclosing wherein the key frame is identified based on the size of the key frame).

18. **As to Claim 15**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt discloses wherein the key frame is identified based on the size of the received video data (paragraphs 33 and 34)

Witt does not expressly disclose based on the GOP size.

Toebes discloses based on the GOP size (paragraph 7, disclosing “the catch up time could be up to an entire GOP or frame set time”, thus disclosing based on the GOP size).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. In particular, Toebes and Witt can be combined to teach and disclose “wherein the key frame is identified based on the GOP size”. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

19. **As to Claim 21**, Witt discloses a streaming server (Fig. 4, “processor” in combination with “broadcaster 38”, disclosing “streaming server”), comprising:

a server interface (Fig. 4, “server 30”) configured to receive a media stream (Fig. 4, "server 30" and paragraph 33, disclosing that the "streaming server 30 receives a video data stream from video source 28", thus disclosing means for receiving a media stream) including a plurality of frames (Figs. 2A/B and 3A/B, disclosing a video data stream including a plurality of frames), the media stream received at a streaming server (Fig. 4, “server 30” included in “processor" and paragraph 33, disclosing receiving a media stream at a "server 30” that is included in a “processor”, such “processor” disclosing a “streaming server”);

a client interface (Fig. 4, “broadcaster 38”) configured to receive a connection request (Fig. 4, “broadcaster 38") from a client device (Fig. 4, “client 40” and paragraph

33, disclosing the “broadcaster 38” receiving a “request signal” from the “client 40”), the connection request associated with the media stream (paragraph 33, disclosing the “broadcaster 38” sending a processed data stream associated with the connection request received from the client 40);

a processor (Fig. 4, “processor” comprising “key/delta frame determinator 32”) configured to identify a key frame included in the plurality of frames (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32” identifies the key frames included in the plurality of frames) and a plurality of predictive frames preceding the key frame (Fig. 4, “key/delta frame determinator 32” and paragraph 33, disclosing that the “key/delta frame determinator 32 determines if the received video data is either a key frame or a delta frame [i.e., a "predictive frame"]"; see Figs. 2 and 3, disclosing plurality of delta frames that precede each key frame and paragraph 33, disclosing that “upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40”, teaching to one of ordinary skill in the art that the broadcaster 38 will determine whether a frame received after the request signal but before receiving a first key frame is a predictive/delta frame and if so, disregard and wait for receipt of the first key frame post-request-signal, thus teaching "identifying a plurality of predictive frames preceding the key frame”; thus all of the above teaching “identifying a plurality of predictive frames preceding the key frame”) by decoding or partially decoding the plurality of frames (Fig. 4, disclosing a “key/delta frame determinator 32” that is located inside “processor”;

paragraph 33, disclosing that the “key/delta frame determinator 32 determines if the received video data is either a key frame or a delta frame [i.e., a "predictive frame"] by analyzing the quantity and structure of the data in the received video data"; thus all of the above teaching “by decoding or partially decoding the plurality of frames”)

and disregard the plurality of predictive frames preceding the key frame (Figs. 2 and 3, disclosing plurality of delta frames that precede each key frame; also see Fig. 5: “transmit first key frame after request and subsequent delta frames S160” and paragraph 33, disclosing that “upon receipt of a request signal from a client 40, the broadcaster 38 will detect the first key frame after receipt of the request signal and transmit the key frame and subsequent delta frames to the client 40”; thus all of the above teaching "disregarding the plurality of predictive frames preceding the key frame”);

wherein the processor (Fig. 4, “processor” in combination with "broadcaster 38", disclosing a "processor") is further configured to provide the key frame to the client device (paragraph 30, disclosing that "the system provides the video data stream 18 in a format which duplicates key frames as both key frames 2 and delta frames 12", thus teaching that when a key frame in the original media stream is encountered, such key frame is "duplicated" as both (i) a key frame that is unchanged in content and (ii) an "introduced delta frame" that is "representative of the data enclosed within the previous key frame”, i.e., the “introduced delta frame” is created in reference to the previously received key frame, thus creating a newly reconstituted data stream, wherein each key frame is reproduced identically; paragraphs 31 and 32, disclosing that when a client

request is received, the key frame in the newly reconstituted data stream is provided to the client and in light of the teachings in paragraphs 30 and 33, it is clear that this provided key frame is the “same key frame” as in the original data stream and is the first key frame after the receipt of the request signal) in response to the connection request even if the plurality of predictive frames are available before the key frame (Fig. 5, "transmit first key frame after request and subsequent delta frames S160" and paragraph 32 and 33, all disclosing sending only the first key frame to the client device after the connection request was received “even if the plurality of predictive frames are available before the key frame”).

Witt does not expressly disclose “maintained in a channel buffer” and “corresponding to a channel change”.

Toebes discloses “maintained in a channel buffer” (paragraphs 22 and 31, disclosing a “distribution buffer 468 configured to store and retrieve video stream data”, i.e., “maintained in a channel buffer”) and “corresponding to a channel change”. (paragraph 32, disclosing changing ”from channel-A 510 to channel-B 520”).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Toebes, in conjunction with the teachings of Witt. In particular, Toebes and Witt are combinable to disclose and teach “a client interface configured to receive a connection request corresponding to a channel change from a client device, the connection request associated with the media stream” and “a processor configured to identify a key frame and a plurality of predictive frames preceding the key frame in the media stream and

disregard the plurality of predictive frames maintained in the channel buffer". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11).

20. **As to Claim 22**, please see rejection for Claim 17, which recites the same limitations.

21. **As to Claim 23**, please see rejection for Claim 18, which recites the same limitations.

22. **As to Claim 24**, please see rejection for Claim 19, which recites the same limitations.

23. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al., further in view of U.S. Patent Publication No. 2007/0116437 A1 to Pun et al.

24. **As to Claim 6**, please note that Witt and Toebes disclose and teach the method as in the parent claim 1.

Witt discloses key frames and predictive frames (Figs. 2 and 3, disclosing key and predictive frames).

Witt does not expressly disclose wherein a first frame in the media stream is provided to the client device at the same time a second frame in the media stream is provided to a second client device already connected to the streaming server, wherein

the streaming server handles the time variance in the media stream viewed by different client devices.

Pun discloses wherein a first frame in the media stream is provided to the client device at the same time a second frame in the media stream is provided to a second client device already connected to the streaming server (paragraph 6, disclosing that the same “encoder”, i.e., “streaming server”, can provide the same "replicas or copies of the compressed bit stream”, i.e., the same MPEG transport stream containing the key and delta frame, for example, to “multiple decoders located at different locations”, i.e., multiple “client devices”, for decoding at the “multiple decoders” “at different times”, thus disclosing and teaching that the same data stream can be distributed to different client devices at different times and therefore, a first frame can be received at a client device while a different, second frame is being received at another client device), wherein the streaming server handles the time variance in the media stream viewed by different client devices (paragraph 6, disclosing distributing the same data stream to different client devices for “decoding at different times”, thus disclosing "handing the time variance in the media stream viewed by different client devices").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Pun, in conjunction with the teachings of Witt. In particular, Pun and Witt can be combined to disclose and teach “wherein the key frame in the media stream is provided to the client device at the same time a predictive frame in the media stream is provided to a second client device already connected to the streaming server, wherein the streaming server handles the

time variance in the media stream viewed by different client devices." The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Pun, paragraphs 3, 15-16).

25. **Claims 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2007/0044128 A1 to Witt, in view of U.S. Patent Publication No. 2007/0277219 A1 to Toebes et al., further in view of U.S. Patent Publication No. 2007/0242666 A1 to Barrett

26. **As to Claim 11**, please note that Witt and Toebes disclose and teach the method as in the parent claim 9.

Witt and Toebes do not expressly disclose wherein the client device is a mobile device.

Barrett discloses wherein the client device is a mobile device. (paragraph 48 disclosing a wireless "transceiver").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Barrett, in conjunction with the teachings of Witt and Toebes. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Toebes, paragraphs 2 and 11; Barrett, paragraphs 1, 6, and 7).

***Conclusion***

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on (571)272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Derrick W Ferris/

Supervisory Patent Examiner, Art Unit 2463

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L1 | 3708 | (370/503).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:29 |
| L2 | 12 | L1 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:29 |
| L3 | 2164 | (370/509).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:30 |
| L4 | 14 | L3 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:30 |
| L5 | 621 | (370/510).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:30 |



Petitioner Disney Ex-1004, 0239

| | | | | | | |
|---|---|---|---|---|---|---|
| L6 | 4 | L5 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:30 |
| L7 | 42 | (370/511).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:30 |
| L8 | 4 | L7 and ((referenc$3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:30 |
| L9 | 231 | (370/512).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:31 |
| L10 | 5 | L9 and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:31 |



Petitioner Disney Ex-1004, 0240

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|---|---|---|---|---|---|---|
| L11 | 171 | (370/513).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:31 |
| L12 | 3 | L11 and ((referenc $3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:31 |
| L13 | 216 | (370/395.64).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:31 |
| L14 | 22 | L13 and ((referenc $3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:31 |
| L15 | 13834 | (709/203).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:32 |



Petitioner Disney Ex-1004, 0241

| | | | | | | |
|---|---|---|---|---|---|---|
| L16 | 21 | L15 and ((referenc $3 or base or key or common) near5 frame or i$1frame) with (first or before or prior) same ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:32 |
| L17 | 418 | (709/209).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:32 |
| L18 | 6 | L17 and ((referenc $3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:32 |
| L19 | 1320 | (709/208).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2010/12/06 11:32 |
| L20 | 12 | L19 and ((referenc $3 or base or key or common) near5 frame or i$1frame) and ((predict$3 or intermedia$4 or chang$3 or delta) with frame or b $1frame or p $1frame) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2010/12/06 11:32 |

**EAST Search History (Interference)**

< This search history is empty>

**12/ 6/ 2010 11:33:22 AM**



Petitioner Disney Ex-1004, 0242

**C:\ Documents and Settings\ pcheng\ My Documents\ EAST\ Workspaces\ 11626340.wsp**



Petitioner Disney Ex-1004, 0243

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| *11626340* | 11626340 | JOHANSSON ET AL. |
| | **Examiner** | **Art Unit** |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | | | | | |
| | 1 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 2 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 3 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 4 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 5 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 6 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 7 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 8 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 9 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 10 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 11 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 12 | ✓ | ✓ | - | - | | | | | |
| | 13 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 14 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 15 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 16 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 17 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 18 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 19 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 20 | ✓ | ✓ | - | - | | | | | |
| | 21 | | | ✓ | ✓ | | | | | |
| | 22 | | | ✓ | ✓ | | | | | |
| | 23 | | | ✓ | ✓ | | | | | |
| | 24 | | | ✓ | ✓ | | | | | |



Petitioner Disney Ex-1004, 0244

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| *11626340* | 11626340 | JOHANSSON ET AL. |
| | **Examiner** | **Art Unit** |
| | PETER CHENG | 2463 |

| SEARCHED | | | |
|---|---|---|---|
| **Class** | **Subclass** | **Date** | **Examiner** |
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |
| ABOVE | UPDATED | 7/31/2010 | PC |
| ABOVE | UPDATED | 12/6/2010 | PC |

| SEARCH NOTES | | |
|---|---|---|
| **Search Notes** | **Date** | **Examiner** |
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 (updated 3/9/2010) | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/2009 (updated 3/9/2010 and 7/31/2010 and 12/6/2010) | pc |

| INTERFERENCE SEARCH | | | |
|---|---|---|---|
| **Class** | **Subclass** | **Date** | **Examiner** |
| | | | |

PTO/SB/30EFS (08/08)
Approved for use through 08/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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# REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
## (Submitted Only via EFS-Web)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Application Number | 11626340 | Filing Date | 2007-01-23 | Docket Number (if applicable) | MOBIP006/1720-1 | Art Unit | 2463 |
| First Named Inventor | Kay Johansson | | | Examiner Name | Chi Tang P. Cheng | | |

**This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.**
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

### SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the orde in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☒ Other Request for one-month extension of time

### MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

### FEES

**The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 504480

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (08/08)
Approved for use through 08/31/2008. OMB 0651-0031
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 contains a valid OMB control number.

| Signature of Registered U.S. Patent Practitioner | | | |
|---|---|---|---|
| Signature | /Audrey Kwan/ | Date (YYYY-MM-DD) | 2011-03-24 |
| Name | Avery Audrey Kwan | Registration Number | 46850 |

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is t file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Tim will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions fo 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.

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

# Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the informatio solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record ma be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop RCE, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on March 24, 2011.

Signed: /Latonia Ervin/
Latonia Ervin

# ***PRELIMINARY AMENDMENT***

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

Please consider the following amendments and remarks in response to the Office Action mailed December 23, 2010 and filed concurrently with a Request for Continued Examination.

**Amendments to the Claims** are shown in the listing of claims, which begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.



Petitioner Disney Ex-1004, 0249

## IN THE CLAIMS

What is claimed is:

1-24. (Canceled)

25. (New) A method, comprising:

receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer;

receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server;

receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request.

26. (New) The method of claim 25, wherein the first media stream is a first video stream and the second media stream is a second video stream.

27. (New) The method of claim 25, wherein the key frames are identified by detecting frames larger than a particular size.

28. (New) The method of claim 25, wherein the key frames are identified by detecting the start of a GOP.

29. (New) The method of claim 25, wherein the key frames are identified by flagging each start of a GOP as a key frame.

30. (New) The method of claim 25, wherein the key frame is an I-frame.

31. (New) The method of claim 25, wherein channel change does not occur until the second key frame can be provided to the client device.



Petitioner Disney Ex-1004, 0250

32. (New) A system, comprising:

an interface configured to receive a first media stream including a first plurality of frames and a second media stream including a second plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer and the second media stream received a the streaming server and maintained in a second channel buffer;

a processor configured to determine positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server;

wherein the processor is further configured to locate the second key frame in the second channel buffer and switch to the second media stream upon receiving a channel change request from a client device receiving the first media stream.

33. (New) The method of claim 32, wherein the first media stream is a first video stream and the second media stream is a second video stream.

34. (New) The method of claim 32, wherein the key frames are identified by detecting frames larger than a particular size.

35. (New) The method of claim 32, wherein the key frames are identified by detecting the start of a GOP.

36. (New) The method of claim 32, wherein the key frames are identified by flagging each start of a GOP as a key frame.

37. (New) The method of claim 32, wherein the key frame is an I-frame.

38. (New) The method of claim 32, wherein channel change does not occur until the second key frame can be provided to the client device.

39. (New) An apparatus, comprising:

means for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer;

means for receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

means for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining



Petitioner Disney Ex-1004, 0251

positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server;

means for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

means for locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request.

40. (New) The apparatus of claim 39, wherein the first media stream is a first video stream and the second media stream is a second video stream.

41. (New) The apparatus of claim 39, wherein the key frames are identified by detecting frames larger than a particular size.

42. (New) The apparatus of claim 39, wherein the key frames are identified by detecting the start of a GOP.

43. (New) The apparatus of claim 39, wherein the key frames are identified by flagging each start of a GOP as a key frame.

44. (New) The apparatus of claim 39, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0252

## REMARKS/ARGUMENTS

In the previous Office Action, claims 1-11, 13-19, and 21-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Witt in view of Toebes (2007/0277219). To facilitate prosecution, claims 1-24 are now canceled and claims 25-44 are new.

Witt describes prior art video data streams and video data streams according to "invention principles." Witt describes a prior art video data stream transmitted to a client device in paragraph [0029]. "FIG. 2A is an illustrative view of the Video Data Stream. The key frames 2 and delta frames 12 described in FIG. 1 are encoded into a digital video stream 18. Encoded digital video stream 18 contains frequent periodic key frames 2. The key frames 2 are periodically placed between delta frames 12 to allow a user to access the video stream 18 from a desired start point. When a user desires to view a transmission at a point for which the data is encoded as a delta frame 12, the viewer is either directed to the closest key frame 2 or constructs the desired start frame from the previous key frame 2 and subsequent delta frames 12." [0029] As noted, prior art systems transmit a data stream to a client and the client device locates the closest key frame or constructs the desired start frame. The video data stream sent from the server is sent with key frames and delta frames without selection and rearrangement.

Toebes states "[0031] Distribution buffer 540 receives and distributes a particular, user selected video stream, in order to limit the bandwidth needed by a downstream portion of a network. For example, distribution buffer 540 may be a particular embodiment of either distribution buffer 468 or distribution buffer 484. Distribution buffer 540 may receive a sequence of media frame sets 542 each comprising a media frames having a particular frame type 544 and identified by a frame index 546. The contents of distribution buffer 540 may be modified based on a changing user selection. The contents of distribution buffer 450 then may be provided through DSLAM 480 and through RG 490 to user STB 402. Alternatively, distribution buffer 484 may receive the video/media stream directly, and the contents of distribution buffer 484 may be modified based on a changing user selection. The contents of distribution buffer 484 then may be provided through RG 490 to user STB 402. Distribution buffer 450 may be considered a cached data stream since the video stream from broadcast feed 440 is queued prior to decoding by user STB 402. The alterability of distribution buffer 450 provides an opportunity to insert a generated independent frame (I-Frame) in a proper position and route subsequent dependent data frames into distribution buffer 450 to provide reduction of a channel selection transition delay."



Petitioner Disney Ex-1004, 0253

The Examiner acknowledges that Witt does not disclose receiving a connection request "corresponding to a channel change." It is respectfully submitted that the materials cited by the Examiner in Toebes actually teach away from using the mechanisms recited in the independent claims in the context of a channel change. That is, the materials cited teach away from "disregarding the plurality of predictive frames preceding the key frame maintained in the channel buffer" and transmitting the same "key frame to the client device in response to the connection request corresponding to the channel change" in the context of a channel change.

Nonetheless, claims 1-24 have been canceled and new claims 25-40 have been provided to facilitate prosecution. The new claims are believed supported by the original Claims, Specification, and Drawings. For example, "[0046] Figure 5 is a flow process diagram showing one example of streaming server processing. At 501, media streams are received. According to various embodiments, media streams are continuously being received at a streaming server. At 503, media streams are maintained in multiple buffers. At 505, key frames in media streams are identified. In some examples, identifying key frames may involve determining the video codec, the GOP size, and/or the frame size and performing decoding or partial decoding of frames. A streaming server may be able to determine key frames by identifying the start of a GOP and the GOP size and flagging each start of a GOP as a key frame. A streaming server may also identify larger frames as key frames."

Furthermore, "[0047] Partial decoding or full decoding can also be used. At 507, a connection request from a client device is received. At 509, a key frame to initially provide to the client device is identified. In some examples, the key frame identified is the earliest key frame for the requested channel available in a buffer for the channel. At 511, the key frame and subsequent predictive and key frames are sent to the client device 511."

None of the materials cited by the Examiner is believed to sufficiently teach or suggest "determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining the positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server."



Petitioner Disney Ex-1004, 0254

Furthermore, none of the materials cited by the Examiner is believed to sufficiently teach or suggest "locating the second key frame in the second media stream and switching to the second media stream specifically at the second key frame in response to the channel change request."

In light of the above remarks for the independent claims, it is respectfully submitted that all pending claims are allowable. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan/

Avery Audrey Kwan
Reg. No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100
akwan@wavsip.com



Petitioner Disney Ex-1004, 0255

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Avery Audrey Kwan/Latonia Ervin |
| **Attorney Docket Number:** | MOBIP006/1720-1 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |
| Extension - 1 month with $0 paid | 1251 | 1 | 130 | 130 |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| Request for continued examination | 1801 | 1 | 810 | 810 |
| | | **Total in USD ($)** | | **940** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 9734509 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Avery Audrey Kwan/Latonia Ervin |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006/1720-1 |
| **Receipt Date:** | 24-MAR-2011 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 17:04:10 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Deposit Account |
| Payment was successfully received in RAM | $940 |
| RAM confirmation Number | 3833 |
| Deposit Account | 504480 |
| Authorized User | |

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Request for Continued Examination (RCE) | MOBIP006_RCE_032411.pdf | 782230<br>29c42cb272eca2f32392da8ad3c15ba6ffff2182 | no | 3 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | | MOBIP006_pamd_032411.pdf | 95053<br>ecfb9742428c68104649fc58ab1f1914bfb0a0bd | yes | 7 |

**Multipart Description/PDF files in .zip description**

| Document Description | Start | End |
|---|---|---|
| Amendment Submitted/Entered with Filing of CPA/RCE | 1 | 1 |
| Claims | 2 | 4 |
| Applicant Arguments/Remarks Made in an Amendment | 5 | 7 |

| | | | | | |
|---|---|---|---|---|---|
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | Fee Worksheet (PTO-875) | fee-info.pdf | 32086<br>a22611c74c79e65f2ad63f81f3373451ea33ea8a | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | | **Total Files Size (in bytes):** | 909369 | |

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**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. 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.

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT 03/24/2011 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * 20 | Minus | ** 23 | = 0 | X $ = | | OR | X $52= | 0 |
| Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $220= | 0 |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/EVELYN G. NIMMONS/

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.*

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006/1720-1 | 1023 |

22434 7590 07/29/2011

Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| **ART UNIT** | **PAPER NUMBER** |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 07/29/2011 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@wavsip.com



Petitioner Disney Ex-1004, 0262

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 March 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *25-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.



Petitioner Disney Ex-1004, 0263

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/24/11 has been entered.

### *Specification*

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

In particular, with respect to the independent claims 25, 32 and 39, there does not appear to be sufficient support or antecedent basis in the Specification for the claimed limitations and features involving the claimed "first media stream" and "second media stream", in general. In particular, for example, there does not appear to be sufficient support in the specification for the limitations:

“means for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream; means for locating the second key frame in

the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request."

### *Response to Arguments*

3. Applicant's arguments filed 3/24/11 have been fully considered but they are moot in light of the new grounds of rejection set forth below.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 25-28, 30-35, 37-42 and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2011/0131622 A1 to Wu et al., in view of U.S. Patent Publication No. 2007/0044128 A1 to Witt.

3. **As to Claim 39**, Wu discloses an apparatus, comprising:

means for (Fig. 3, “aggregation edge 301” and paragraph 28, teaching that such “aggregation edge 301” contains a “video acceleration module VAM", all teaching such "means for”) receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server (Fig. 3, “aggregation edge 301” and paragraph 28, teaching that such “aggregation edge 301” contains a “video acceleration module VAM", all teaching such “streaming server”) and maintained in a first channel

buffer (paragraphs 13 and 28-29, teaching that each media stream "has an associated cache memory upon which is stored the previous set of I, P and B frames for That respective stream", such cache memory teaching such recited "first channel buffer" and further teaching, in reference to Fig. 4, "streaming buffers" that are "fixed buffers for each multicast stream [the VAM at the edge 301] is sourcing", further teaching this limitation);

means for receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer (paragraphs 13 and 28-29, teaching that each media stream "has an associated cache memory upon which is stored the previous set of I, P and B frames for That respective stream", such cache memory teaching such recited "second channel buffer" and further teaching, in reference to Fig. 4, "streaming buffers" that are "fixed buffers for each multicast stream [the VAM at the edge 301] is sourcing", further teaching this limitation);

means for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame] corresponding to that particular stream is immediately read from the cache memory", thus teaching to an ordinary artisan that the position of a key frame [i.e., the "previous I frame corresponding to that particular stream"] must be determined in order for such "previous I frame" to be "immediately read" from the cache/buffer, thus teaching this limitation), the plurality of key frames

including a first key frame in the first channel buffer and a second key frame in the second channel buffer (paragraph 13, teaching that for each stream, its corresponding stream buffer/"cache memory" contains at least "the previous I, P and B frames", teaching this limitation),

wherein determining positions of the plurality of key frames includes determining video codec information (paragraphs 14-24, teaching that the MPEG2 standard defines specific video codec specifications for I, P and B frames, thus teaching that the MPEG2 standard teaches methods of distinguishing and determining I frames [i.e., "key frames"] from the other frame types based on video codec information, thus teaching this limitation), determining a group of pictures (GOP) size (paragraph 18, teaching that the GOP size is one consideration in the delineation of I, P and B frames, teaching "determining a GOP size");

means for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client has switched] corresponding to that particular stream is immediately read from the cache memory", teaching this limitation);

means for locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request (paragraphs 13 and 30 and Fig. 5, teaching that "when a

viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client has switched] corresponding to that particular stream is immediately read from the cache memory" and "in process block 505, the VAM starts bursting from STRMBUF [i.e., the channel buffer for the new, second channel/stream] beginning with the preamble and first I frame into the port buffer PBUF", thus teaching to an ordinary artisan "switching to the second media stream specifically at the second key frame in response to the channel change request" and "means for locating the second key frame in the second channel buffer" because the position of a key frame [i.e., the "second key frame"] must be determined in order for such "previous I frame" to be "immediately read" from the cache/buffer, thus teaching this limitation)

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size and performing at least partial decoding of the media stream (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation) using a processor at the streaming server (Fig. 4, "processor" comprising "server30", "key/delta frame determinator 32" and other components, thus teaching "using a processor at the streaming server").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and

teach "wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

4. **As to Claim 40**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the first media stream is a first video stream and the second media stream is a second video stream (paragraph 13, teaching multiple broadcast media streams and paragraphs 14-24, teaching MPEG2 standard for video encoding, thus teaching this limitation).

5. **As to Claim 41**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames have the largest frame size of the three types of MPEG frames, I, P and B frames (paragraph 15-18).

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting frames larger than a particular size". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

6. **As to Claim 42**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames appear at the start of a GOP (Fig. 2 and paragraph 15-18).

Witt discloses and teaches wherein determining the plurality of key frames includes determining the structure of the received data (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting the start of a GOP". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

7. **As to Claim 44**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the key frame is an I-frame (Fig. 2 and paragraphs 14-24, teaching MPEG2 standard for encoding frames wherein the "key/reference frame" is the so-called I-frame).

8. **As to Claim 32,** please see rejection for Claim 39.

9. **As to Claim 33,** please see rejection for Claim 40.

10. **As to Claim 34,** please see rejection for Claim 41.

11. **As to Claim 35,** please see rejection for Claim 42.

12. **As to Claim 37,** please see rejection for Claim 44.

13. **As to Claim 38**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 32.

Wu further discloses wherein channel change does not occur until the second key frame can be provided to the client device (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client has switched] corresponding to that particular stream is immediately read from the cache memory" and "in process block 505, the VAM starts bursting from STRMBUF [i.e., the channel buffer for the new, second channel/stream] beginning with the preamble and first I frame into the port buffer PBUF", thus teaching this limitation).

14. **As to Claim 25,** please see rejection for Claim 39.

15. **As to Claim 26,** please see rejection for Claim 40.

16. **As to Claim 27,** please see rejection for Claim 41.

17. **As to Claim 28,** please see rejection for Claim 42.

18. **As to Claim 30,** please see rejection for Claim 44.

19. **As to Claim 31,** please see rejection for Claim 38.

20. **Claims 29, 36 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2011/0131622 A1 to Wu et al., in view of U.S. Patent Publication No. 2007/0044128 A1 to Witt, further in view of U.S. Patent Publication No. 2007/0107026 A1 to Sherer et al.

21. **As to Claim 43,** Wu and Witt teach the apparatus as in the parent claim 39.

Wu further discloses key frames appear at the start of a GOP (Fig. 2 and paragraph 15-18).

Sherer teaches wherein the key frames are identified by flagging the first key frame of a stream to be channel-switched to as a key frame (paragraph 39, “the stream server indicates channel change boundaries between unicast streams by ... using a marker bit or an explicit signal at the first I-frame of a new unicast stream", teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Sherer, in conjunction with the teachings of Wu. In particular, Sherer, Wu and Witt are combinable to disclose and teach “wherein the key frames are identified by flagging each start of a

GOP as a key frame". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Sherer, paragraphs 3-11).

22. **As to Claim 36,** please see rejection for Claim 43.

23. **As to Claim 29,** please see rejection for Claim 43.

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on (571)272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Derrick W Ferris/
Supervisory Patent Examiner, Art Unit 2463

| Notice of References Cited | Application/Control No. 11/626,340 | Applicant(s)/Patent Under Reexamination JOHANSSON ET AL. | |
|---|---|---|---|
| | Examiner PETER CHENG | Art Unit 2463 | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|---|---|---|---|---|
| * | A | US-2007/0107026 | 05-2007 | Sherer et al. | 725/097 |
| * | B | US-2011/0131622 | 06-2011 | Wu et al. | 725/109 |
| | C | US- | | | |
| | D | US- | | | |
| | E | US- | | | |
| | F | US- | | | |
| | G | US- | | | |
| | H | US- | | | |
| | I | US- | | | |
| | J | US- | | | |
| | K | US- | | | |
| | L | US- | | | |
| | M | US- | | | |

**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
|---|---|---|---|---|---|---|
| | N | | | | | |
| | O | | | | | |
| | P | | | | | |
| | Q | | | | | |
| | R | | | | | |
| | S | | | | | |
| | T | | | | | |

**NON-PATENT DOCUMENTS**

| * | | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
| | U | |
| | V | |
| | W | |
| | X | |

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



Petitioner Disney Ex-1004, 0275

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| S115 | 1721 | ((referenc$3 or base or key or common) near5 frame or i$1frame) same channel $3 near5 (switch$3 or chang$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/07/20 12:20 |
| S116 | 661 | ((referenc$3 or base or key or common) near5 frame or i$1frame) with channel $3 near5 (switch$3 or chang$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/07/20 12:20 |
| S117 | 1593 | ((referenc$3 or base or key) near5 frame or i $1frame) same channel $3 near5 (switch$3 or chang$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/07/20 12:21 |
| S118 | 631 | ((referenc$3 or base or key) near5 frame or i $1frame) with channel$3 near5 (switch $3 or chang $3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/07/20 12:21 |



Petitioner Disney Ex-1004, 0276

| | | | | | | |
|---|---|---|---|---|---|---|
| S119 | 312 | ((referenc$3 or base or key) near5 frame or i $1frame) with channel$3 near5 (switch $3 or chang $3) and ("370" or "725").clas. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/07/20 12:22 |
| S120 | 184 | ((referenc$3 or key) near5 frame or i $1frame) with channel$3 near5 (switch $3 or chang $3) and ("370" or "725").clas. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/07/20 12:22 |

**EAST Search History (Interference)**

<This search history is empty>

**7/25/2011 1:12:42 PM**
**C:\Documents and Settings\pcheng\My Documents\EAST\Workspaces\11626340.wsp**



Petitioner Disney Ex-1004, 0277

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | | | | |
| | 1 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 2 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 3 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 4 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 5 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 6 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 7 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 8 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 9 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 10 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 11 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 12 | ✓ | ✓ | - | - | - | | | | |
| | 13 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 14 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 15 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 16 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 17 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 18 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 19 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 20 | ✓ | ✓ | - | - | - | | | | |
| | 21 | | | ✓ | ✓ | - | | | | |
| | 22 | | | ✓ | ✓ | - | | | | |
| | 23 | | | ✓ | ✓ | - | | | | |
| | 24 | | | ✓ | ✓ | - | | | | |
| | 25 | | | | | ✓ | | | | |
| | 26 | | | | | ✓ | | | | |
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| | 28 | | | | | ✓ | | | | |
| | 29 | | | | | ✓ | | | | |
| | 30 | | | | | ✓ | | | | |
| | 31 | | | | | ✓ | | | | |
| | 32 | | | | | ✓ | | | | |
| | 33 | | | | | ✓ | | | | |
| | 34 | | | | | ✓ | | | | |
| | 35 | | | | | ✓ | | | | |
| | 36 | | | | | ✓ | | | | |



Petitioner Disney Ex-1004, 0278

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | | | | |
| | 37 | | | | | ✓ | | | | |
| | 38 | | | | | ✓ | | | | |
| | 39 | | | | | ✓ | | | | |
| | 40 | | | | | ✓ | | | | |
| | 41 | | | | | ✓ | | | | |
| | 42 | | | | | ✓ | | | | |
| | 43 | | | | | ✓ | | | | |
| | 44 | | | | | ✓ | | | | |

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

## SEARCHED

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |
| ABOVE | UPDATED | 7/31/2010 | PC |
| ABOVE | UPDATED | 12/6/2010 | PC |
| ABOVE | UPDATED | 7/25/11 | PC |

## SEARCH NOTES

| Search Notes | Date | Examiner |
|---|---|---|
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 (updated 3/9/2010) | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/2009 (updated 3/9/2010 and 7/31/2010 and 12/6/2010 and 7/25/11) | pc |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| | | | |

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop Amendment Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on September 26, 2011.

Signed: /Latonia Ervin/
Latonia Ervin

# ***RESPONSE TO OFFICE ACTION***

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

Please consider the following remarks and arguments in response to the Office Action mailed July 29, 2011.

**A Listing of the Claims** begins on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.



Petitioner Disney Ex-1004, 0281

## IN THE CLAIMS

What is claimed is:

1-24. (Canceled)

25. (Previously Presented) A method, comprising:

receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer;

receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server;

receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request.

26. (Previously Presented) The method of claim 25, wherein the first media stream is a first video stream and the second media stream is a second video stream.

27. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting frames larger than a particular size.

28. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting the start of a GOP.

29. (Previously Presented) The method of claim 25, wherein the key frames are identified by flagging each start of a GOP as a key frame.

30. (Previously Presented) The method of claim 25, wherein the key frame is an I-frame.

31. (Previously Presented) The method of claim 25, wherein channel change does not occur until the second key frame can be provided to the client device.



Petitioner Disney Ex-1004, 0282

32. (Previously Presented) A system, comprising:

an interface configured to receive a first media stream including a first plurality of frames and a second media stream including a second plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer and the second media stream received a the streaming server and maintained in a second channel buffer;

a processor configured to determine positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server;

wherein the processor is further configured to locate the second key frame in the second channel buffer and switch to the second media stream upon receiving a channel change request from a client device receiving the first media stream.

33. (Previously Presented) The method of claim 32, wherein the first media stream is a first video stream and the second media stream is a second video stream.

34. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting frames larger than a particular size.

35. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting the start of a GOP.

36. (Previously Presented) The method of claim 32, wherein the key frames are identified by flagging each start of a GOP as a key frame.

37. (Previously Presented) The method of claim 32, wherein the key frame is an I-frame.

38. (Previously Presented) The method of claim 32, wherein channel change does not occur until the second key frame can be provided to the client device.

39. (Previously Presented) An apparatus, comprising:

means for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer;

means for receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

means for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining



Petitioner Disney Ex-1004, 0283

positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server;

means for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

means for locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request.

40. (Previously Presented) The apparatus of claim 39, wherein the first media stream is a first video stream and the second media stream is a second video stream.

41. (Previously Presented) The apparatus of claim 39, wherein the key frames are identified by detecting frames larger than a particular size.

42. (Previously Presented) The apparatus of claim 39, wherein the key frames are identified by detecting the start of a GOP.

43. (Previously Presented) The apparatus of claim 39, wherein the key frames are identified by flagging each start of a GOP as a key frame.

44. (Previously Presented) The apparatus of claim 39, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0284

## REMARKS/ARGUMENTS

Claims 25-44 are pending. The Examiner rejected claims 25, 32, and 39 as not having sufficient support or antecedent basis. The Examiner argues that the terms first media stream and second media stream are not supported by the specification. Applicants respectfully disagree.

The Specification provides ample support for multiple media streams, which is believed to provide ample support for a first and a second media stream. For example, Figure 5 and associated description state "At 501, media streams are received. According to various embodiments, media streams are continuously being received at a streaming server. At 503, media streams are maintained in multiple buffers. At 505, key frames in media streams are identified." Furthermore, Figure 2 and associated description state "[0029] Figure 2 is a diagrammatic representation showing another example of a sequence of frames. According to various embodiments, a sequence of frames such as a sequence of video frames is received at a streaming server. In some embodiments, the sequence of video frames is associated with a particular channel and a buffer is assigned to each channel. Other sequences of video frames may be held in other buffers assigned to other channels. In other examples, buffers or portions of buffers are maintained for separate video streams and separate channels." Still furthermore, "[0044] According to various embodiments, buffers 431, 433, 435, and 437 are provided on a per channel basis."

The Examiner also argues that "receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream; [and] locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request" is not sufficiently supported. Applicants respectfully disagree. This recitation is believed supported by the original Claims, Specification, and Drawings. For example, "Connection requests can result from a variety of user actions such as a channel change, an application launch, a program purchase, etc. In some instances, a streaming server 421 simply provides the first available frame followed by subsequent frames in response to a client device connection request. However, the techniques of the present invention contemplate an intelligent streaming server that identifies key frames in video streams and provides a key frame initially to a client device. The key frame includes substantially all the



Petitioner Disney Ex-1004, 0285

information needed for a client device to begin display[ing] a correct video frame." Furthermore, "[0023] When a connection request is received from a client device, a key frame is provided to the client device even if the key frame is not the first available frame. That is, a key frame is provided even if one or more predictive frames are available before the key frame. This allows a client device to receive a frame that it can display without distortion. Subsequent predictive frames can then reference the key frame. Connection requests such as channel changes or initial channel requests are handled efficiently. Although there may still be delay in transmission and delay in buffering and decoding at a client device, delay because of the receipt of unusable predictive frames is decreased as a streaming server will initially provide a usable key frame to a client device."

Further examples of support for each of the elements of the independent claims are provided below. The independent claims recite "receiving a first media stream including a first plurality of frames, the first media stream received at the streaming server and maintained in a first channel buffer; receiving a second media stream including a second plurality of frames, the second media stream received at the streaming server and maintained in a second channel buffer."

These elements are believed supported by description such as "[0023] According to various embodiments, a streaming server identifies key frames in media streams maintained in one or more buffers... [0024] In some embodiments, the sequence of video frames is associated with a particular channel and a buffer is assigned to each channel. Other sequences of video frames may be held in other buffers assigned to other channels. In other examples, buffers or portions of buffers are maintained for separate video streams and separate channels. In particular embodiments, key frame 101 is received early along time axis 141. One example of a key frame 101 is an I frame that includes substantially all of the data needed for a client device to display a frame of video. Key frame 101 is followed by predictive frames 103, 105, 107, 109, 111, 113, 115, and 117."

The independent claims also recite "determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and



Petitioner Disney Ex-1004, 0286

performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server." These elements are believed supported by description such as "[0045] In some examples, identifying key frames may involve determining the video codec, the GOP size, and/or the frame size and performing decoding or partial decoding of frames. A streaming server may be able to determine key frames by identifying the start of a GOP and the GOP size and flagging each start of a GOP as a key frame."

The independent claims also recite "receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream; locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request." These elements are believed supported by description such as "[0023] According to various embodiments, a streaming server identifies key frames in media streams maintained in one or more buffers. When a connection request is received from a client device, a key frame is provided to the client device even if the key frame is not the first available frame. That is, a key frame is provided even if one or more predictive frames are available before the key frame. This allows a client device to receive a frame that it can display without distortion. Subsequent predictive frames can then reference the key frame. Connection requests such as channel changes or initial channel requests are handled efficiently. Although there may still be delay in transmission and delay in buffering and decoding at a client device, delay because of the receipt of unusable predictive frames is decreased as a streaming server will initially provide a usable key frame to a client device."

Claims 25-28, 30-35, 37-42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the primary reference Wu (2011/0131622) in view of Witt (2007/0044128). It is respectfully submitted that Wu and Witt do not teach all of the elements of the independent claims. Furthermore, it is respectfully submitted that Wu does not qualify as prior art under any 35 U.S.C. 102 or 103 section. Wu has a filing date of January 28, 2011, according to the USPTO version of application number 2011/0131622. The Wu filing date of January 28, 2011 is well after the priority date of the present application. Furthermore, Wu does not appear to benefit from any priority claim according to the USPTO version of application number 2011/0131622. Consequently, Wu cannot be used as a prior art reference in forming a 35 U.S.C. 103(a) rejection against the present claims.



Petitioner Disney Ex-1004, 0287

In light of the above remarks for the independent claims, it is respectfully submitted that all pending claims are allowable. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan/

Avery Audrey Kwan
Reg. No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100
akwan@wavsip.com



Petitioner Disney Ex-1004, 0288

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 11053326 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Avery Audrey Kwan/Latonia Ervin |
| **Filer Authorized By:** | Avery Audrey Kwan |
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| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
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| 1 | | MOBIP006_ResponsetoOfficeAction_092611.pdf | 98914<br>bacbe4bdabeff98495118b80cecb798c6b971447 | yes | 8 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Amendment/Req. Reconsideration-After Non-Final Reject | 1 | 1 |
| | Claims | 2 | 4 |
| | Applicant Arguments/Remarks Made in an Amendment | 5 | 8 |
| **Warnings:** | | | |
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| | **Total Files Size (in bytes):** | 98914 | |

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PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY ☐ RATE ($) | SMALL ENTITY ☐ FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT 09/26/2011 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * 20 | Minus | ** 23 | = 0 | X $ = | | OR | X $60= | 0 |
| Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $250= | 0 |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/ERIC V. BURNS/

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.*

| Information Disclosure Statement By Applicant (Use Several Sheets if Necessary) | | |
|---|---|---|
| | **Atty Docket No.** | MOBIP006/ 1720-1 |
| | **Application No.:** | 11/626,340 |
| | **Applicant** | JOHANSSON, Kay, et al. |
| | **Filing Date** | January 23, 2007 |
| | **Group** | 2463 |
| | **Conf. No.** | 1023 |
| | | 1 of 1 |
| | **Submitted on:** | October 24, 2011 |

**U.S. Patent Documents**

| Examiner Initial | No. | Patent No. | Date | Patentee | Class | Sub-class | Filing Date |
|---|---|---|---|---|---|---|---|
| | 1. | 2006/143669 | 06-29-2006 | Cohen Noam | | | |

**Foreign Patent or Published Foreign Patent Application**

| Examiner Initial | | Document No. | Publication Date | Country or Patent Office | Class | Sub-Class | Translation Yes | Translation No |
|---|---|---|---|---|---|---|---|---|
| | 2. | 1 523 190 | 04-13-2005 | EP | | | | |
| | 3. | 2006/041784 | 04/20/2006 | WO | | | | |

**Other Documents**

| Examiner Initial | No. | Author, Title, Place (e.g. Journal) of Publication, Date |
|---|---|---|
| | 4. | European Supplemental Search Report mailed July 4, 2011 for Application No. PCT/US 08/71 3763. (MOBIP006WO) |
| | 5. | |
| | 6. | |
| | 7. | |

| Examiner | Date Considered |
|---|---|
| | |

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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(71) Applicant: **MICROSOFT CORPORATION**
**Redmond, WA 98052 (US)**

(72) Inventors:
- **Green, Dustin L.**
  **Redmond WA 98052 (US)**
- **Baldwin, James A.**
  **Redmond WA 98052 (US)**
- **Barrett, Peter T.**
  **Redmond WA 98052 (US)**

(74) Representative: **Grünecker, Kinkeldey,**
**Stockmair & Schwanhäusser Anwaltssozietät**
**Maximilianstrasse 58**
**80538 München (DE)**

## (54) Fast channel change

(57) In an exemplary server implementation, a server is configured to retain at least one independent frame for each video channel of multiple video channels that are being distributed using multicast communications and is adapted to respond to channel change requests from clients by transmitting the retained at least one independent frame of a requested video channel to a requesting client using a unicast communication. In an exemplary method implementation, a method for fast channel changing in a multicast video distribution architecture includes: detecting a channel change request that indicates a requested channel, the requested channel corresponding to a multicast group; and transmitting a retained intra frame for the requested channel as a unicast communication.

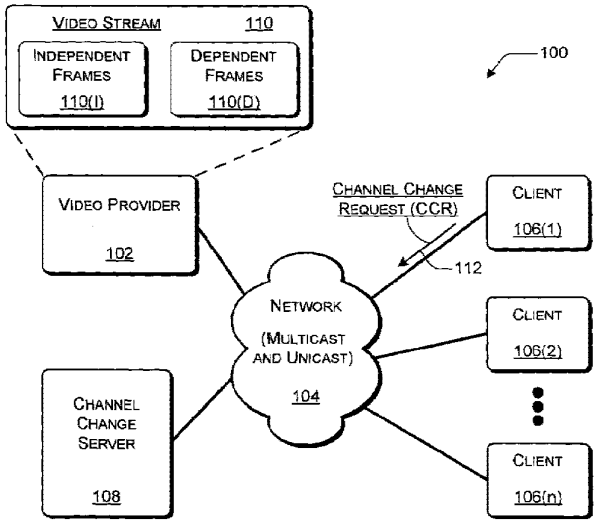



FIG. 1

EP 1 523 190 A1



Petitioner Disney Ex-1004, 0293

## Description

### TECHNICAL FIELD

**[0001]** This disclosure relates in general to changing channels in a digital video environment and in particular, by way of example but not limitation, to reducing the video presentation latency when changing from one video channel to another video channel in a digital multicast network.

### BACKGROUND

**[0002]** Television-based entertainment systems are expanding the programming and services that they offer. In addition to television programming content such as that found on broadcast and traditional cable networks, television service providers are adding on-demand video, as well as other interactive services, features, and applications. The existence of these specific services, features, and applications, as well as the continuing increase in the breadth of available general programming content, drives the adoption of digital network technology for television-based entertainment systems.

**[0003]** Digital technology enables satellite and cable operators to increase the number and kinds of services that they offer to subscribers and thus their average revenue per subscriber. Unfortunately, although digital technology offers many advantages to subscribers as compared to traditional analog networks, it also has a number of drawbacks. For example, changing channels in a digital television service typically takes longer than in an analog television service. This channel changing latency annoys and frustrates users of the digital television service.

**[0004]** This channel changing latency and other drawbacks of digital technology lead to higher rates of subscriber churn, which means that a large percentage of subscribers that try digital television service switch back to traditional analog service within a short time period. Switching subscribers from analog to digital service involves expenditures for network operators that range from broad, general marketing costs down to individual incentives and installation expenses. Furthermore, network operators usually have greater opportunity and/or ability to sell add-on services (e.g., extra channels, pay-per-view, etc.) in conjunction with digital network services. Consequently, reducing subscriber churn can financially benefit satellite and cable operators.

**[0005]** Accordingly, for e.g. television-based entertainment systems, there is a need for schemes and/or techniques to reduce the churn out of digital service and back to traditional analog service that results from subscribers being dissatisfied with the slower channel changing experienced with digital television service.

### SUMMARY

**[0006]** In an exemplary server implementation, a server is configured to retain at least one independent frame for each video channel of multiple video channels that are being distributed using multicast communications and is adapted to respond to channel change requests from clients by transmitting the retained at least one independent frame of a requested video channel to a requesting client using a unicast communication. In an exemplary method implementation, a method for fast channel changing in a multicast video distribution architecture includes: detecting a channel change request that indicates a requested channel, the requested channel corresponding to a multicast group; and transmitting a retained intra frame for the requested channel as a unicast communication.

**[0007]** Other method, system, approach, apparatus, server, device, media, procedure, arrangement, etc. implementations are described herein.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0008]** The same numbers are used throughout the drawings to reference like and/or corresponding aspects, features, and components.

**[0009]** FIG 1 illustrates an exemplary video distribution architecture that includes a network that is capable of both multicast and unicast communications.

**[0010]** FIG 2 illustrates a video distribution architecture that includes an exemplary channel change server that is capable of providing an intra frame in a unicast message.

**[0011]** FIG 3A illustrates a video distribution architecture that includes an exemplary channel change server that is capable of synchronizing a joining to a multicast group for a client using a join command.

**[0012]** FIG 3B illustrates a video distribution architecture that includes an exemplary channel change server that is capable of synchronizing a joining to a multicast group for a client using a join command and that is capable of providing a smoother initial video presentation experience.

**[0013]** FIG 4A illustrates a first exemplary mechanism for implementing a join command.

**[0014]** FIG. 4B illustrates a second exemplary mechanism for implementing a join command.

**[0015]** FIG 5 is a flow diagram that illustrates an exemplary method for fast channel changing with a combination multicast and unicast network.

### DETAILED DESCRIPTION

**[0016]** FIG 1 illustrates an exemplary video distribution architecture 100 that includes a network 104 that is capable of both multicast and unicast communications. Network 104 is implemented with multiple network elements (not separately shown in FIG 1). Each network



Petitioner Disney Ex-1004, 0294

element may be capable of facilitating both multicast and unicast communications, or each network element may be capable of facilitating either multicast or unicast communications. Furthermore, network 104 may include some network elements that participate in both multicast and unicast communications and other network elements that participate in either multicast or unicast communications (but not necessarily both).

**[0017]** As illustrated, a video provider 102, a channel change server 108, and one or more clients 106(1), 106 (2) ... 106(n) are coupled to network 104. Video provider 102 is capable of providing video for multiple channels to clients 106 utilizing a multicast scheme over network 104. Likewise, clients 106 are capable of receiving video for multiple channels from video provider 102 via a multicast scheme over network 104. Video as used herein may optionally include audio and/or associated audio/video presentation control information.

**[0018]** In a described implementation, video provider 102 receives, stores, and/or otherwise has access to video information for multiple channels as represented by the illustrated video stream 110 for a given particular channel. Each video stream 110 is comprised of independent frames 110(I) and dependent frames 110(D). Independent frames 110(I) may be decoded without reference to other video frames. Independent frames 110 (I) include, for example, intra (I) frames. In contradistinction, dependent frames 110(D) are decoded with reference to one or more other video frames. Dependent frames 110(D) include, for example, predicted (P) frames and bidirectional (B) frames. Consequently, because independent frames 110(I) may be decoded without waiting for any subsequent frames, independent frames 110(I) may be decoded more quickly and/or sooner than dependent frames 110(D), at least for a video stream 110 that is being received in real-time.

**[0019]** Generally, video stream 110 is distributed from video provider 102 over network 104 to selected clients 106 using a multicast scheme. For example, video provider 102 may correspond to a multicast source, network 104 may include multiple multicast replication points, and clients 106 may correspond to multiple multicast receivers. Furthermore, each video stream 110 for a particular video channel may correspond to a multicast stream in a multicast video distribution scheme.

**[0020]** In operation, each given client 106 that requests to receive a particular video channel is joined to a multicast group corresponding to that particular video channel. Thereafter, network 104 forwards a duplicate of the associated video stream 110 for the particular video channel that corresponds to the multicast group to which the given client 106 has been joined. Network 104 forwards duplicates of video stream 110 to selected clients 106 via one or more replication points (not separately shown in FIG 1).

**[0021]** When a given client 106 (e.g., client 106(1)) wishes to change channels, client 106(1) transmits a channel change request (CCR) 112 toward a video distribution headend or similar server or system. Channel change request 112 includes, in addition to an identifier of client 106(1), an indication of the requested video channel. As illustrated, video provider 102 and channel change server 108 separately or jointly comprise a video distribution headend. Channel change request 112 precipitates a multicast group change to a multicast group corresponding to the requested video channel.

**[0022]** After the multicast group change, video stream 110 can then be directed to the requesting client 106(1). However, a long channel changing latency may be experienced by the user of client 106(1) if client 106(1) begins receiving video stream 110 during a time period of dependent frames 110(D), which cannot be independently decoded. Client 106(1) waits to decode video until a next independent frame 110(I) is received by client 106 (1).

**[0023]** In a described implementation, channel change server 108 responds to channel change request 112 to ameliorate this channel changing latency. Specifically, channel change server 108 is adapted to unicast an independent frame 110(I) for the requested video channel to client 106(1). More specifically, channel change server 108 is adapted to transmit a retained independent frame 110(I) for the video stream 110 that is associated with the requested video channel to client 106(1) in a unicast communication. This retained independent frame 110(I) may then be decoded (and displayed) relatively quickly without regard to other frames 110(I or D) and without having to wait for the next independent frame 110(I).

**[0024]** Channel change server 108 may operate in any one or more of three exemplary modes when unicasting a retained independent frame. In a first mode, a retained independent frame comprises a cached previous independent frame. This first mode is described further below with reference to FIG 2. In a second mode, a retained independent frame comprises a cached previous (or possibly buffered) independent frame. This second mode is described further below with reference to FIG 3A. In a third mode, a retained independent frame comprises a buffered independent frame. This third mode is described further below with reference to FIG. 3B. The second and third modes are implementations that can also involve synchronized joining of clients to a relevant multicast group.

**[0025]** FIG 2 illustrates a video distribution architecture 200 that includes an exemplary channel change server 108 that is capable of providing an intra frame in a unicast message 208. With respect to video distribution architecture 100 (of FIG 1), video provider 102, channel change server 108, and clients 106(1, 2 ... n) remain connected to network 104. However, additional details regarding network 104 are provided.

**[0026]** As illustrated, network 104 includes at least one replication point 202. Network 104 usually includes many such replication points 202. In fact, multiple replication points 202 are typically located between a multi-



Petitioner Disney Ex-1004, 0295

cast source (e.g., video provider 102 and/or channel change server 108) and a multicast receiver (e.g., any client of clients 106). In other words, although only one replication point 202 is explicitly shown, video stream 110 may be communicated (e.g., forwarded and/or duplicated) by multiple replication points 202 between video provider 102 and clients 106.

**[0027]** In a described implementation, replication points 202 are realized as any of many different types of network elements or nodes. For example, replication points 202 may be routers, switches, and so forth. As multicast-capable nodes, replication points 202 are adapted to facilitate group membership, to duplicate/forward multicast communications, to handle multicast streams as identified by source and group address (S, G), to perform other multicast-related functions, some combination or subset thereof, and so forth. For example, replication points 202 may be capable of implementing communications in accordance with a multicast routing protocol (e.g., protocol independent multicast - sparse mode (PIM-SM)), in accordance with a group management protocol (e.g., internet group management protocol (IGMP)), and so forth.

**[0028]** IGMP is used by receiver hosts (e.g., at least clients 106) and replication points 202 to notify each other about conditions and changes to group membership. PIM-SM is used to propagate forwarding state information between and among replication points 202. IGMP defines messages that are used to join clients 106 to a group and to notify replication points 202 that a client 106 is leaving a group. Although an implementation is described primarily in the context of IGMP, other multicast protocols may alternatively be employed.

**[0029]** Video stream 110 is illustrated as an exemplary stream of I, P, and B frames. Video stream 110 may be coded using any video compression algorithm or technology, such as the Moving Pictures Expert Group 4th standard (MPEG-4; ISO/IEC 14496-1/2/3). The video frame series shown in FIG 2 is "IBBPBBPBBPBBI"; however, any video frame series may be present. In fact, the frame series for video stream 110 may be changing in an unknown and/or unpredictable fashion.

**[0030]** Channel change server 108 includes one or more processors 206 and at least one memory 204. Memory 204 includes processor-executable instructions that may be executed by processor 206 to perform function(s) as described further below. These processor-executable instructions may comprise hardware, firmware, software, some combination thereof, and so forth. Modules having processor-executable instructions that are stored as part of memory 204 include: I frame cacher 214, cached I frames 216, channel change request detector 218, and channel change request handler 220. These modules are described further herein below.

**[0031]** As noted generally above with reference to video stream 110, frames can be independently decoded, but P and B frames usually cannot. P frames reference up to one other frame, and B frames reference up to two other frames. When a particular client 106 joins a new multicast group corresponding to a different video channel, the particular client 106 is unable to begin decoding video stream 110 (or display any video for the user) until an I frame is received. Under an MPEG-4 video coding paradigm, the average delay between a channel change request 112 and receipt of an I frame during normal stream flow can be 1-2 seconds. This delay can lengthen to 5-10 seconds with next generation coding paradigms. Channel change server 108 can reduce this average delay and thereby ameliorate user frustrations arising from long channel changing delays.

**[0032]** In a described implementation, client 106(1) initially determines that a video channel change is desired (e.g., as a result of user input) and/or being demanded. Client 106(1) formulates a channel change request 112 that indicates a requested channel and identifies (perhaps implicitly) client 106(1). Channel change request 112 is transmitted upstream (e.g., as a unicast message) through one or more replication points 202.

**[0033]** Channel change request detector 218 configures channel change server 108 to be monitoring network 104 for channel change requests 112. When channel change request 112 from client 106(1) is detected, channel change request handler 220 is activated to respond to it. Specifically, channel change request handler 220 responds by sending a previous I frame for the requested channel to client 106(1) in a unicast message.

**[0034]** In order to be able to send previous I frames for requested channels to clients 106, channel change server 108 secures access to such previous I frames by retaining them at least temporarily. Specifically, I frame cacher 214 tracks each video stream 110 that is associated with each video channel and stores at least the immediately most recent previous I frame for each video stream 110. These most recent previous I frames are stored as cached I frames 216.

**[0035]** As illustrated in FIG 2, the activation time of channel change request 112 is indicated along video stream 110 as time of CCR 212. This time of CCR 212 falls between two I frames. Hence, retained I frame 210, which comprises a cached or previous I frame in this mode, has already been stored at cached I frames 216 by I frame cacher 214. Channel change request handler 220 extracts retained I frame 210 from cached I frames 216. Channel change request handler 220 also formulates a unicast message (UM) that includes retained I frame 210 and transmits it as retained I frame UM 208 toward client 106(1).

**[0036]** Client 106(1) receives retained I frame UM 208 and can decode and display retained I frame 210 thereof while awaiting the next I frame of video stream 110 that is associated with the requested channel. The faster that retained I frame UM 208 is received by client 106(1), the shorter the delay between when a user requests a channel change and when a full (initially static) video frame



Petitioner Disney Ex-1004, 0296

is displayed and the less likely that transmission of retained I frame 210 in retained I frame UM 208 is to interfere with the reception of current and possibly more-relevant (e.g., newer) frames of video stream 110. Hence, transmission bandwidth at least between client 106(1) and the replication point 202 that is most proximate thereto can be an issue. Addressing this transmission bandwidth issue is described below with reference to FIGS. 3A and 3B.

**[0037]** FIG 3A illustrates a video distribution architecture 300A that includes an exemplary channel change server 108 that is capable of synchronizing a joining to a multicast group for client 106(1) using a join command. With respect to video distribution architecture 200 (of FIG 2), video provider 102, channel change server 108, and clients 106(1, 2 ... n) remain connected to network 104. However, video provider 102 provides video streams 110 via channel change server 108. Although shown separately, video provider 102 and channel change server 108 (e.g., in FIGS. 1-3B) may be co-located and/or combined into a single server or system.

**[0038]** In a described implementation, channel change server 108 is adapted to buffer video stream 110 to delay it in time before multicast streaming distribution thereof. Channel change server 108 is capable of synchronizing a joining to a new channel to just prior to a new I frame for a video stream 110 that is associated with the new channel by "predicting" the occurrence of a next I frame. This quasi-prediction is accomplished using the time delay aspect of the buffered portion of video stream 110.

**[0039]** As illustrated, channel change server 108 includes memory 204 that has processor-executable instructions, which may be executed by processor 206 to perform function(s) as described further below. Modules having processor-executable instructions that are stored as part of memory 204 include: video stream bufferer 304, buffered video stream 306, join command issuer 308, and synchronization determiner 310. The functions of modules 304, 306, 308, and 310 may be implemented in conjunction with or separately from those of modules 214, 216, 218, and 220 (of FIG 2).

**[0040]** Channel change server 108 accepts video stream 110 (for each video channel) from video provider 102. Video stream bufferer 304 creates a buffered portion 312(T) of video stream 110 between a receive point (RP) and a send point (SP). Each currently-buffered buffered portion 312 is stored as buffered video stream 306. Buffered portion 312(T) corresponds to a current time "T". The receive point corresponds to the point along video stream 110 at which channel change server 108 is currently receiving from video provider 102. The send point corresponds to the point along video stream 110 at which channel change server 108 is currently sending toward clients 106.

**[0041]** In a described implementation, client 106(1) transmits upstream (e.g., as a unicast message) channel change request 112, possibly through one or more replication points 202 depending on the upstream path. The activation time of CCR 212 is indicated with respect to video stream 110 and buffered portion 312(T). Retained I frame 210 may be sent in retained I frame UM 208 by channel change request handler 220 (as described above with reference to FIG 2). In this mode, retained I frame 210 comprises a cached or buffered I frame. If the retained I frame 210 happens to be within buffered portion 312(T), it may be retrieved directly from buffered video stream 306, possibly even prior to being cached as part of cached I frames 216 if I frames are not cached until they are sent at the send point SP.

**[0042]** Because full decoding of true motion video does not start until reception of the next upcoming I frame, transmission of intervening P and/or B frames can be considered unnecessary bandwidth usage. To avoid such bandwidth squandering and to increase the likely speed at which retained I frame UM 208 is received by client 106(1), synchronization determiner 310 is capable of causing client 106( 1 ) to be joined to the multicast group corresponding to the requested channel just in time to receive the next decodable frame. This may, for example, amount to as little "excess bandwidth" utilization as a few packets before the next I frame to as much "excess bandwidth" as multiple frames. In this mode, the next decodable frame comprises another I frame.

**[0043]** Specifically, synchronization determiner 310 ascertains whether the next I frame is present within the current buffered portion 312 of video stream 110. At time of CCR 212, the next decodable frame 314 is not within buffered portion 312(T). However, after "X" unit(s) of time, the next decodable frame 314 is within buffered portion 312(T+X). When synchronization determiner 310 ascertains that the next decodable frame 314 is within the current buffered portion 312, synchronization determiner 310 determines that it is time to issue a join command and thus activates or prompts join command issuer 308.

**[0044]** Join command issuer 308, once activated, issues a join command over network 104 (not explicitly indicated in FIG 3A for clarity). The join command causes a join message 302 to be received at replication point 202. Join message 302 notifies replication point 202 that client 106(1) is to begin receiving the multicast stream that corresponds to the requested channel by joining client 106(1) to the multicast group for that multicast stream. This join message 302 may be transmitted from client 106(1) or join command issuer 308 of channel change server 108. The former is described further below with reference to FIG 4A, and the latter is described further below with reference to FIG. 4B. In the latter implementation, the join command that is issued by join command issuer 308 may comprise join message 302.

**[0045]** In a described implementation, the size of buffered portion 312 relates to an expected (including a known) time that is consumed when joining a client 106 to a multicast group of a multicast channel. This time



Petitioner Disney Ex-1004, 0297

may include a time period to effectuate a leave operation. By way of example, buffered portion 312 may correspond to a worst case (e.g., absolute or reasonable worst case) scenario for effectuating a join operation for any of the relevant clients 106. Alternatively, the size of buffered portion 312 may correspond to an average time to effectuate a multicast join operation, may be tailored for each individual or designated set of clients 106 if conditions of network 104 vary spatially or temporally, and so forth.

**[0046]** FIG 3B illustrates a video distribution architecture 300B that includes an exemplary channel change server 108 that is capable of synchronizing a joining to a multicast group for client 106(1) using a join command and that is capable of providing a smoother initial video presentation experience. Video distribution architecture 300A can result in a video gap or discontinuity that is experienced by a user of a client 106. This video gap/discontinuity results from the consecutive display of two non-consecutive I frames, which have multiple intervening undisplayed non-I frames. Video distribution architecture 300B ameliorates this video gap/discontinuity by smoothing the video presentation as described below.

**[0047]** For the sake of clarity, video stream bufferer 304, join command issuer 308, and synchronization determiner 310 are not shown in FIG 3B. However, a longer segment of video stream 110 is illustrated. Buffered portion 312(T*) is longer than buffered portion 312(T) (of FIG 3A). Buffered portion 312(T*) includes a joining time 316 and an I frame interval duration 318, as described below.

**[0048]** In a described implementation for this third mode, channel change server 108 is adapted to buffer video stream 110 to delay it in time, before multicast streaming distribution thereof, by at least the maximum distance between I frames plus the maximum join-time for client 106(1) to become joined to the multicast group corresponding to the requested channel. Channel change server 108 is capable of synchronizing a joining to a new channel to just after a new I frame for a video stream 110 that is associated with the new channel by "predicting" the occurrences of I frames. This quasi-prediction is accomplished using the time delay aspect of the buffered portion 312(T*) (e.g., the delay window) of video stream 110.

**[0049]** Channel change server 108 is adapted to retain I frames within buffered portion 312(T*). The retained I frames may be retained by I frame cacher 214 as cached I frames 216 or as recorded pointers/indexes to I frames that are in the buffered window. Alternatively, the retained I frames may be retained within buffered portion 312(T*) without using an I frame cacher 214. In a described implementation for this mode, retained I frame 210 comprises a buffered I frame.

**[0050]** When client 106(1) requests a channel change via a CCR 112, channel change server 108 provides the oldest retained I frame 210 within the delay window of buffered portion 312(T*) for which client 106(1) still has time to receive a retained I frame UM 208 and to join the multicast group in time to receive the frame immediately subsequent to the oldest retained I frame 210. In this manner, client 106(1) receives a contiguous set of frames, with the first frame being a retained I frame 210 arriving via a retained I frame UM 208 and the (initial) subsequent frames being non-I frames arriving via the multicast group. Client 106(1) pauses on the retained I frame 210 because it is sent "ahead of time", and client 106(1) then begins full motion video when it is time to play the immediately subsequent frame that is obtained from the delayed multicast stream.

**[0051]** Joining time 316 corresponds to the time consumed when joining a client 106 to a multicast group, as described above with reference to FIG 3A. I frame interval duration 318 corresponds to the greatest possible time period between successive I frames for the given coding scheme. As illustrated, a first time of CCR 212' is shown arriving just as joining time 316 is about to start. Consequently, a first retained I frame 210', which is a buffered I frame in this implementation of the third mode, and a first next decodable frame 314' are the first two frames that a client 106 receives to start video decoding. A second time of CCR 212" is shown arriving after expiration of joining time 316 with respect to retained I frame 210' but prior to expiration of a joining time 316 (not explicitly shown) with respect to retained I frame 210". Consequently, a second retained I frame 210", and a second next decodable frame 314" are the first two frames that a client 106 receives to start video decoding for second time of CCR 212".

**[0052]** FIG 4A illustrates a first exemplary mechanism 308*A for implementing a join command. Exemplary mechanism 308*A involves participation by client 106 as well as channel change server 108 and replication point 202. Specifically, channel change server 108 transmits a join instruction UM 402 to client 106 via replication point 202. Join instruction UM 402 stipulates to client 106 when to transmit its join message responsive to the determination made by synchronization determiner 310 (of FIGS. 3A and 3B) of channel change server 108. At the appointed stipulated time, client 106 transmits join message 302A to replication point 202 so that client 106 is joined to the multicast group corresponding to the requested channel in time to receive the next decodable frame 314 and without receiving a significant amount of earlier non-I (or inter) frame(s) or otherwise non-decodable frame(s).

**[0053]** This joining delay of the multicast stream facilitates bandwidth availability for the unicast delivery of retained I frame 210 (of FIGS. 2, 3A, and 3B). Replication point 202 may be, for example, the replication point 202 that is closest to client 106 and capable of multicasting the desired video stream 110.

**[0054]** To the extent that the join operation is precipitated by a join message 302A that is transmitted from client 106, exemplary mechanism 308*A comports with a more-typical multicast joining procedure. However,



Petitioner Disney Ex-1004, 0298

the logistics involved are non-trivial inasmuch as three network elements are involved in the instigation of the join message and because setting time constraints (e. g., as reflected by the size of buffered portion 312) becomes concomitantly more difficult and/or more extreme for worst case analysis. The joining procedure can be simpler and more certain if client 106 is not obligated to participate.

**[0055]** FIG 4B illustrates a second exemplary mechanism 308*B for implementing a join command. Exemplary mechanism 308*B involves participation by channel change server 108 and replication point 202. Specifically, channel change server 108 transmits a join message 302B to replication point 202. Join message 302B is transmitted responsive to the determination made by synchronization determiner 310 and likely involves less lead time for effectuating the joining operation with sufficient clearance to receive the next decodable frame 314. Join message 302B notifies replication point 202 that client 106 is to be joined to the multicast group corresponding to the requested channel. Exemplary mechanism 308*B entails enabling non-receiver hosts, such as sender/source hosts, to be capable of precipitating join operations on behalf of receiver hosts.

**[0056]** FIG 5 is a flow diagram 500 that illustrates an exemplary method for fast channel changing with a combination multicast and unicast network. Flow diagram 500 includes thirteen (13) blocks 502-526. Although the actions of flow diagram 500 may be performed in other environments and with a variety of e.g. software schemes, FIGS. 2, 3A-3B, and 4A-4B are used in particular to illustrate certain aspects and examples of the method.

**[0057]** For example, the actions of blocks 502-526 may be performed by a channel change server 108 and a client 106, possibly in conjunction with one or more replication points 202 of a network 104. As illustrated, channel change server 108 performs the actions of blocks 502-516, and client 106 performs the actions of blocks 518-526.

**[0058]** At block 502, a video stream is accepted. For example, channel change server 108 may accept one or more video streams 110 from an associated video provider 102. At block 504, a portion of the accepted video stream is buffered. For example, video stream bufferer 304 may delay each video stream 110 that is associated with each channel to create buffered portion 312 for each video stream 110. The buffered portions 312 may be stored as a set of buffered video streams 306 with frames that enter at the receiving point (RP) and "move" toward the sending point (SP).

**[0059]** At block 506, at least one I frame is retained. For example, I frame cacher 214 of channel change server 108 may retain the retained frame (e.g., retained I frame 210) of each video stream 110 that is associated with each channel as a set of cached I frames 216 or a set of indexes/pointers to frames in a buffered portion 312(T*). Alternatively, I frames may be retained by being buffered at known or determinable locations of buffered portion 312(T*). As indicated by the dashed arrow that diverges from point 528, the actions of blocks 502-506 are ongoing for channel change server 108.

**[0060]** At block 518, video is being received via multicast communication. For example, client 106 may be receiving video stream 110 from video provider 102 and/or channel change server 108 as a multicast stream over one or more replication points 202 of network 104. At block 520, a channel change request is transmitted as a unicast message. For example, client 106 may transmit a channel change request 112 as a unicast message toward channel change server 108. This channel change request 112 is effectively a request to switch from a first multicast group corresponding to a first video channel to a second multicast group corresponding to a second video channel, with the requested second video channel being indicated by channel change request 112.

**[0061]** At block 508, a channel change request is detected. For example, channel change request detector 218 of channel change server 108 may detect channel change request 112. If video distribution architecture 200 is implemented, channel change server 108 may be monitoring links of and/or interfaces to network 104 in the vicinity of video provider 102 for channel change requests 112, or video provider 102 may be forwarding channel change requests 112 (or channel change server 108 may be the intended recipient of channel change requests 112). If video distribution architecture 300A or 300B is implemented, channel change server 108 may be the intended recipient of channel change requests 112, and so forth.

**[0062]** At block 510, a retained I frame for the requested channel is retrieved. For example, channel change request handler 220 accesses cached I frames 216 and/or buffered portion 312(T*) of buffered video stream 306 to retrieve the retained I frame (e.g., retained I frame 210, including 210' and 210") for the video stream 110 associated with the requested channel. At block 512, the retained I frame for the requested channel is transmitted as a unicast message. For example, channel change request handler 220, after appropriate formulation, transmits retained I frame UM 208 toward client 106.

**[0063]** At block 522, the retained I frame for the requested channel is received as a unicast message. For example, client 106 may receive retained I frame UM 208, which is an example of a unicast communication, even though client 106 usually receives video streams 110 as multicast streams during standard video channel reception. At block 524, the retained I frame for the requested channel is displayed. For example, client 106 extracts the retained I frame for the requested channel from the retained I frame UM 208 and causes the retained I frame to be displayed. Depending on the time period until the next decodable frame 314 (including 314' and 314") is due, this static I frame presentation may continue for a noticeable time (e.g., up to 1-2 sec-



Petitioner Disney Ex-1004, 0299

onds in a typical MPEG-4 video coding implementation).

**[0064]** At block 514, the client's joining to the multicast group that corresponds to the requested channel is synchronized with regard to the next decodable frame. For example, for video distribution architectures 300A and 300B, synchronization determiner 310 of channel change server 108 may ascertain when the next decodable frame 314 is due to be sent to (and thereby when next decodable frame 314 is likely to be received or will be received in a worst-case scenario by) client 106. This next decodable frame 314 ascertainment may be performed with reference to buffered portion 312 (including buffered portion 312(T*) and joining time 316 thereof) for the video stream 110 that is associated with the requested channel. Once the timing of next decodable frame 314 is ascertained, synchronization determiner 310 determines the appropriate timing for the multicast joining operation of client 106 to the multicast group corresponding to the requested channel.

**[0065]** At block 516, a join command is issued for the requesting client. For example, join command issuer 308 may issue a join command with respect to client 106 responsive to a synchronization determination by synchronization determiner 310. The join command may comprise a join instruction unicast message 402 that is sent to client 106 to prompt client 106 to transmit a join message 302A at an appointed time to a replication point 202 (e.g., exemplary mechanism 308*A for implementing a join command). Alternatively, the join command may comprise a join message 302B that is sent "directly" to a replication point 202 on behalf of client 106 (e.g., exemplary mechanism 308*B for implementing a join command).

**[0066]** At block 526, video for the requested channel is received via multicast communication. For example, client 106 may receive video stream 110 that is associated with the requested channel via a corresponding multicast streaming group over network 104 using multiple replication points 202. In other words, after a replication point 202 has caused client 106 to be joined to the corresponding multicast streaming group responsive to a join message 302, at least that one replication point 202 duplicates (as necessary) and forwards video stream 110 to client 106.

**[0067]** The actions of blocks 512 and 516 may, in particular, be performed in a myriad of orders. For example, the issuance of block 516 may occur after the transmission of block 512, or the issuance and transmission of blocks 516 and 512 may occur substantially simultaneously or at least without consideration of the order of either. Alternatively, the issuance of block 516 may be performed after the transmission of block 512 unless a next I frame is of such temporal proximity (e.g., closer than a predetermined threshold period) that waiting to issue the join command jeopardizes the ability of a channel changing client to receive the next I frame.

**[0068]** The actions, aspects, features, components, etc. of FIGS. 1-5 are illustrated in diagrams that are divided into multiple blocks. However, the order, interconnections, layout, etc. in which FIGS. 1-5 are described and/or shown is not intended to be construed as a limitation, and any number of the blocks can be combined, rearranged, augmented, omitted, etc. in any manner to implement one or more systems, methods, devices, procedures, media, apparatuses, servers, arrangements, etc. for fast channel changing. Furthermore, although the description herein includes references to specific implementations, the illustrated and/or described implementations can be implemented in any suitable hardware, software, firmware, or combination thereof and using any suitable video distribution architecture(s), network element(s) and organization(s), video encoding standard(s), multicast and unicast scheme(s), and so forth.

**[0069]** With particular reference to FIGS. 2 and 3A-3B, a video provider 102 and/or a server 108 may include a variety of processor-accessible media. Such media may be any available media that is accessible by a computing or other (e.g., electronic) device. Such media may include both volatile and non-volatile media, removable and non-removable media, and storage (e.g., memory 204) and transmission media (e.g., links or nodes of network 104). The media may include processor-executable instructions.

**[0070]** Implementations for fast channel changing may be described in the general context of processor-executable instructions. Generally, processor-executable instructions include routines, programs, protocols, objects, interfaces, components, data structures, etc. that perform and/or enable particular tasks and/or implement particular abstract data types. Fast channel changing, as described in certain implementations herein, may also be practiced in distributed processing environments where tasks are performed by remotely-linked processing devices that are connected through a communications link and/or network. Especially but not exclusively in a distributed computing environment, processor-executable instructions may be located in separate storage media, executed by different processors, and/or propagated over transmission media.

**[0071]** Although systems, media, devices, methods, procedures, apparatuses, techniques, schemes, approaches, procedures, arrangements, and other implementations have been described in language specific to structural, logical, algorithmic, and functional features and/or diagrams, it is to be understood that the invention defined in the appended claims is not necessarily limited to the specific features or diagrams described. Rather, the specific features and diagrams are disclosed as exemplary forms of implementing the claimed invention.

## Claims

1. A method for fast channel changing in a multicast video distribution architecture, the method compris-



Petitioner Disney Ex-1004, 0300

ing:

detecting a channel change request that indicates a requested channel, the requested channel corresponding to a multicast group; and
transmitting a retained intra frame for the requested channel as a unicast communication.

**2.** The method as recited in claim 1, further comprising:

caching at least one previous intra frame for each channel of a plurality of channels as a set of cached intra frames; and
retrieving, responsive to the detecting, the retained intra frame for the requested channel from the set of cached intra frames, the retained intra frame comprising a previous intra frame.

**3.** The method as recited in claim 1, wherein:

the detecting comprises detecting the channel change request from a particular client; and
the transmitting comprises transmitting the retained intra frame to the particular client.

**4.** The method as recited in claim 1, further comprising:

synchronizing a multicast joining operation to the multicast group corresponding to the requested channel with regard to a next decodable frame of the requested channel.

**5.** The method as recited in claim 4, further comprising:

buffering a video stream portion;

wherein the synchronizing comprises determining when the next decodable frame is present within the buffered video stream portion.

**6.** The method as recited in claim 4, further comprising:

buffering a video stream portion;

wherein the synchronizing comprises determining when the retained intra frame reaches a joining time of the buffered video stream portion.

**7.** The method as recited in claim 4, further comprising:

issuing a join command responsive to the synchronizing.

**8.** The method as recited in claim 7, wherein the issuing comprises:

transmitting a join instruction communication to a client that made the channel change request, the join instruction communication stipulating a time at which the client is to transmit a join message to a replication point.

**9.** The method as recited in claim 7, wherein the issuing comprises:

transmitting a join message to a replication point.

**10.** The method as recited in claim 1, further comprising:

caching at least one previous intra frame for each channel of a plurality of channels as a set of cached intra frames;
retrieving, responsive to the detecting, the retained intra frame for the requested channel from the set of cached intra frames, the retained intra frame comprising a previous intra frame;
buffering a video stream portion;
synchronizing a multicast joining operation to the multicast group corresponding to the requested channel based, at least partially, on whether a next intra frame is present within the buffered video stream portion; and
issuing a join command responsive to the synchronizing.

**11.** The method as recited in claim 1, further comprising:

buffering a video stream portion;
buffering at least two intra frames for each channel of a plurality of channels to produce buffered intra frames;
retrieving, responsive to the detecting, the retained intra frame for the requested channel from the buffered intra frames with regard to a joining time of the buffered video stream portion;
synchronizing a multicast joining operation to the multicast group corresponding to the requested channel based, at least partially, on whether a next decodable frame is outside the joining time; and
issuing a join command responsive to the synchronizing.

**12.** One or more processor-accessible media comprising processor-executable instructions that, when executed, direct an apparatus to perform the method as recited in claim 1.



Petitioner Disney Ex-1004, 0301

13. A channel change server comprising:

cached intra frames for a plurality of video streams, each respective video stream of the plurality of video streams associated with a respective channel of a plurality of channels;
a channel change request detector that is capable of detecting channel change requests from individual clients of a plurality of clients; and
a channel change request handler that is configured to respond to a detected channel change request from a particular client of the plurality of clients by extracting a most recent intra frame of a video stream associated with a requested channel from the cached intra frames and by transmitting the extracted most recent intra frame to the particular client using a unicast communication;

wherein the channel change server is associated with multicast video distribution of the plurality of video streams.

14. The channel change server as recited in claim 13, further comprising:

an intra frame cacher that is adapted to extract intra frames from the plurality of video streams and to cache at least a most recent intra frame for each video stream of the plurality of video streams.

15. The channel change server as recited in claim 13, further comprising:

a join command issuer that is adapted to send a join message to a replication point to cause the replication point to join the particular client to a multicast group corresponding to the requested channel.

16. The channel change server as recited in claim 13, further comprising:

a join command issuer that is adapted to send a join instruction message to the particular client, the join instruction message stipulating an appointed time at which the particular client is to transmit a join message to a replication point.

17. The channel change server as recited in claim 13, further comprising:

a synchronization determiner that is adapted to synchronize a multicast joining operation for the particular client to a multicast group corresponding to the requested channel with regard to a next intra frame of the video stream associated with the requested channel.

18. The channel change server as recited in claim 17, wherein the synchronization determiner is further adapted to synchronize the multicast joining operation for the particular client to the multicast group corresponding to the requested channel using a quasi-predicted time of the next intra frame of the video stream associated with the requested channel.

19. The channel change server as recited in claim 17, further comprising:

a time-delayed buffered portion of the video stream that is associated with the requested channel;

wherein the synchronization determiner is further adapted to synchronize the multicast joining operation for the particular client to the multicast group corresponding to the requested channel with regard to the time-delayed buffered portion of the video stream that is associated with the requested channel.

20. The channel change server as recited in claim 19, wherein a size of the time-delayed buffered portion corresponds to a likely or possible time period consumed when joining the particular client to the multicast group corresponding to the requested channel.

21. The channel change server as recited in claim 19, wherein the synchronization determiner is further adapted to determine that a join command is to be issued when the synchronization determiner ascertains that the next intra frame is present within the time-delayed buffered portion of the video stream that is associated with the requested channel.

22. The channel change server as recited in claim 19, wherein the synchronization determiner is further adapted to prompt issuance of a join command as soon as the next intra frame is ascertained to be present within the time-delayed buffered portion of the video stream that is associated with the requested channel even if the extracted most recent intra frame of the video stream associated with the requested channel has not been fully delivered to the particular client using the unicast communication.

23. A channel change server comprising:

retained intra frames for a plurality of video streams, each respective video stream of the plurality of video streams associated with a re-



Petitioner Disney Ex-1004, 0302

spective channel of a plurality of channels;
a channel change request detector that is capable of detecting channel change requests from individual clients of a plurality of clients; and
a channel change request handler that is configured to respond to a detected channel change request from a particular client of the plurality of clients by extracting a retained intra frame of a video stream associated with a requested channel from the retained intra frames and by transmitting the extracted retained intra frame to the particular client using a unicast communication;

wherein the channel change server is associated with multicast video distribution of the plurality of video streams.

**24.** The channel change server as recited in claim 23, further comprising:

a video stream bufferer that is adapted to buffer each video stream of the plurality of video streams to create a plurality of respective buffered portions.

**25.** The channel change server as recited in claim 23, further comprising:

a join command issuer that is adapted to send a join message to a replication point to cause the replication point to join the particular client to a multicast group corresponding to the requested channel.

**26.** The channel change server as recited in claim 23, further comprising:

a join command issuer that is adapted to send a join instruction message to the particular client, the join instruction message stipulating an appointed time at which the particular client is to transmit a join message to a replication point.

**27.** The channel change server as recited in claim 23, further comprising:

a synchronization determiner that is adapted to synchronize a multicast joining operation for the particular client to a multicast group corresponding to the requested channel with regard to a next decodable frame of the video stream associated with the requested channel.

**28.** The channel change server as recited in claim 27, wherein the synchronization determiner is further adapted to synchronize the multicast joining operation for the particular client to the multicast group corresponding to the requested channel using a quasi-predicted time of the next decodable frame of the video stream associated with the requested channel.

**29.** The channel change server as recited in claim 27, further comprising:

a time-delayed buffered portion of the video stream that is associated with the requested channel;

wherein the synchronization determiner is further adapted to synchronize the multicast joining operation for the particular client to the multicast group corresponding to the requested channel with regard to the time-delayed buffered portion of the video stream that is associated with the requested channel.

**30.** The channel change server as recited in claim 29, wherein a size of the time-delayed buffered portion corresponds to a likely or possible time period consumed when joining the particular client to the multicast group corresponding to the requested channel.

**31.** The channel change server as recited in claim 29, wherein a size of the time-delayed buffered portion corresponds to a combination of a multicast joining time and an intra frame interval duration.

**32.** The channel change server as recited in claim 29, wherein a joining time of the time-delayed buffered portion corresponds to a likely or possible time period consumed when joining the particular client to the multicast group corresponding to the requested channel.

**33.** The channel change server as recited in claim 29, wherein the synchronization determiner is further adapted to determine that a join command is to be issued when the synchronization determiner ascertains that the next decodable frame is proximate to a joining time of the time-delayed buffered portion of the video stream that is associated with the requested channel.

**34.** The channel change server as recited in claim 29, wherein the synchronization determiner is further adapted to prompt issuance of a join command as soon as the next decodable frame is ascertained to be entering a joining time of the time-delayed buffered portion of the video stream that is associated with the requested channel even if the extracted retained intra frame of the video stream associated with the requested channel has not been fully deliv-



Petitioner Disney Ex-1004, 0303

ered to the particular client using the unicast communication.

**35.** An arrangement for channel changing, comprising:

retention means for retaining at least one intra frame for each video stream of a plurality of video streams, each respective video stream associated with a respective channel of a plurality of channels;
detection means for detecting a channel change request from a client that indicates a requested channel, the channel change request from the client signifying a demand to switch from a first multicast group to a second multicast group that corresponds to the requested channel; and
handler means for handling the channel change request by transmitting a retained intra frame to the client via a unicast communication, the retained intra frame retained by the retention means from a respective video stream that is associated with the requested channel.

**36.** The arrangement as recited in claim 35, further comprising:

buffer means for buffering each respective video stream of the plurality of video streams to establish a respective buffered portion for each respective video stream; and
synchronization means for synchronizing a joining of the client to the second multicast group (i) with reference to a respective buffered portion for the respective video stream that is associated with the requested channel and (ii) with regard to a next decodable frame of the respective video stream that is associated with the requested channel.

**37.** The arrangement as recited in claim 36, further comprising:

issuance means for issuing a join command responsive to the synchronization means.

**38.** The arrangement as recited in claim 35, wherein the retention means comprises at least one of (i) buffering means for buffering the at least one intra frame for each video stream of the plurality of video streams and (ii) caching means for caching at least one intra frame for each video stream of the plurality of video streams.

**39.** The arrangement as recited in claim 35, wherein the arrangement comprises at least one server.

**40.** The arrangement as recited in claim 35, wherein the arrangement comprises one or more processor-accessible media.

**41.** A server that is configured to retain at least one independent frame for each video channel of a plurality of video channels that are being distributed using multicast communications and that is adapted to respond to channel change requests from clients by transmitting the retained at least one independent frame of a requested video channel to a requesting client using a unicast communication.

**42.** The server as recited in claim 41, wherein the server is capable of multicasting the plurality of video channels to the clients.

**43.** The server as recited in claim 41, wherein the server is capable of synchronizing a multicast joining operation for the requesting client with regard to a next decodable frame of the requested video channel.

**44.** The server as recited in claim 43, wherein the next decodable frame of the requested video channel comprises a next independent frame.

**45.** The server as recited in claim 43, wherein the next decodable frame of the requested video channel comprises a next dependent frame.

**46.** The server as recited in claim 41, wherein the server is capable of synchronizing a multicast joining operation for the requesting client with regard to a next decodable frame of the requested video channel; and wherein the server is further adapted to refrain from transmitting the retained at least one independent frame of the requested video channel to the requesting client if transmission of the retained at least one independent frame jeopardizes timely reception of the next decodable frame of the requested video channel.

**47.** The server as recited in claim 41, wherein the server is further adapted to issue a join command irrespective of a complete or an incomplete delivery to the requesting client of the retained at least one independent frame of the requested video channel.

**48.** A system comprising:

at least one processor; and
one or more media including processor-executable instructions that are capable of being executed by the at least one processor, the processor-executable instructions adapted to direct the system to perform actions comprising:

multicasting a plurality of channels;
retaining at least one intra frame for each



Petitioner Disney Ex-1004, 0304

channel of the plurality of channels; and transmitting a retained intra frame for a requested channel as a unicast communication responsive to a channel change request.

**49.** The system as recited in claim 48, wherein the system comprises a video provider and a channel change server.

**50.** The system as recited in claim 48, wherein the system comprises a video provider and a channel change server that are co-located.

**51.** The system as recited in claim 48, wherein the system comprises a channel change server that receives the plurality of channels from a video provider; and wherein the channel change server performs the action of multicasting the plurality of channels.

**52.** The system as recited in claim 48, wherein the processor-executable instructions are adapted to cause the system to perform a further action comprising:

synchronizing a multicast joining operation to a multicast group corresponding to the requested channel with regard to a next decodable frame of the requested channel.

**53.** The system as recited in claim 52, wherein the processor-executable instructions are adapted to cause the system to perform a further action comprising:

buffering a video stream portion of a video stream that is associated with the requested channel;

wherein the action of synchronizing comprises an action of determining when the next decodable frame is present within the buffered video stream portion of the video stream that is associated with the requested channel, the next decodable frame comprising a next intra frame.

**54.** The system as recited in claim 52, wherein the processor-executable instructions are adapted to cause the system to perform a further action comprising:

buffering a video stream portion of a video stream, which is associated with the requested channel, to a length that at least equals a sum of a multicast joining time and an intra frame interval duration;

wherein the action of synchronizing comprises an action of determining when the next decodable frame is entering the multicast joining time part of the buffered video stream portion of the video stream, the next decodable frame comprising a next non-intra frame.

**55.** The system as recited in claim 52, wherein the processor-executable instructions are adapted to cause the system to perform a further action comprising:

issuing a join command responsive to the synchronizing.



Petitioner Disney Ex-1004, 0305

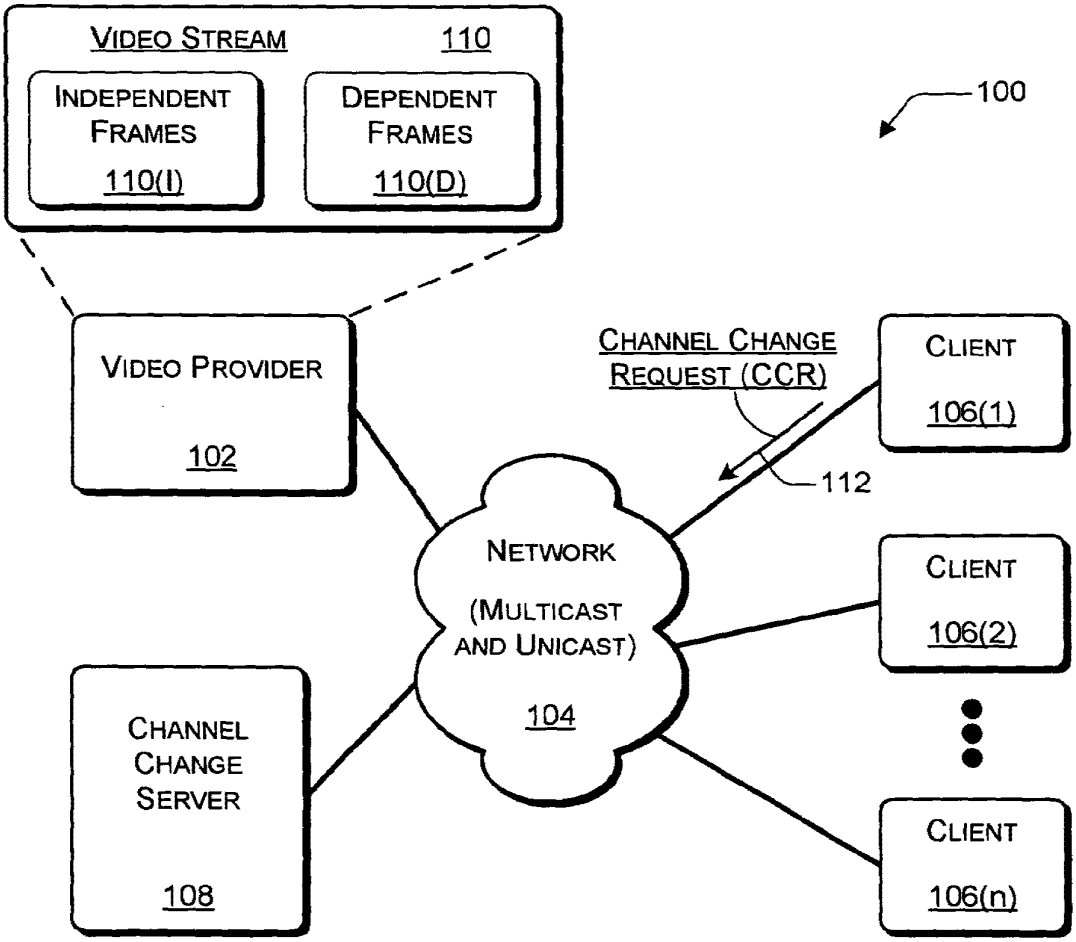



FIG. 1



Petitioner Disney Ex-1004, 0306

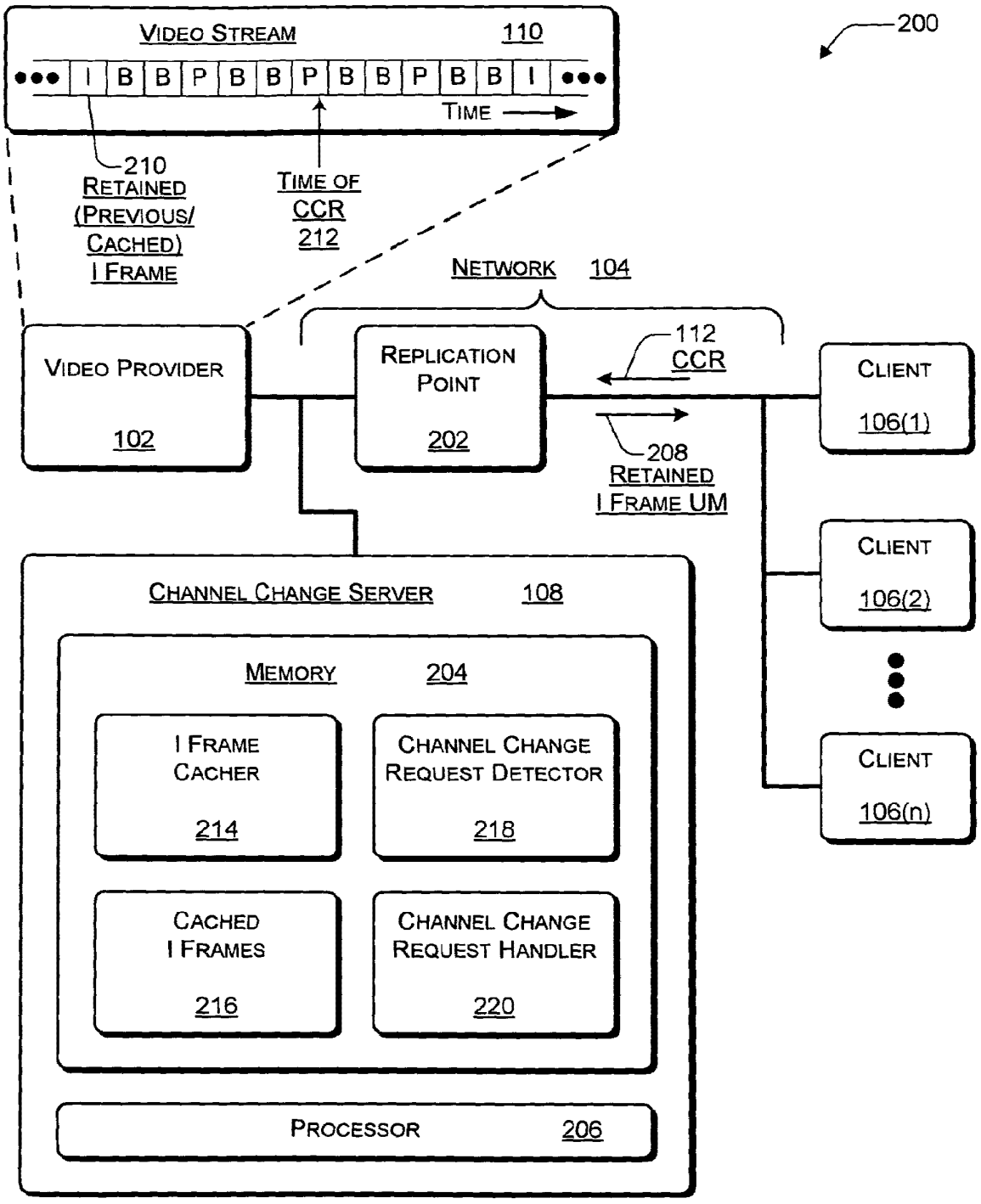



FIG. 2



Petitioner Disney Ex-1004, 0307

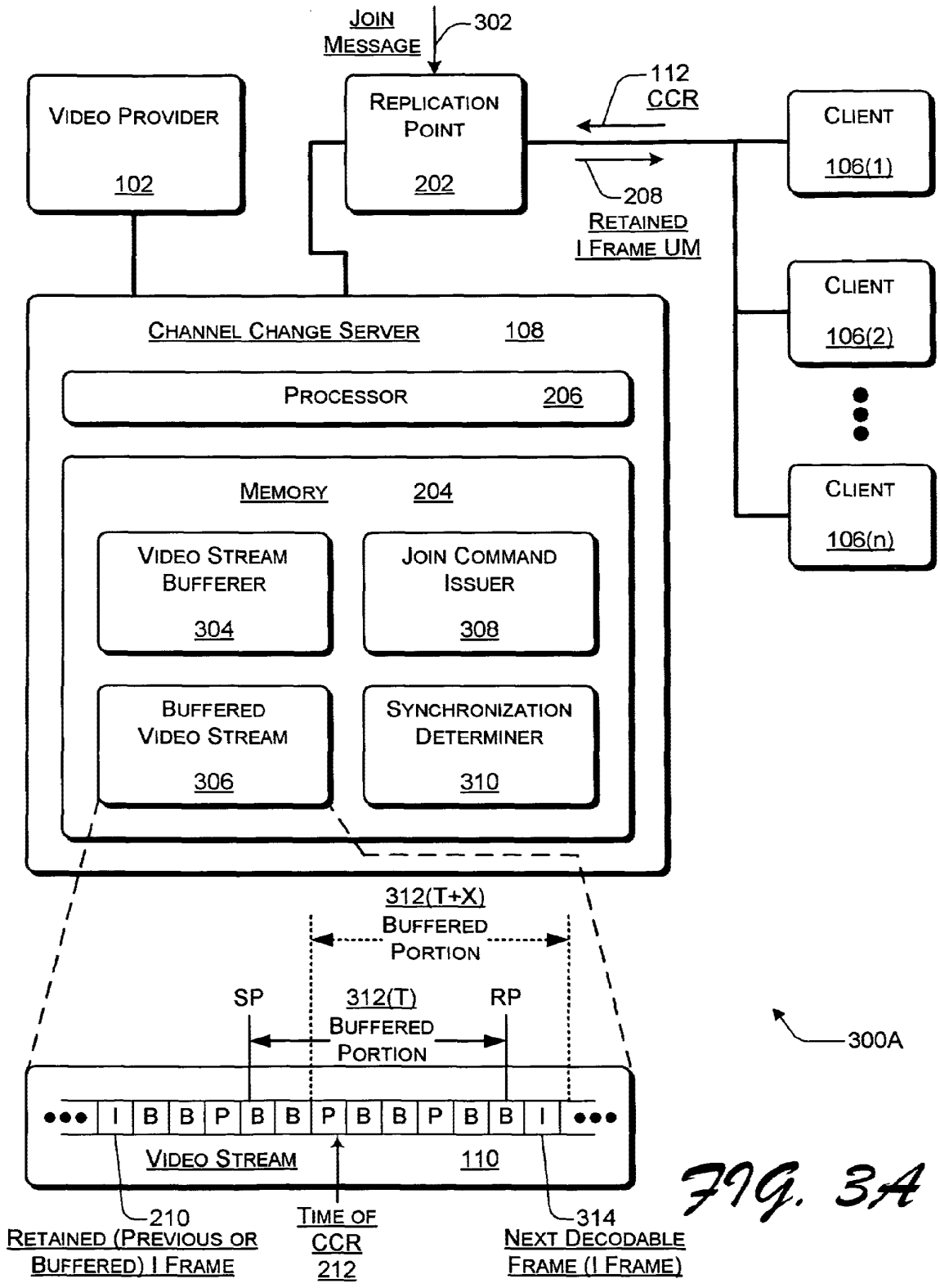



FIG. 3A



Petitioner Disney Ex-1004, 0308

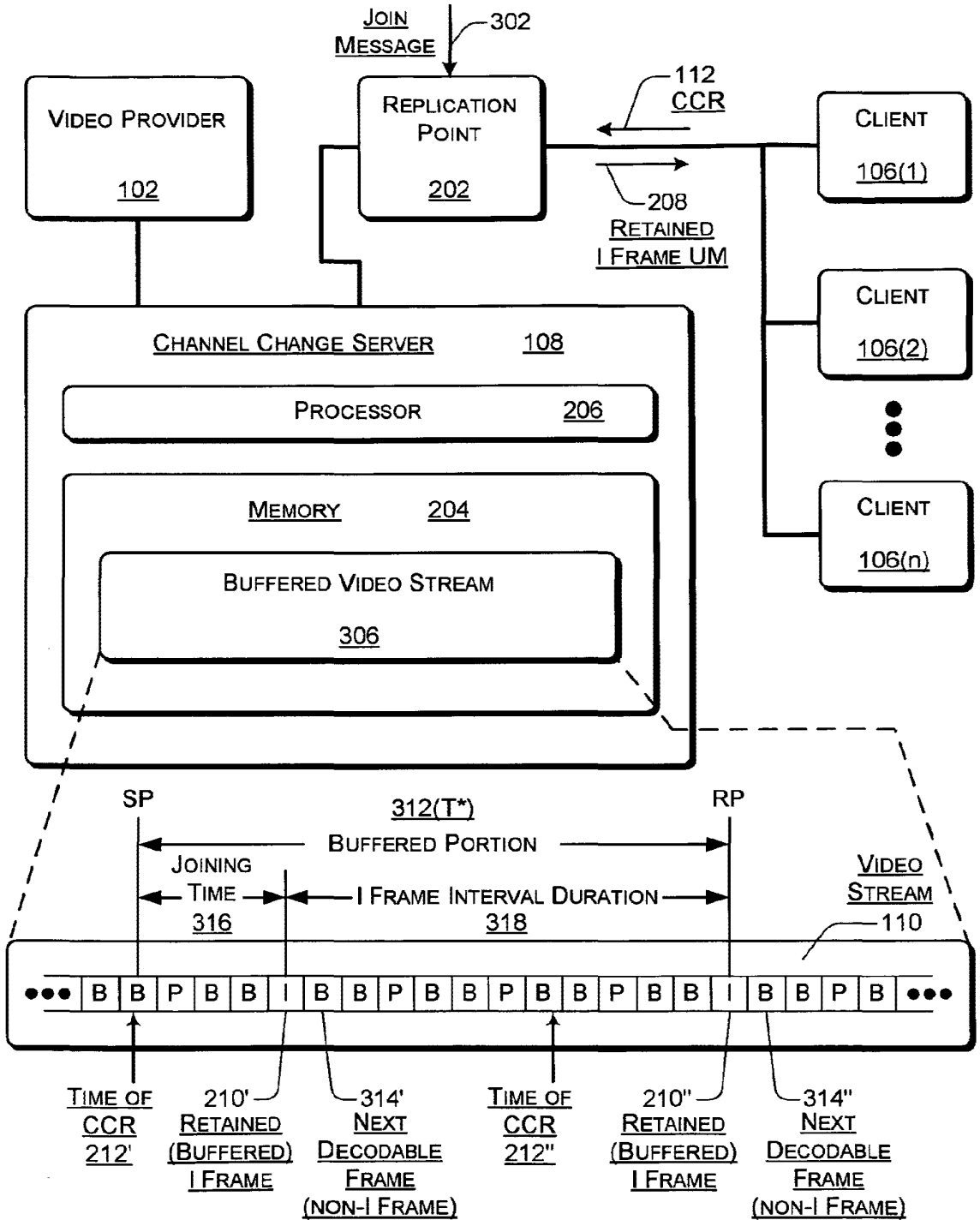



FIG. 3B

300B



Petitioner Disney Ex-1004, 0309

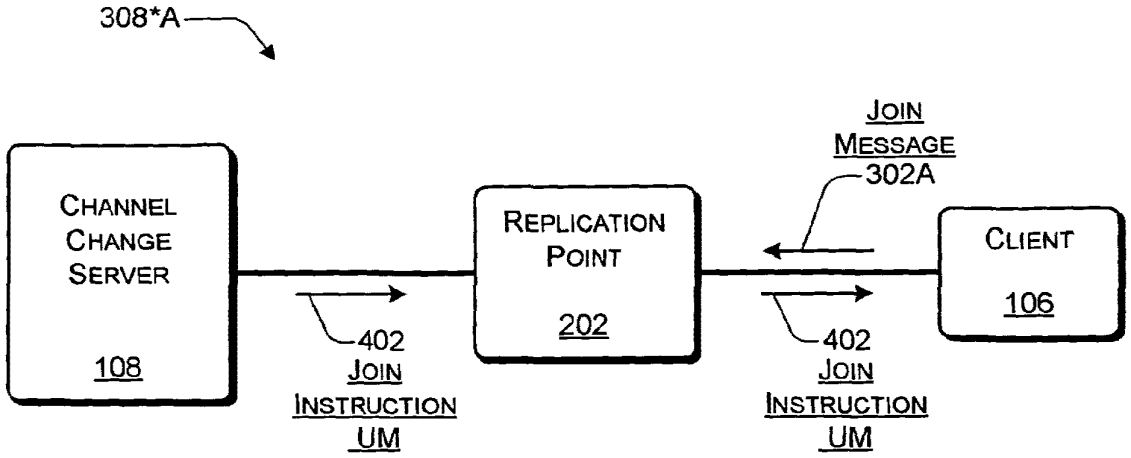



FIG. 4A

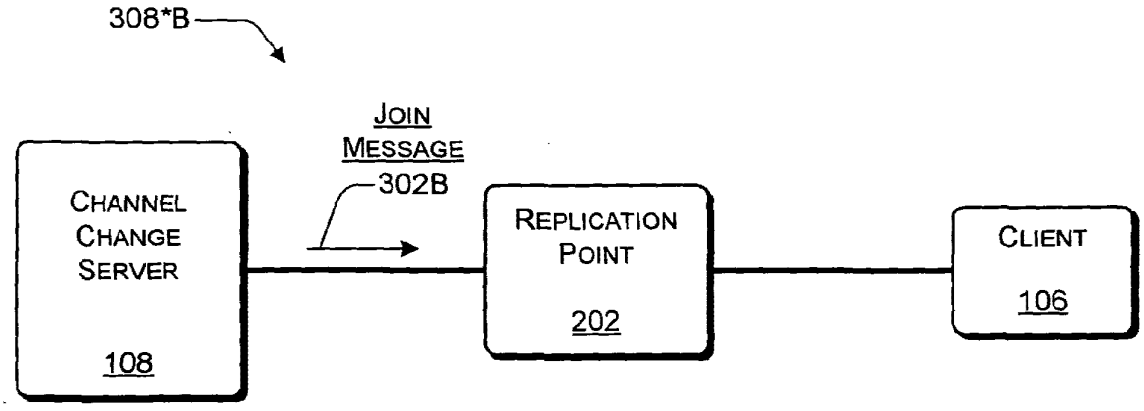



FIG. 4B



Petitioner Disney Ex-1004, 0310

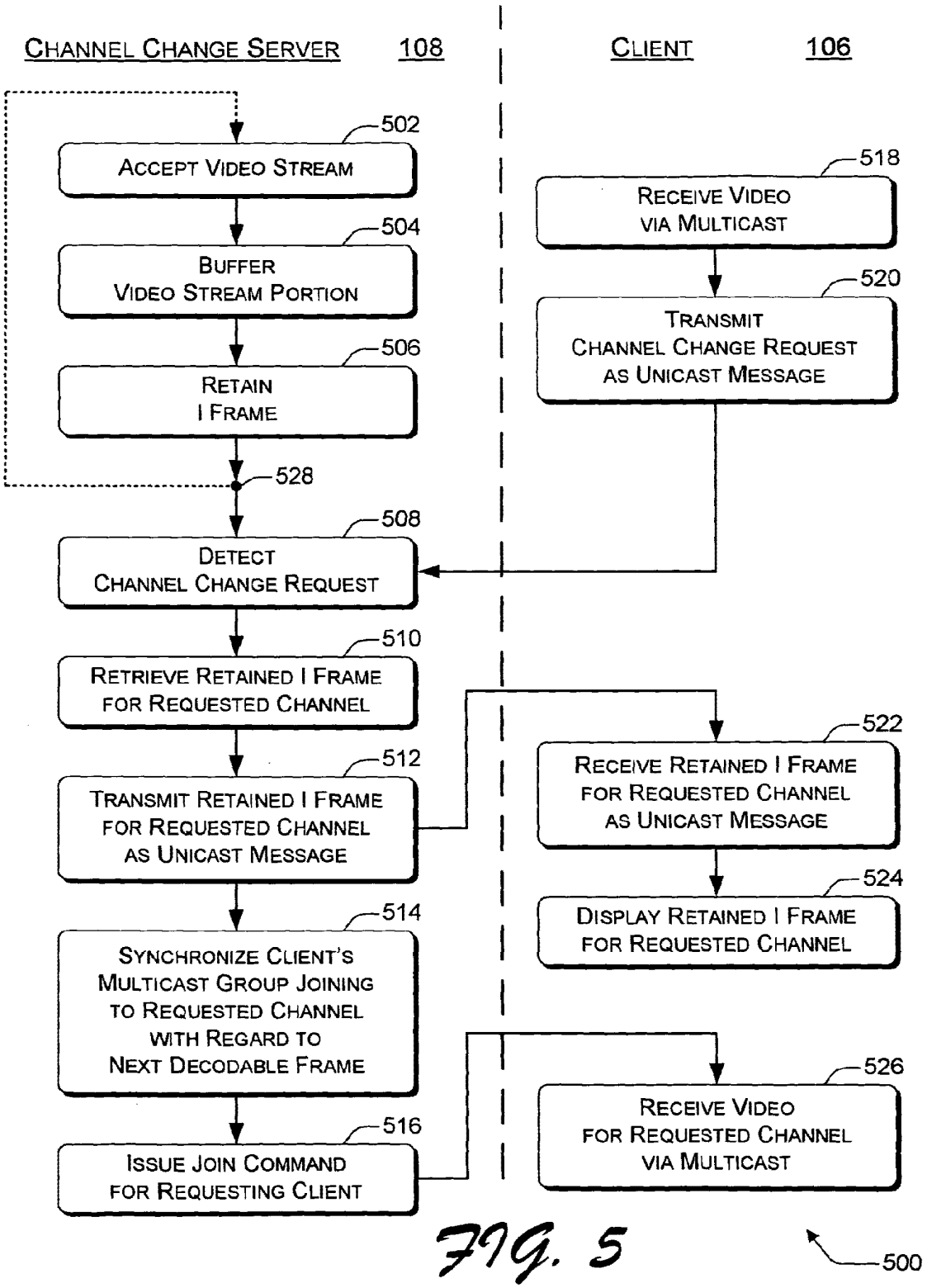



FIG. 5



Petitioner Disney Ex-1004, 0311

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 04 02 1617

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
|---|---|---|---|
| X | WO 01/03373 A1 (TELIA AB; BENGTSSON, JOHAN, E; BERGSTEN, ANDERS; KALLA, THOMAS; KLITTB) 11 January 2001 (2001-01-11)<br>* page 5, line 20 - page 8, line 19 *<br>* page 9, line 7 - page 10, line 10 *<br>* page 11, line 25 - page 12, line 21 * | 1-3,12, 23,24, 35, 38-45, 48-51 | H04N7/173 |
| A | US 2002/114331 A1 (CHEUNG KWOK WAI ET AL) 22 August 2002 (2002-08-22)<br>* paragraph [0066] * | 1-55 | |
| A | US 2002/124258 A1 (FRITSCH JEAN-GEORGES) 5 September 2002 (2002-09-05)<br>* paragraph [0034] * | 1-55 | |
| A | US 2002/002708 A1 (ARYE RAM) 3 January 2002 (2002-01-03)<br>* paragraph [0060] *<br>* paragraph [0085] * | 1-55 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.7) |
| A | US 6 418 473 B1 (ST. MAURICE SUSAN T ET AL) 9 July 2002 (2002-07-09)<br>* column 2, line 13 - line 64 * | 1-55 | H04N |
| A | US 2002/107968 A1 (HORN GAVIN ET AL) 8 August 2002 (2002-08-08)<br>* abstract * | 1-55 | |
| A | US 2002/040481 A1 (OKADA SHIGEYUKI ET AL) 4 April 2002 (2002-04-04)<br>* paragraph [0061] * | 1-55 | |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| Berlin | 28 January 2005 | Blais, D |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)



Petitioner Disney Ex-1004, 0312

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 02 1617

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-01-2005

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| WO 0103373 A1 | 11-01-2001 | SE 521181 C2 | 07-10-2003 |
| | | EE 200100709 A | 17-02-2003 |
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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82



Petitioner Disney Ex-1004, 0313

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Avery Audrey Kwan/Latonia Ervin |
| **Attorney Docket Number:** | MOBIP006/1720-1 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| Submission- Information Disclosure Stmt | 1806 | 1 | 180 | 180 |
| | | **Total in USD ($)** | | **180** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 11254804 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 22434 |
| **Filer:** | Avery Audrey Kwan/Latonia Ervin |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006/1720-1 |
| **Receipt Date:** | 24-OCT-2011 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 19:18:25 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Deposit Account |
| Payment was successfully received in RAM | $180 |
| RAM confirmation Number | 7203 |
| Deposit Account | 504480 |
| Authorized User | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | MOBIP006_IDS_Transmittal.pdf | 68307<br>ca8a358fa5c5f81104fba654d3d0d8ee987994b0 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Information Disclosure Statement (IDS) Form (SB08) | MOBIP006_1449_102411.pdf | 67021<br>20b357130cefc177d54f4239a234e2e2f5cee4b0 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Non Patent Literature | MOBIP006EP_Supplemental_Search_Rpt_070411.pdf | 254856<br>1041ea6819ff14e45fb7f5093a3c4d6b662b7e8f | no | 7 |
| **Warnings:** | | | | | |
| The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing | | | | | |
| **Information:** | | | | | |
| 4 | Non Patent Literature | MOBIP006EP_D1_EP1523190A1_843811.pdf | 1224227<br>0c4eb04d979db576bbfdc9832226a4b64d4eae7a | no | 21 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 5 | Non Patent Literature | MOBIP006EP_D2_WO06041784_843812.pdf | 131340<br>0e60d29185ec9369f5fe002226a00b8b562917d7 | no | 3 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 6 | Fee Worksheet (SB06) | fee-info.pdf | 29972<br>6d3afef5617c7065d0a9618bdfee2eb4a74710e6 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | | **Total Files Size (in bytes):** | 1775723 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| In re application of: JOHANSSON, Kay, et al. | Attorney Docket No.: MOBIP006/1720-1 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P. |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation No.: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on October 24, 2011.

Signed: /Latonia Ervin/
Latonia Ervin

# INFORMATION DISCLOSURE STATEMENT
# 37 CFR §§1.56 AND 1.97(b)

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

Dear Sir:

The reference(s) identified in the attached Information Disclosure Statement (copies of non-U.S. references are attached) may be material to examination of the above-identified patent application. Applicants identify the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make the identified reference(s) of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that the reference(s) indeed constitutes prior art.

This Information Disclosure Statement is being filed after the mailing date of the first Office Action on the merits, or after three months from the filing date of this application, whichever event occurred last, but it is believed before the mailing date of either: (i) a final action under 37 C.F.R. §1.113 or (ii) a notice of allowance under 37 C.F.R. §1.311, whichever occurs first.



Petitioner Disney Ex-1004, 0319

Accompanying this Information Disclosure Statement is the fee set forth in 37 C.F.R. §1.17(p). If it is determined that any additional fees are due, the Commissioner is authorized to charge such fees to Deposit Account 504480 (Order No. MOBIP006)

Respectfully submitted,
Weaver Austin Villeneuve & Sampson LLP

/Audrey Kwan /

Avery Audrey Kwan
Registration No. 46850

P.O. Box 70250
Oakland, CA 94612-0250



Petitioner Disney Ex-1004, 0320

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006/1720-1 | 1023 |

22434 7590 10/27/2011

Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| **ART UNIT** | **PAPER NUMBER** |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 10/27/2011 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@wavsip.com



Petitioner Disney Ex-1004, 0321

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *26 September 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)☒ Claim(s) *25-44* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *25-44* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

10)☒ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

In particular, with respect to the independent claims 25, 32 and 39, there does not appear to be sufficient support or antecedent basis in the Specification for certain claimed limitations and features involving the claimed "first media stream" and "second media stream". In particular, for example, there does not appear to be sufficient support in the specification for the limitations:

“means for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream; means for locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request."

### *Response to Arguments*

2. Applicant's arguments filed 9/26/11 have been fully considered but they are not persuasive.

In particular, with regard to the objection that the Specification lacks sufficient support for the limitations: “means for receiving a channel change request from a client

device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream; means for locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request", Applicant argues that the originally filed Specification provides the required support in paragraph 23, which was quoted at length. (pages 5-6).

The examiner respectfully disagrees. Upon closer review, the portions of the Specification mentioned, in particular paragraph 23, disclose and teach the general concept that "when a connection request is received from a client device, a key frame is provided to the client device even if the key frame is not the first available frame". To be sure, such "connection requests" may include "channel changes", as taught in paragraph 23. However, for example, there is no teaching in that paragraph of "locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request", since the action taken in response to the channel change request as taught in paragraph 23, is limited to providing a key frame to the client device "even if the key frame is not the first available frame" and thus, for example, there does not appear to be teachings regarding the step of "switching to the second media stream". Therefore, the objection to the Specification is maintained as to the limitations quoted above in the objection.

3. As to the Section 103 rejection, Applicant asserts that one of the cited reference, Wu does not qualify as prior art under Sections 102 and/or 103 because its filing date is

January 28, 2011, post-dating the Applicant's effective filing data of January 23, 2007. Applicant is advised, however, that Wu is a continuation application whose effective filing date is February 27, 2006, thus qualifying it as prior art under Section 102(e), among other sections.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 25-28, 30-35, 37-42 and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2011/0131622 A1 to Wu et al., in view of U.S. Patent Publication No. 2007/0044128 A1 to Witt.

3. **As to Claim 39**, Wu discloses an apparatus, comprising:

means for (Fig. 3, “aggregation edge 301” and paragraph 28, teaching that such “aggregation edge 301” contains a “video acceleration module VAM", all teaching such "means for”) receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server (Fig. 3, “aggregation edge 301” and paragraph 28, teaching that such “aggregation edge 301” contains a “video acceleration module VAM", all teaching such “streaming server”) and maintained in a first channel buffer (paragraphs 13 and 28-29, teaching that each media stream "has an associated cache memory upon which is stored the previous set of I, P and B frames for That

respective stream", such cache memory teaching such recited "first channel buffer" and further teaching, in reference to Fig. 4, "streaming buffers" that are "fixed buffers for each multicast stream [the VAM at the edge 301] is sourcing", further teaching this limitation);

means for receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer (paragraphs 13 and 28-29, teaching that each media stream "has an associated cache memory upon which is stored the previous set of I, P and B frames for That respective stream", such cache memory teaching such recited "second channel buffer" and further teaching, in reference to Fig. 4, "streaming buffers" that are "fixed buffers for each multicast stream [the VAM at the edge 301] is sourcing", further teaching this limitation);

means for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame] corresponding to that particular stream is immediately read from the cache memory", thus teaching to an ordinary artisan that the position of a key frame [i.e., the "previous I frame corresponding to that particular stream"] must be determined in order for such "previous I frame" to be "immediately read" from the cache/buffer, thus teaching this limitation), the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer (paragraph 13, teaching that for each stream, its corresponding

stream buffer/"cache memory" contains at least "the previous I, P and B frames", teaching this limitation),

wherein determining positions of the plurality of key frames includes determining video codec information (paragraphs 14-24, teaching that the MPEG2 standard defines specific video codec specifications for I, P and B frames, thus teaching that the MPEG2 standard teaches methods of distinguishing and determining I frames [i.e., "key frames"] from the other frame types based on video codec information, thus teaching this limitation), determining a group of pictures (GOP) size (paragraph 18, teaching that the GOP size is one consideration in the delineation of I, P and B frames, teaching "determining a GOP size");

means for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client has switched] corresponding to that particular stream is immediately read from the cache memory", teaching this limitation);

means for locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client

has switched] corresponding to that particular stream is immediately read from the cache memory" and "in process block 505, the VAM starts bursting from STRMBUF [i.e., the channel buffer for the new, second channel/stream] beginning with the preamble and first I frame into the port buffer PBUF", thus teaching to an ordinary artisan "switching to the second media stream specifically at the second key frame in response to the channel change request" and "means for locating the second key frame in the second channel buffer" because the position of a key frame [i.e., the "second key frame"] must be determined in order for such "previous I frame" to be "immediately read" from the cache/buffer, thus teaching this limitation)

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size and performing at least partial decoding of the media stream (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation) using a processor at the streaming server (Fig. 4, "processor" comprising "server30", "key/delta frame determinator 32" and other components, thus teaching "using a processor at the streaming server").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a

frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

4. **As to Claim 40**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the first media stream is a first video stream and the second media stream is a second video stream (paragraph 13, teaching multiple broadcast media streams and paragraphs 14-24, teaching MPEG2 standard for video encoding, thus teaching this limitation).

5. **As to Claim 41**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames have the largest frame size of the three types of MPEG frames, I, P and B frames (paragraph 15-18).

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and

teach "wherein the key frames are identified by detecting frames larger than a particular size". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

6. **As to Claim 42**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames appear at the start of a GOP (Fig. 2 and paragraph 15-18).

Witt discloses and teaches wherein determining the plurality of key frames includes determining the structure of the received data (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting the start of a GOP". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

7. **As to Claim 44**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the key frame is an I-frame (Fig. 2 and paragraphs 14-24, teaching MPEG2 standard for encoding frames wherein the "key/reference frame" is the so-called I-frame).

8. **As to Claim 32,** please see rejection for Claim 39.

9. **As to Claim 33,** please see rejection for Claim 40.

10. **As to Claim 34,** please see rejection for Claim 41.

11. **As to Claim 35,** please see rejection for Claim 42.

12. **As to Claim 37,** please see rejection for Claim 44.

13. **As to Claim 38**, please note that Witt and Wu disclose and teach the apparatus as in the parent claim 32.

Wu further discloses wherein channel change does not occur until the second key frame can be provided to the client device (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client has switched] corresponding to that particular stream is immediately read from the cache memory" and "in process block 505, the VAM starts bursting from STRMBUF [i.e., the channel buffer for the new, second channel/stream] beginning with the preamble and first I frame into the port buffer PBUF", thus teaching this limitation).

14. **As to Claim 25,** please see rejection for Claim 39.

15. **As to Claim 26,** please see rejection for Claim 40.

16. **As to Claim 27,** please see rejection for Claim 41.

17. **As to Claim 28,** please see rejection for Claim 42.

18. **As to Claim 30,** please see rejection for Claim 44.

19. **As to Claim 31,** please see rejection for Claim 38.

20. **Claims 29, 36 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2011/0131622 A1 to Wu et al., in view of U.S. Patent Publication No. 2007/0044128 A1 to Witt, further in view of U.S. Patent Publication No. 2007/0107026 A1 to Sherer et al.

21. **As to Claim 43,** Wu and Witt teach the apparatus as in the parent claim 39.

Wu further discloses key frames appear at the start of a GOP (Fig. 2 and paragraph 15-18).

Sherer teaches wherein the key frames are identified by flagging the first key frame of a stream to be channel-switched to as a key frame (paragraph 39, “the stream server indicates channel change boundaries between unicast streams by ... using a marker bit or an explicit signal at the first I-frame of a new unicast stream", teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Sherer, in conjunction with the teachings of Wu. In particular, Sherer, Wu and Witt are combinable to disclose and teach “wherein the key frames are identified by flagging each start of a GOP as a key frame”. The suggestion or motivation would have been in order to

ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Sherer, paragraphs 3-11).

22. **As to Claim 36,** please see rejection for Claim 43.

23. **As to Claim 29,** please see rejection for Claim 43.

***Conclusion***

24. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on (571)272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Derrick W Ferris/
Supervisory Patent Examiner, Art Unit 2463

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

## SEARCHED

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |
| ABOVE | UPDATED | 7/31/2010 | PC |
| ABOVE | UPDATED | 12/6/2010 | PC |
| ABOVE | UPDATED | 7/25/11 | PC |
| ABOVE | UPDATED | 10/14/11 | PC |

## SEARCH NOTES

| Search Notes | Date | Examiner |
|---|---|---|
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 (updated 3/9/2010) | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/2009 (updated 3/9/2010 and 7/31/2010 and 12/6/2010 and 7/25/11, 10/14/11) | pc |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| | | | |

## EAST Search History

### EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L1 | 187 | ((referenc$3 or key) near5 frame or i$1frame) with channel$3 near5 (switch$3 or chang$3) and ("370" or "725").clas. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/10/14 16:13 |
| L2 | 7065 | (370/503,509-513,395.64).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2011/10/14 16:15 |
| L3 | 17346 | (709/203,209,208).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2011/10/14 16:15 |
| L4 | 30 | l2 and ((referenc$3 or base or key or common) near5 frame or i$1frame) same channel$3 near5 (switch$3 or chang$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/10/14 16:16 |
| L5 | 5 | l3 and ((referenc$3 or base or key or common) near5 frame or i$1frame) same channel$3 near5 (switch$3 or chang$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2011/10/14 16:16 |

### EAST Search History (Interference)

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Petitioner Disney Ex-1004, 0336

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | | | |
| | 1 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 2 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 3 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 4 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 5 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 6 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 7 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 8 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 9 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 10 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 11 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 12 | ✓ | ✓ | - | - | - | - | | | |
| | 13 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 14 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 15 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 16 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 17 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 18 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 19 | ✓ | ✓ | ✓ | ✓ | - | - | | | |
| | 20 | ✓ | ✓ | - | - | - | - | | | |
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| | 26 | | | | | ✓ | ✓ | | | |
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| | 28 | | | | | ✓ | ✓ | | | |
| | 29 | | | | | ✓ | ✓ | | | |
| | 30 | | | | | ✓ | ✓ | | | |
| | 31 | | | | | ✓ | ✓ | | | |
| | 32 | | | | | ✓ | ✓ | | | |
| | 33 | | | | | ✓ | ✓ | | | |
| | 34 | | | | | ✓ | ✓ | | | |
| | 35 | | | | | ✓ | ✓ | | | |
| | 36 | | | | | ✓ | ✓ | | | |



Petitioner Disney Ex-1004, 0337

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | | | |
| | 37 | | | | | ✓ | ✓ | | | |
| | 38 | | | | | ✓ | ✓ | | | |
| | 39 | | | | | ✓ | ✓ | | | |
| | 40 | | | | | ✓ | ✓ | | | |
| | 41 | | | | | ✓ | ✓ | | | |
| | 42 | | | | | ✓ | ✓ | | | |
| | 43 | | | | | ✓ | ✓ | | | |
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| Signature | Ellen McDonald | Date | 11/14/11 |
| Name | Ellen McDonald | Telephone | 510 450 5710 |
| Title | Vice President & General Counsel, MobiTV, Inc. | | |

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## STATEMENT UNDER 37 C.F.R. 3.73(b)

Applicant/Patent Owner: Kay Johansson, et al. Attorney Docket No. MOBIP006US
Application No./Patent No.: 11/626,340 Filed/Issue Date: January 23, 2007
Titled: KEY FRAME DETECTION AND SYNCHRONIZATION
MobiTV, Inc., a Corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

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Avery Audrey Kwan — USPTO Reg. No 46,850
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In re. Patent Application of: Kay Johansson, et al.
Serial No.: 11/626,340
Filed: January 23, 2007
Title: KEY FRAME DETECTION AND SYNCHRONIZATION

Examiner: Chi Tang P. Cheng
Group Art Unit: 2463
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In re Patent Application of: Kay Johansson, et al. Examiner: Chi Tang P. Cheng
Serial No.: 11/626,440 Group Art Unit: 2463
Filed: January 23, 2007 Docket No.: MOBIP088US
Title: KEY FRAME DETECTION AND SYNCHRONIZATION

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Name: Avery Aldaz Kwan
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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US |

**CONFIRMATION NO. 1023**

**POA ACCEPTANCE LETTER**

19694
Avery Audrey Kwan
8016 Broadway Ter
Oakland, CA 94611

*OC000000051161501*

Date Mailed: 12/01/2011

## NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/14/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/atesfai/

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Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



Petitioner Disney Ex-1004, 0343

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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006/1720-1 |

**CONFIRMATION NO. 1023**

**POWER OF ATTORNEY NOTICE**

22434
Weaver Austin Villeneuve & Sampson LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

*OC000000051161475*

Date Mailed: 12/01/2011

## NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/14/2011.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/atesfai/

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Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



Petitioner Disney Ex-1004, 0344

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop AF, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on January 23, 2012.

Signed: /Amber Lundy/
Amber Lundy

## *RESPONSE TO OFFICE ACTION*

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

Please consider the following remarks and arguments in response to the Office Action mailed October 27, 2011.

**A Listing of the Claims** begins on page 2 of this paper.

**Remarks/Arguments** begin on page 6 of this paper.



Petitioner Disney Ex-1004, 0345

## IN THE CLAIMS

What is claimed is:

1-24. (Canceled)

25. (Currently Amended) A method, comprising:

receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer;

receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server;

receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

identifying based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

~~locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request.~~

26. (Previously Presented) The method of claim 25, wherein the first media stream is a first video stream and the second media stream is a second video stream.

27. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting frames larger than a particular size.

28. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting the start of a GOP.

29. (Previously Presented) The method of claim 25, wherein the key frames are identified by flagging each start of a GOP as a key frame.



Petitioner Disney Ex-1004, 0346

30. (Previously Presented) The method of claim 25, wherein the key frame is an I-frame.

31. (Previously Presented) The method of claim 25, wherein channel change does not occur until the second key frame can be provided to the client device.

32. (Currently Amended) A system, comprising:

an interface configured to receive a first media stream including a first plurality of frames and a second media stream including a second plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer and the second media stream received a the streaming server and maintained in a second channel buffer;

a processor configured to determine positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, and determining a frame size~~, and performing at least partial decoding of the first media stream and the second media stream~~ using a processor at the streaming server;

wherein the processor is further configured to identify based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

~~locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request.~~

33. (Previously Presented) The method of claim 32, wherein the first media stream is a first video stream and the second media stream is a second video stream.

34. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting frames larger than a particular size.

35. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting the start of a GOP.

36. (Previously Presented) The method of claim 32, wherein the key frames are identified by flagging each start of a GOP as a key frame.

37. (Previously Presented) The method of claim 32, wherein the key frame is an I-frame.

38. (Previously Presented) The method of claim 32, wherein channel change does not occur until the second key frame can be provided to the client device.



Petitioner Disney Ex-1004, 0347

39. (Currently Amended) ~~An apparatus~~ A computer readable medium, comprising:

computer code ~~means~~ for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer;

computer code ~~means~~ for receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

computer code ~~means~~ for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server;

computer code ~~means~~ for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

computer code for identifying based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

~~means for locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request.~~

40. (Currently Amended) The computer readable medium ~~apparatus~~ of claim 39, wherein the first media stream is a first video stream and the second media stream is a second video stream.

41. (Currently Amended) The computer readable medium ~~apparatus~~ of claim 39, wherein the key frames are identified by detecting frames larger than a particular size.

42. (Currently Amended) The computer readable medium ~~apparatus~~ of claim 39, wherein the key frames are identified by detecting the start of a GOP.

43. (Currently Amended) The computer readable medium ~~apparatus~~ of claim 39, wherein the key frames are identified by flagging each start of a GOP as a key frame.



Petitioner Disney Ex-1004, 0348

44. (Currently Amended) The computer readable medium ~~apparatus~~ of claim 39, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0349

## REMARKS/ARGUMENTS

Claims 25-44 are pending. The specification was objected to with respect to independent claims 25, 32, and 39 and not describing a "first media stream" and a "second media stream." Applicants respectfully disagree. The specification explicitly describes a streaming server as receiving multiple media streams in multiple buffers. It is believed that describing a media stream as well as multiple media streams provides sufficient support for the claim language "first media stream" and "second media stream."

More specifically, "Figure 4 is a diagrammatic representation showing one example of a streaming server 421. According to various embodiments, the streaming server 421 includes a processor 401, memory 403, buffers 431, 433, 435, and 437, and a number of interface. In some examples, the interfaces include an encoder interface 411, a media aggregation server interface 413, and a client device interface 441. The encoder interface 411 and the media aggregation server interface 413 are operable to receive media streams such as video streams. In some examples, hundreds of video streams associated with hundreds of channels are continuously being received and maintained in buffers 431, 433, 435, and 437 before being provided to client devices through client device interface 441." [0042]

Furthermore, these buffers may be assigned to one or more channels. "In some embodiments, the sequence of video frames is associated with a particular channel and a buffer is assigned to each channel. Other sequences of video frames may be held in other buffers assigned to other channels. In other examples, buffers or portions of buffers are maintained for separate video streams and separate channels. In particular embodiments, key frame 201 is received early along time axis 241." [0029]

The rejection argues that "switching to the second media stream specifically at the second key frame in response to the channel change request" is not supported. Applicants respectfully disagree. The Specification explicitly states that during a connection request such as a channel change request, "Similarly, when client 253 requests a connection, the client receives key frame 201 initially. If key frame 201 is no longer available in the buffer, a client connecting would receive key frame 219, even if this means that predictive frames 203, 205, 207, 209, 211, 213, 215, and 217 are skipped. For example, client 255 may connect at a time that would have



Petitioner Disney Ex-1004, 0350

provided predictive frame 211, but the streaming server intelligently identifies the next available key frame as key frame 219 and provides that key frame 219 to the client 255. No predictive frames are inefficiently transmitted at the beginning of a connection request. According to various embodiments, only key frames are initially provided upon connection requests." [0032]

Nonetheless, the independent claims have been amended to facilitate prosecution. The independent claims have been amended to remove the recitation "locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request" and add the recitation "identifying a next available key frame associated with the second media, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request."

This recitation is believed supported by the original claims, drawings, and specification. For example, "but the streaming server intelligently identifies the next available key frame as key frame 219 and provides that key frame 219 to the client 255. No predictive frames are inefficiently transmitted at the beginning of a connection request. According to various embodiments, only key frames are initially provided upon connection requests." [0032]

Claim 39 has been amended to remove "means for" language and to add "computer code" language. Objections to the Specification are believed overcome.

Claims 25-28, 30-35, 37-42, and 44 including all independent claims were rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (2011/0131622) in view of Witt (20070044128). In the previous Office Action response, Applicants noted that Wu had a filing date post-dating the effective filing date of the present application. The Wu specification also did not note any priority information. However, a different version of the application does note priority information, indicating that Wu has an effective filing date of February 27, 2006 provided that the priority application provides sufficient support for the material cited by the Examiner in the later application.

Wu describes "[0030] FIG. 5 shows the process flow for one embodiment of the Video Acceleration Module. Initially, in process block 501, initialization parameters (e.g., client last-mile bandwidth availability, preamble requirements, etc.) are pre-programmed into the VAM. In



Petitioner Disney Ex-1004, 0351

process block 502, the VAM builds preamble from incoming multicast stream. Functions that will allow for faster channel change time are configured as part of the initialization sequence and will be captured into preamble space. Bits sent out in PID 0 that detail Program Specific Information (PSI), such as the Program Association Table (PAT) and Program Mapping Table (PMT) as well as a Program Clock Reference that allows the decoder PLL contained in the client device to synch its internal clock to the incoming stream. A typical PCR transmission rate is every 33 ms. In process block 503, the StrmBuf fill begins from a live multicast stream starting with an I frame and a sliding window that includes the preamble as shown in FIG. 4 above. One GOP is always buffered along with the preamble, since the threshold to illustrate the mechanism was chosen to be 1 GOP. The Join Request issued from the client is received by process block 504 at the port by the VAM in the channel change window indicated between points 404 and 405 in FIG. 4 above. In process block 505, the VAM starts bursting from StrmBuf beginning with the preamble and first I frame into the port buffer PBUF. Since StrmBuf has pre-buffering from the incoming multicast stream, for the first GOP, it could be in various stages of being filled anywhere from point 404 to point 405. Point 405 represents the worst case scenario whereby the last B frame has just been received and the VAM has started buffering the start of the I frame into StrmBuf."

To facilitate prosecution, the independent claims have been amended. The independent claims have been amended to recite "identifying based on frame size a next available key frame associated with the second media stream." This amendment is believed supported in the original Claims, Specification, and Drawings. For example, "[0033] According to various embodiments, a streaming server performs processing on each received frame to determine which frames are key frames. Identifying key frames may involve decoding or partially decoding a frame. In other examples, key frames may be identified based upon the size of the frame, as key frames are typically much larger than predictive frames."

None of the materials cited by the Examiner are believed to sufficiently teach or suggest this recitation in this context.



Petitioner Disney Ex-1004, 0352

In light of the above remarks for the independent claims, it is respectfully submitted that all pending claims are allowable. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
Kwan Intellectual Property Law

/Audrey Kwan/

Avery Audrey Kwan
Reg. No. 46,850

Kwan Intellectual Property Law
1300 Clay Street, Ste 600
Oakland, CA 94612
408-883-5025
akwan@kwanip.com



Petitioner Disney Ex-1004, 0353

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 11898920 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 23-JAN-2012 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 16:36:23 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | MOBIP006_Response_to_Office_Action_01-23-12_final.pdf | 50817<br>eb01360a27cb5bb284eb8b83c0b880798a6377eb | yes | 9 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Amendment After Final | 1 | 1 |
| | Claims | 2 | 5 |
| | Applicant Arguments/Remarks Made in an Amendment | 6 | 9 |
| **Warnings:** | | | |
| **Information:** | | | |
| | **Total Files Size (in bytes):** | 50817 | |

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**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY ☐ RATE ($) | SMALL ENTITY ☐ FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT 01/23/2012 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * 20 | Minus | ** 23 | = 0 | X $ = | | OR | X $60= | 0 |
| Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $250= | 0 |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/JACQUELYN WILLIAMS/

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.**

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

19694 7590 02/15/2012

Kwan Intellectual Property Law
1300 Clay St, Suite 600
Oakland, CA 94612

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| ART UNIT | PAPER NUMBER |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 02/15/2012 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@kwanip.com
alundy@kwanip.com
jferguson@kwanip.com

CONTINUATION of 3. NOTE: Claims 25, 32 and 39 have been amended to add the limitation “identifying based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request" and to delete the limitation "locating the second key frame in the second channel buffer and switching to the second media stream specifically at the second key frame in response to the channel change request.” These claim amendments introduce new issues and would require further search and consideration.

CONTINUATION of 11. does NOT place the application in condition for allowance because:

Applicant argues that the claim amendments described above in section 3. would overcome the outstanding issues set forth in the last office action, namely, the objection to the Specification as failing to provide adequate support for certain limitations and the prior rejections for the outstanding claims. As the claim amendments proposed herein by the Applicant would change the scope of the claims, such amendments would require further search and consideration.

| **Advisory Action Before the Filing of an Appeal Brief** | **Application No.** 11/626,340 | **Applicant(s)** JOHANSSON ET AL. | |
|---|---|---|---|
| | **Examiner** PETER CHENG | **Art Unit** 2463 | |

***--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

THE REPLY FILED 23 January 2012 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires *3* months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *see continuation sheet*. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☒ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *25-44*.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: see continuation sheet.
12. ☒ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

/Derrick W Ferris/
Supervisory Patent Examiner, Art Unit 2463

/P. C./
Examiner, Art Unit 2463



Petitioner Disney Ex-1004, 0359

| Information Disclosure Statement By Applicant (Use Several Sheets if Necessary) | | |
|---|---|---|
| | **Atty Docket No.** | MOBIP006/ 1720-1 |
| | **Application No.:** | 11/626,340 |
| | **Applicant** | JOHANSSON, Kay, et al. |
| | **Filing Date** | January 23, 2007 |
| | **Group** | 2463 |
| | **Conf. No.** | 1023 |
| | | 1 of 1 |
| | **Submitted on:** | October 24, 2011 |

**U.S. Patent Documents**

| Examiner Initial | No. | Patent No. | Date | Patentee | Class | Sub-class | Filing Date |
|---|---|---|---|---|---|---|---|
| | 1. | 2006/143669 | 06-29-2006 | Cohen Noam | | | |

**Foreign Patent or Published Foreign Patent Application**

| Examiner Initial | | Document No. | Publication Date | Country or Patent Office | Class | Sub-Class | Translation Yes | Translation No |
|---|---|---|---|---|---|---|---|---|
| | 2. | 1 523 190 | 04-13-2005 | EP | | | | |
| | 3. | 2006/041784 | 04/20/2006 | WO | | | | |

**Other Documents**

| Examiner Initial | No. | Author, Title, Place (e.g. Journal) of Publication, Date |
|---|---|---|
| | 4. | European Supplemental Search Report mailed July 4, 2011 for Application No. PCT/US 08/71 3763. (MOBIP006WO) |
| | 5. | |
| | 6. | |
| | 7. | |

| Examiner | /Chi Tang Cheng/ | Date Considered | 01/26/2012 |
|---|---|---|---|

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /P.C

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop AF, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on January 23, 2012.

Signed: /Amber Lundy/
Amber Lundy

## *RESPONSE TO OFFICE ACTION*

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

Please consider the following remarks and arguments in response to the Office Action mailed October 27, 2011.

**A Listing of the Claims** begins on page 2 of this paper.

**Remarks/Arguments** begin on page 6 of this paper.

DO NOT ENTER: /P.C./
01/26/2012



Petitioner Disney Ex-1004, 0361

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006 |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop AF, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on January 23, 2012.

Signed: /Amber Lundy/
Amber Lundy

## *RESPONSE TO OFFICE ACTION*

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

Please consider the following remarks and arguments in response to the Office Action mailed October 27, 2011.

**A Listing of the Claims** begins on page 2 of this paper.

**Remarks/Arguments** begin on page 6 of this paper.

DO NOT ENTER: /P.C./
01/26/2012



Petitioner Disney Ex-1004, 0362

PTO/SB/30 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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 contains a valid OMB control number.

# Request for Continued Examination (RCE) Transmittal

Address to:
Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

| | |
|---|---|
| Application Number | 11/626,340 |
| Filing Date | January 23, 2007 |
| First Named Inventor | Kay Johansson |
| Art Unit | 2643 |
| Examiner Name | Chi Tang P. Cheng |
| Attorney Docket Number | MOBIP006US |

**This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.**
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. Submission required under 37 CFR 1.114 Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

   a. ☑ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

      i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

      ii. ☑ Other Amendment and Response filed on January 23, 2012

   b. ☐ Enclosed

      i. ☐ Amendment/Reply

      ii. ☐ Affidavit(s)/ Declaration(s)

      iii. ☐ Information Disclosure Statement (IDS)

      iv. ☐ Other _____

2. Miscellaneous

   a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

   b. ☐ Other _____

3. Fees The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

   a. ☐ The Director is hereby authorized to charge the following fees, any underpayment of fees, or credit any overpayments, to Deposit Account No. _____.

      i. ☐ RCE fee required under 37 CFR 1.17(e)

      ii. ☐ Extension of time fee (37 CFR 1.136 and 1.17)

      iii. ☐ Other _____

   b. ☐ Check in the amount of $ _____ enclosed

   c. ☑ Payment by credit card (Form PTO-2038 enclosed)

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

***SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED***

| | | | |
|---|---|---|---|
| Signature | /Audrey Kwan/ | Date | February 23, 2012 |
| Name (Print/Type) | Avery Audrey Kwan | Registration No. | 46,850 |

***CERTIFICATE OF MAILING OR TRANSMISSION***

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

| | | | |
|---|---|---|---|
| Signature | /Amber Lundy/ | | |
| Name (Print/Type) | Amber Lundy | Date | February 23, 2012 |

This collection of information is required by 37 CFR 1.114. 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 1.11 and 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: Mail Stop RCE, 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.*

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Attorney Docket Number:** | MOBIP006US |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| Request for continued examination | 1801 | 1 | 930 | 930 |
| | | **Total in USD ($)** | | **930** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 12144791 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 23-FEB-2012 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 15:48:17 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Credit Card |
| Payment was successfully received in RAM | $930 |
| RAM confirmation Number | 2605 |
| Deposit Account | |
| Authorized User | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 1 | Request for Continued Examination (RCE) | MOBIP006_RCE_2-23-12_final_.pdf | 581645<br>30cc27d83ee3e2deec66a84f2123818698b37e06 | no | 1 |
| **Warnings:** | | | | | |
| This is not a USPTO supplied RCE SB30 form. | | | | | |
| **Information:** | | | | | |
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 30406<br>dd1af13f3c6ec80c635c40b0e237f27f767c0ae8 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 612051 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Attorney Docket Number:** | MOBIP006US |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |
| Extension - 1 month with $0 paid | 1251 | 1 | 150 | 150 |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| | | | **Total in USD ($)** | **150** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 12145507 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 23-FEB-2012 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 16:16:49 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Credit Card |
| Payment was successfully received in RAM | $150 |
| RAM confirmation Number | 3286 |
| Deposit Account | |
| Authorized User | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 1 | Fee Worksheet (SB06) | fee-info.pdf | 30074<br>f894cb5820accade43ad0707cb78aa260b5bf7ef | no | 2 |

| | |
|---|---|
| **Warnings:** | |
| **Information:** | |
| **Total Files Size (in bytes):** | 30074 |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. 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.

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY ☐ RATE ($) | SMALL ENTITY ☐ FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT 02/23/2012 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * 20 | Minus | ** 23 | = 0 | X $ = | | OR | X $60= | 0 |
| Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $250= | 0 |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/CATHERINE SMITH/

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.*

UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

19694 7590 04/12/2012

Kwan Intellectual Property Law
1300 Clay St, Suite 600
Oakland, CA 94612

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| ART UNIT | PAPER NUMBER |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 04/12/2012 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@kwanip.com
alundy@kwanip.com
jferguson@kwanip.com



Petitioner Disney Ex-1004, 0373

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 February 2012*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)☒ Claim(s) *25-44* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *25-44* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/23/12 has been entered.

### *Claim Rejections - 35 USC § 101*

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. **Claims 39-44** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter since it fails to be limited to embodiments which fall within a statutory category.

**Claims 39-44** recite “computer readable medium comprising computer code” that causes certain steps to be performed.

It is noted that applicant fails to provide antecedent basis for the claim term “computer readable medium comprising computer code” intended to be covered within the meaning in the disclosure. Since the applicant fails to provide antecedent basic to limit the specific statutory embodiments, “computer readable storage medium” (i)

encompasses non-statutory embodiments such as carrier signal, radio wave, light wave, and transmission medium/media and (ii) may be further interpreted to be software per se.

Transitory transmission media encompassing “carrier signal, radio wave, light wave, transmission medium/media", are not a Manufacture within the meaning of 101. Furthermore, claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O’Reilly, 56 U.S. (15 How.) at 112-14. These characterizations above are applicable to the claimed invention in Claims 39-44 and thus, these claims are non-statutory.

Please also be advised that software per se, which is an embodiment encompassed by the claimed invention in Claims 39-44, is nonstatutory subject matter as well.

In view of the above analysis, claims 39-44 are ineligible for patent protection as failing to be limited to embodiments which fall within a statutory category.

### ***Response to Arguments***

1. Please note that the objection to the Specification has been withdrawn.
2. Please also note new grounds for rejection under Section 103 set forth below.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 25-28, 30-35, 37-42 and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent Publication No. 2011/0131622 A1 to Wu et al., further in view of U.S. Patent Publication No. 2007/0044128 A1 to Witt.

3. **As to Claim 39**, Barrett discloses a computer readable medium (Fig. 3B, "channel change server 108" comprising "processor 206" and other components and paragraph 30, teaching that the "memory 204" comprises computer software instructions and codes, thus teaching "computer readable medium"), comprising:

computer code for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer (Figs. 3B and 5 and paragraph 58, teaching that the channel change server 108, i.e., the streaming server, may accept one or more video streams 110 and buffer each such video stream 110, thus teaching this limitation);

computer code for receiving a second media stream including a second plurality of frames, the second media stream received [at] the streaming server and maintained in a second channel buffer (Figs. 3B and 5 and paragraph 58, teaching that the channel

change server 108, i.e., the streaming server, may accept one or more video streams 110 and buffer each such video stream 110, thus teaching this limitation);

computer code for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer (Figs. 3B and 5 and paragraph 59, teaching that in each buffered video stream 110, at least one I frame, i.e., "key frame", is retained (by the “I frame cacher 214” situated in the “channel change server 108”), thus teaching determining the position of such I/key frame in the buffer, thus teaching this limitation);

computer code for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream (Fig. 3B and Fig. 5 and paragraphs 50-51 and 61, teaching that a "client 106" may send a "channel change request CCR" that is then detected at the "channel change server 108" that requests a change to a second video stream/channel, teaching this limitation);

computer code for identifying a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request (see, e.g., Figs. 5 and 3B and paragraphs 62 and 50-51, teaching that, for example, when a "channel change request CCR 212' or CCR 212"" is received/detected from a client 106, the next frame sent to the client 106 is the “first retained I frame 210’" and the "second retained I frame 210"" are sent, respectively in response to the CCR 212' and 212", such first/second retained

I frames 210' and 210'' being "available" in the buffer subsequent in time, after the reception of the CCR 212' and 212'', respectively, thus teaching “the next available key frame is provided as the second key frame in response to the channel change request” and thus teaching this limitation) wherein no predictive frames are transmitted at the beginning of the channel change request (please see discussion above, where no predictive frame is sent to the CCR-sending client before the first/second retained I frame 210' or 210'', as the case may be, thus teaching “wherein no predictive frames are transmitted at the beginning of the channel change request”).

Wu discloses

determining positions of a plurality of key frames in the first channel buffer and the second channel buffer (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame] corresponding to that particular stream is immediately read from the cache memory”, thus teaching to an ordinary artisan that the position of a key frame [i.e., the "previous I frame corresponding to that particular stream"] must be determined in order for such "previous I frame" to be "immediately read" from the cache/buffer, thus teaching this limitation), the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer (paragraph 13, teaching that for each stream, its corresponding stream buffer/"cache memory” contains at least “the previous I, P and B frames”, teaching this limitation),

wherein determining positions of the plurality of key frames includes determining video codec information (paragraphs 14-24, teaching that the MPEG2 standard defines specific video codec specifications for I, P and B frames, thus teaching that the MPEG2 standard teaches methods of distinguishing and determining I frames [i.e., "key frames"] from the other frame types based on video codec information, thus teaching this limitation), determining a group of pictures (GOP) size (paragraph 18, teaching that the GOP size is one consideration in the delineation of I, P and B frames, teaching “determining a GOP size").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barret, Abstract, paragraphs 1-7).

Barrett and Wu do not expressly disclose wherein determining the plurality of key frames includes determining a frame size and performing at least partial decoding of the media stream using a processor at the streaming server.

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size and performing at least partial decoding of the media stream (paragraph 34, teaching that “the video data is analyzed for the structure [i.e., “performing at least partial decoding of the media data”] and quantity of data [i.e., “determining a frame size”] to determine if the data is either a key frame or a delta frame”, teaching this limitation) using a processor at the streaming server (Fig. 4,

"processor" comprising “server30”, “key/delta frame determinator 32” and other components, thus teaching "using a processor at the streaming server").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu, Barrett and Witt are combinable to disclose and teach “wherein determining positions of the plurality of key frames includes determining video codec information, determining a group of pictures (GOP) size, determining a frame size, and performing at least partial decoding of the first media stream and the second media stream using a processor at the streaming server” and “computer code for identifying based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request”. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

4. **As to Claim 40**, please note that Barrett, Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the first media stream is a first video stream and the second media stream is a second video stream (paragraph 13, teaching multiple broadcast media streams and paragraphs 14-24, teaching MPEG2 standard for video encoding, thus teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

5. **As to Claim 41**, please note that Barrett, Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames have the largest frame size of the three types of MPEG frames, I, P and B frames (paragraph 15-18).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

Barrett and Wu do not expressly disclose wherein determining the plurality of key frames includes determining a frame size.

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size (paragraph 34, teaching that “the video data is analyzed for the structure [i.e., “performing at least partial decoding of the media data”] and quantity of data [i.e., “determining a frame size”] to determine if the data is either a key frame or a delta frame”, teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting frames larger than a particular size". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

6. **As to Claim 42**, please note that Barrett, Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames appear at the start of a GOP (Fig. 2 and paragraph 15-18).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

Witt discloses and teaches wherein determining the plurality of key frames includes determining the structure of the received data (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting the start of a GOP". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

7. **As to Claim 44**, please note that Barrett, Witt and Wu disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the key frame is an I-frame (Fig. 2 and paragraphs 14-24, teaching MPEG2 standard for encoding frames wherein the "key/reference frame" is the so-called I-frame).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

8. **As to Claim 32,** please see rejection for Claim 39.

9. **As to Claim 33,** please see rejection for Claim 40.

10. **As to Claim 34,** please see rejection for Claim 41.

11. **As to Claim 35,** please see rejection for Claim 42.

12. **As to Claim 37,** please see rejection for Claim 44.

13. **As to Claim 38**, please note that Barrett, Witt and Wu disclose and teach the apparatus as in the parent claim 32.

Wu further discloses wherein channel change does not occur until the second key frame can be provided to the client device (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client has switched] corresponding to that particular stream is immediately read from the cache memory" and "in process block 505, the VAM starts bursting from STRMBUF [i.e., the channel buffer for the new, second channel/stream] beginning with the preamble and first I frame into the port buffer PBUF", thus teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

14. **As to Claim 25,** please see rejection for Claim 39.

15. **As to Claim 26,** please see rejection for Claim 40.

16. **As to Claim 27,** please see rejection for Claim 41.

17. **As to Claim 28,** please see rejection for Claim 42.

18. **As to Claim 30,** please see rejection for Claim 44.

19. **As to Claim 31,** please see rejection for Claim 38.

20. **Claims 29, 36 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent Publication No. 2011/0131622 A1 to Wu et al. and U.S. Patent Publication No. 2007/0044128 A1 to Witt, further in view of U.S. Patent Publication No. 2007/0107026 A1 to Sherer et al.

21. **As to Claim 43,** Wu, Barrett and Witt teach the apparatus as in the parent claim 39.

Wu further discloses key frames appear at the start of a GOP (Fig. 2 and paragraph 15-18).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

Sherer teaches wherein the key frames are identified by flagging the first key frame of a stream to be channel-switched to as a key frame (paragraph 39, “the stream server indicates channel change boundaries between unicast streams by ... using a marker bit or an explicit signal at the first I-frame of a new unicast stream", teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Sherer, in

conjunction with the teachings of Wu. In particular, Sherer, Barrett, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by flagging each start of a GOP as a key frame". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Sherer, paragraphs 3-11).

22. **As to Claim 36,** please see rejection for Claim 43.

23. **As to Claim 29,** please see rejection for Claim 43.

## ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on (571)272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Derrick W Ferris/
Supervisory Patent Examiner, Art Unit 2478

| Notice of References Cited | Application/Control No. 11/626,340 | Applicant(s)/Patent Under Reexamination JOHANSSON ET AL. | |
|---|---|---|---|
| | Examiner PETER CHENG | Art Unit 2463 | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|---|---|---|---|---|
| * | A | US-2005/0081244 | 04-2005 | Barrett et al. | 725/097 |
| | B | US- | | | |
| | C | US- | | | |
| | D | US- | | | |
| | E | US- | | | |
| | F | US- | | | |
| | G | US- | | | |
| | H | US- | | | |
| | I | US- | | | |
| | J | US- | | | |
| | K | US- | | | |
| | L | US- | | | |
| | M | US- | | | |

**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
|---|---|---|---|---|---|---|
| | N | | | | | |
| | O | | | | | |
| | P | | | | | |
| | Q | | | | | |
| | R | | | | | |
| | S | | | | | |
| | T | | | | | |

**NON-PATENT DOCUMENTS**

| * | | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
| | U | |
| | V | |
| | W | |
| | X | |

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



Petitioner Disney Ex-1004, 0389

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | **Examiner** | **Art Unit** |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | 04/03/2012 | | |
| | 1 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 2 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 3 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 4 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 5 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 6 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 7 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 8 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 9 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 10 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 11 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 12 | ✓ | ✓ | - | - | - | - | - | | |
| | 13 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 14 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 15 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 16 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 17 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 18 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 19 | ✓ | ✓ | ✓ | ✓ | - | - | - | | |
| | 20 | ✓ | ✓ | - | - | - | - | - | | |
| | 21 | | | ✓ | ✓ | - | - | - | | |
| | 22 | | | ✓ | ✓ | - | - | - | | |
| | 23 | | | ✓ | ✓ | - | - | - | | |
| | 24 | | | ✓ | ✓ | - | - | - | | |
| | 25 | | | | | ✓ | ✓ | ✓ | | |
| | 26 | | | | | ✓ | ✓ | ✓ | | |
| | 27 | | | | | ✓ | ✓ | ✓ | | |
| | 28 | | | | | ✓ | ✓ | ✓ | | |
| | 29 | | | | | ✓ | ✓ | ✓ | | |
| | 30 | | | | | ✓ | ✓ | ✓ | | |
| | 31 | | | | | ✓ | ✓ | ✓ | | |
| | 32 | | | | | ✓ | ✓ | ✓ | | |
| | 33 | | | | | ✓ | ✓ | ✓ | | |
| | 34 | | | | | ✓ | ✓ | ✓ | | |
| | 35 | | | | | ✓ | ✓ | ✓ | | |
| | 36 | | | | | ✓ | ✓ | ✓ | | |



Petitioner Disney Ex-1004, 0390

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | 04/03/2012 | | |
| | 37 | | | | | ✓ | ✓ | ✓ | | |
| | 38 | | | | | ✓ | ✓ | ✓ | | |
| | 39 | | | | | ✓ | ✓ | ✓ | | |
| | 40 | | | | | ✓ | ✓ | ✓ | | |
| | 41 | | | | | ✓ | ✓ | ✓ | | |
| | 42 | | | | | ✓ | ✓ | ✓ | | |
| | 43 | | | | | ✓ | ✓ | ✓ | | |
| | 44 | | | | | ✓ | ✓ | ✓ | | |



Petitioner Disney Ex-1004, 0391

**EAST Search History**

**EAST Search History (Prior Art)**

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| S127 | 0 | "2006143669" | US-PGPUB; USPAT | ADJ | ON | 2012/03/29 17:55 |
| S128 | 0 | "200600143669" | US-PGPUB; USPAT | ADJ | ON | 2012/03/29 17:55 |
| S129 | 1 | "20060143669" | US-PGPUB; USPAT | ADJ | ON | 2012/03/29 17:56 |
| S130 | 192 | ((referenc$3 or key) near5 frame or i$1frame) with channel$3 near5 (switch$3 or chang$3) and ("370" or "725").clas. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/03/29 19:40 |
| S131 | 7244 | (370/503,509-513,395.64).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2012/03/29 19:40 |
| S132 | 30 | S131 and ((referenc$3 or base or key or common) near5 frame or i$1frame) same channel$3 near5 (switch$3 or chang$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/03/29 19:40 |
| S133 | 18440 | (709/203,209,208).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2012/03/29 19:40 |
| S134 | 5 | S133 and ((referenc$3 or base or key or common) near5 frame or i$1frame) same channel$3 near5 (switch$3 or chang$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/03/29 19:40 |
| S135 | 18 | (microsoft).as. and (green and barrett and baldwin).in. and fast with channel with change | US-PGPUB; USPAT | ADJ | ON | 2012/04/03 11:25 |
| S136 | 22 | (microsoft).as. and (green and barrett and baldwin).in. and fast with channel with change | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/04/03 11:26 |
| S137 | 3 | "20050081244" | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/04/03 11:30 |

**EAST Search History (Interference)**

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Petitioner Disney Ex-1004, 0392

**4/3/2012 8:34:36 PM**
**C:\Users\pcheng\Documents\EAST\Workspaces\11626340.wsp**

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

## SEARCHED

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |
| ABOVE | UPDATED | 7/31/2010 | PC |
| ABOVE | UPDATED | 12/6/2010 | PC |
| ABOVE | UPDATED | 7/25/11 | PC |
| ABOVE | UPDATED | 10/14/11, 3/29/12 | PC |

## SEARCH NOTES

| Search Notes | Date | Examiner |
|---|---|---|
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 (updated 3/9/2010) | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/2009 (updated 3/9/2010 and 7/31/2010 and 12/6/2010 and 7/25/11, 10/14/11, 3/29/12) | pc |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| | | | |

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006US |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop Amendment Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on June 8, 2012.

Signed: /Amber Lundy/
Amber Lundy

# *RESPONSE TO OFFICE ACTION*

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

Please consider the following remarks and arguments in response to the Office Action mailed April 12, 2012.

**Amendments to the Claims** begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.



Petitioner Disney Ex-1004, 0395

## IN THE CLAIMS

What is claimed is:

1-24. (Canceled)

25. (Currently Amended) A method, comprising:

receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer, the streaming server configured to receive the first media stream from a media aggregation server, wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm;

receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes ~~determining video codec information, determining a group of pictures (GOP) size,~~ determining a frame size~~, and performing at least partial decoding of the first media stream and the second media stream~~ using a processor at the streaming server;

receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

identifying based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

26. (Previously Presented) The method of claim 25, wherein the first media stream is a first video stream and the second media stream is a second video stream.

27. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting frames larger than a particular size.

28. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting the start of a GOP.

29. (Previously Presented) The method of claim 25, wherein the key frames are identified by flagging each start of a GOP as a key frame.

30. (Previously Presented) The method of claim 25, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0396

31. (Previously Presented) The method of claim 25, wherein channel change does not occur until the second key frame can be provided to the client device.

32. (Currently Amended) A system, comprising:

an interface configured to receive a first media stream including a first plurality of frames and a second media stream including a second plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer and the second media stream received a the streaming server and maintained in a second channel buffer, the streaming server configured to receive the first media stream from a media aggregation server, wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm;

a processor configured to determine positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes ~~determining video codec information, determining a group of pictures (GOP) size,~~ determining a frame size using a processor at the streaming server;

wherein the processor is further configured to identify based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

33. (Previously Presented) The method of claim 32, wherein the first media stream is a first video stream and the second media stream is a second video stream.

34. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting frames larger than a particular size.

35. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting the start of a GOP.

36. (Previously Presented) The method of claim 32, wherein the key frames are identified by flagging each start of a GOP as a key frame.

37. (Previously Presented) The method of claim 32, wherein the key frame is an I-frame.

38. (Previously Presented) The method of claim 32, wherein channel change does not occur until the second key frame can be provided to the client device.



Petitioner Disney Ex-1004, 0397

39. (Currently Amended) A non-transitory computer readable medium, comprising:

computer code for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer, the streaming server configured to receive the first media stream from a media aggregation server, wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm;

computer code for receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

computer code for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes ~~determining video codec information, determining a group of pictures (GOP) size,~~ determining a frame size~~, and performing at least partial decoding of the first media stream and the second media stream~~ using a processor at the streaming server;

computer code for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

computer code for identifying based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

40. (Previously Presented) The computer readable medium of claim 39, wherein the first media stream is a first video stream and the second media stream is a second video stream.

41. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by detecting frames larger than a particular size.

42. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by detecting the start of a GOP.

43. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by flagging each start of a GOP as a key frame.

44. (Previously Presented) The computer readable medium of claim 39, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0398

## REMARKS/ARGUMENTS

Claims 25-44 are pending. Claims 39-44 are rejected under 35 U.S.C. 101. Claim 39 has been amended to recite a non-transitory computer readable medium. The rejection under 35 U.S.C. 101 is believed overcome.

In the previous Office Action, claims 25-28, 30-35, 37-42, and 44 including all independent claims were rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (2011/0131622) in view of Witt (20070044128). In light of the previous Office Action Response, claims 25-28, 30-35, 37-42, and 44 are now rejected under 35 U.S.C. 103(a) as being unpatentable over Barrett (2005/0081244) in view of Wu and further in view of Witt.

The Office Action notes that the materials cited to not explicitly teach or suggest "identifying based on frame size a next available key frame associated with the second media stream." The Office Action states that key frames are known to be large and Wu does describe determining GOP sizes. However, it is respectfully submitted that none of the materials cited in the Office Action teach or suggest using frame size to determine the location of key frames. It is respectfully submitted that the materials cited arguably only describe performing decoding or analyzing GOP positions to identify key frames, not by using frame sizes themselves.

The techniques of the present invention recognize that using frame sizes themselves to identify key frames provides a particularly efficient way of identifying key frames in media streams that may be processed in real-time.

Nonetheless, the independent claims have been amended to facilitate prosecution. The independent claims have been amended to recite "the streaming server configured to receive the first media stream from a media aggregation server, wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm." None of the materials teach or suggest a media aggregation server connected to the streaming server, where the media aggregation server obtains content from a database, a content provider, and an encoder farm. This amendment is believed supported by the original Claims, Specification, and Drawings. For example, Figure 3 and associated description show a media aggregation server 361 connected to database 355, content partner 385, and encoder farm 371.



Petitioner Disney Ex-1004, 0399

In light of the above remarks for the independent claims, it is respectfully submitted that all pending claims are allowable. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached using the contact information provided below.

Please charge any additional fees or credit any overpayment to Deposit Account 50-5612.

Respectfully submitted,

/Audrey Kwan/

Avery Audrey Kwan
Reg. No. 46,850

Kwan & Olynick LLP
1300 Clay Street, Ste 600
Oakland, CA 94612
408-883-5025
akwan@kwanip.com



Petitioner Disney Ex-1004, 0400

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 12972888 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 08-JUN-2012 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 16:53:04 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | MOBIP006_Response_filed_6-8-12.pdf | 42592<br>472f3b4613fe5da8d26c362263bc076d2187ec14 | yes | 6 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Amendment/Req. Reconsideration-After Non-Final Reject | 1 | 1 |
| | Claims | 2 | 4 |
| | Applicant Arguments/Remarks Made in an Amendment | 5 | 6 |
| **Warnings:** | | | |
| **Information:** | | | |
| | **Total Files Size (in bytes):** | 42592 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. 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.

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| | (Column 1) | (Column 2) | SMALL ENTITY ☐ RATE ($) | SMALL ENTITY ☐ FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | | | | | |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

AMENDMENT 06/08/2012

| | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * 20 | Minus | ** 23 | = 0 | X $ = | | OR | X $60= | 0 |
| Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $250= | 0 |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

AMENDMENT

| | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/JACQUELINE COUPLIN/

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.*

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

19694 7590 08/14/2012

Kwan & Olynick LLP
1300 Clay St, Suite 600
Oakland, CA 94612

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| ART UNIT | PAPER NUMBER |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 08/14/2012 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@kwanip.com
alundy@kwanip.com
jferguson@kwanip.com



Petitioner Disney Ex-1004, 0404

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *08 June 2012*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)☒ Claim(s) *25-44* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *25-44* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

10)☒ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

There is no support in the Specification for the limitation "wherein the media aggregation server obtains content from … an encoder farm", recited in independent claims 25, 32 and 39.

Applicant states that "Figure 3 and associated description show a media aggregation server 361 connected to database 355, content partner 385, and encoder farm 371" and that this allegedly provides the proper support. However, a closer examination of Fig. 3 and paragraph 37 reveals that the "encoder farm" actually receives data from the "media aggregation server" to process/encode/convert, and not the other way around as recited by this limitation. For example, paragraph 37 discloses that "the encoder farm 371 can be used to process media content ... from media aggregation server 361" and does not teach that the encoded/processed content is then passed back to the media aggregation server from the encoder farm. Visually, Fig. 3 also discloses and teaches the same thing, that is, there is no arrow going from the encoder farm to the media aggregation server, thus indicating that there is no data that flows from the encoder farm to the media aggregation server, which is what the limitation above would require.

***Response to Arguments***

1. Please note that the Section 101 rejection for claims 39-44 has been withdrawn.

2. Applicant's arguments with respect to the Section 103 rejection have been considered but are not persuasive.

In particular, Applicant argues that "none of the materials cited in the Office Action teach or suggest using frame size to determine the location of key frames, it is respectfully submitted that the materials cited arguably only describe performing decoding or analyzing GOP positions to identify key frames, not by using frame sizes themselves." (page 5 of Applicant's Response).

The examiner would respectfully disagree. As set forth below in the rejection, the reference Witt teaching using the "quantity of data" in a data frame to determine whether a particular presently received data frame is a "key frame" (paragraphs 33-34), which teaches that whether the present received frame, i.e., the present "location" of the data stream being received (using the broadest reasonable interpretation of the term "location"), contains a key frame, is determined based on examining the "frame size", thus teaching "using frame size to determine location of key frames". As set forth below, this teaching above in Witt is also combinable with the teachings in Barrett to teach this feature. Please see rejection for details.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 39, 32 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent Publication No. 2007/0044128 A1 to Witt, further in view of U.S. Patent Publication No. 2003/0005455 to Bowers.

3. **As to Claim 39**, Barrett discloses a computer readable medium (Fig. 3B, “channel change server 108” comprising “processor 206” and other components and paragraph 30, teaching that the "memory 204" comprises computer software instructions and codes, thus teaching “computer readable medium”), comprising:

computer code for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer (Figs. 3B and 5 and paragraph 58, teaching that the channel change server 108, i.e., the streaming server, may accept one or more video streams 110 and buffer each such video stream 110, thus teaching this limitation);

computer code for receiving a second media stream including a second plurality of frames, the second media stream received [at] the streaming server and maintained in a second channel buffer (Figs. 3B and 5 and paragraph 58, teaching that the channel

change server 108, i.e., the streaming server, may accept one or more video streams 110 and buffer each such video stream 110, thus teaching this limitation);

computer code for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer (Figs. 3B and 5 and paragraph 59, teaching that in each buffered video stream 110, at least one I frame, i.e., "key frame", is retained (by the “I frame cacher 214” situated in the “channel change server 108”), thus teaching determining the position of such I/key frame in the buffer, thus teaching this limitation);

computer code for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream (Fig. 3B and Fig. 5 and paragraphs 50-51 and 61, teaching that a "client 106" may send a "channel change request CCR" that is then detected at the "channel change server 108" that requests a change to a second video stream/channel, teaching this limitation);

computer code for identifying a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request (see, e.g., Figs. 5 and 3B and paragraphs 62 and 50-51, teaching that, for example, when a "channel change request CCR 212' or CCR 212"" is received/detected from a client 106, the next frame sent to the client 106 is the “first retained I frame 210”' and the "second retained I frame 210"" are sent, respectively in response to the CCR 212' and 212", such first/second retained

I frames 210' and 210'' being "available" in the buffer subsequent in time, after the reception of the CCR 212' and 212'', respectively, thus teaching “the next available key frame is provided as the second key frame in response to the channel change request” and thus teaching this limitation) wherein no predictive frames are transmitted at the beginning of the channel change request (please see discussion above, where no predictive frame is sent to the CCR-sending client before the first/second retained I frame 210' or 210'', as the case may be, thus teaching “wherein no predictive frames are transmitted at the beginning of the channel change request”).

Barrett does not expressly disclose wherein determining the plurality of key frames includes determining a frame size using a processor at the streaming server.

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size (paragraphs 33 and 34, teaching that “the video data is analyzed for the structure [i.e., “performing at least partial decoding of the media data”] and quantity of data [i.e., “determining a frame size”] to determine if the data is either a key frame or a delta frame”, thus teaching that the “data” is organized in "frames" [this is also taught in Figs. 2 and 3, which also teaches a “plurality of key frames”] and that the “quantity of data” in such data "frames" is analyzed to determine whether the data frame is a “key frame”, teaching this limitation; please further note that another interpretation of the teachings above in paragraphs 33-34 also teaches that, whether the present received frame, i.e., the present "location" or “position” of the data stream being received (using the broadest reasonable interpretation of the term “location”/”position”), contains a key frame, is determined based on examining the

"frame size", thus teaching "determining positions of the plurality of key frames [by] determining a frame size") using a processor at the streaming server (Fig. 4, "processor" comprising "server30", "key/delta frame determinator 32" and other components, thus teaching "using a processor at the streaming server").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Barrett. In particular, since Barrett teaches determining positions of key frames in the channel buffers, and since Witt teaches determining whether a frame is a key frame based on the "frame size", the teachings of Barrett and Witt above are combinable to disclose and teach "wherein determining positions of the plurality of key frames includes determining a frame size using a processor at the streaming server" and "computer code for identifying based on frame size a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

Bowers discloses the streaming server configured to receive the first media stream from a media aggregation server (see, e.g., paragraphs 53-59 and Fig. 4, teaching that the "data termination module 36a" [i.e., the recited "streaming server"] receives media content from "aggregation module 102a" [i.e., the recited "media

aggregation server"], teaching this limitation), wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm (paragraphs 12-13 and 30-31, teaching that the media aggregation server receives the media content from the "proxy server", which receives the media content from "servers, source modules or other data repositories containing or storing the media or data", such media content collectively teaching the recited "media stream", thus teaching that this limitation; further note that paragraphs 30-31 further teach that the "source modules" that provide the media streams ultimately to the media aggregation server "perform the general function of ... delivering media or data through" a network to the media aggregation server, thus teaching that the source modules perform encoding functions and thus are an embodiment of an "encoder farm"; further note paragraphs 56-59, teaching that the media content to be delivered to the aggregation modules 102 are first processed by "parental control modules 104" and then delivered to the aggregation modules 102, thus teaching that the "parental control modules 104" are embodiments of an "encoder farm", and thus further teaching "wherein the media aggregation server obtains content from … an encoder farm"; further see paragraph 54, further teaching that each "aggregation module 102" is capable of converting received media content from one format to another format before delivering such content to the receiver modules, further teaching that within each aggregation module 102 is an "encoder farm" that encodes the received content before delivery to the receiver modules, further teaching another embodiment of this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Bowers, in conjunction with the teachings of Barrett and Witt. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7; Bowers, paragraphs 1-17).

4. **As to Claim 32,** please see rejection for Claim 39.

5. **As to Claim 25,** please see rejection for Claim 39.

1. **Claims 40-42, 44, 33-35, 37-38, 26-28 and 30-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent Publication No. 2007/0044128 A1 to Witt and U.S. Patent Publication No. 2003/0005455 to Bowers, further in view of U.S. Patent Publication No. 2011/0131622 to Wu.

6. **As to Claim 40**, please note that Barrett, Witt and Bowers disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the first media stream is a first video stream and the second media stream is a second video stream (paragraph 13, teaching multiple broadcast media streams and paragraphs 14-24, teaching MPEG2 standard for video encoding, thus teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction

with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

7. **As to Claim 41**, please note that Barrett, Witt and Bowers disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames have the largest frame size of the three types of MPEG frames, I, P and B frames (paragraph 15-18).

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting frames larger than a particular size". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

8. **As to Claim 42**, please note that Barrett, Witt and Bowers disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames appear at the start of a GOP (Fig. 2 and paragraph 15-18).

Witt discloses and teaches wherein determining the plurality of key frames includes determining the structure of the received data (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting the start of a GOP". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

9. **As to Claim 44**, please note that Barrett, Witt and Bowers disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the key frame is an I-frame (Fig. 2 and paragraphs 14-24, teaching MPEG2 standard for encoding frames wherein the "key/reference frame" is the so-called I-frame).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to

ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

10. **As to Claim 33,** please see rejection for Claim 40.

11. **As to Claim 34,** please see rejection for Claim 41.

12. **As to Claim 35,** please see rejection for Claim 42.

13. **As to Claim 37,** please see rejection for Claim 44.

14. **As to Claim 38**, please note that Barrett, Witt and Bowers disclose and teach the apparatus as in the parent claim 32.

Wu further discloses wherein channel change does not occur until the second key frame can be provided to the client device (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client has switched] corresponding to that particular stream is immediately read from the cache memory" and "in process block 505, the VAM starts bursting from STRMBUF [i.e., the channel buffer for the new, second channel/stream] beginning with the preamble and first I frame into the port buffer PBUF", thus teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

15. **As to Claim 26,** please see rejection for Claim 40.

16. **As to Claim 27,** please see rejection for Claim 41.

17. **As to Claim 28,** please see rejection for Claim 42.

18. **As to Claim 30,** please see rejection for Claim 44.

19. **As to Claim 31,** please see rejection for Claim 38.

20. **Claims 29, 36 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent Publication No. 2007/0044128 A1 to Witt and U.S. Patent Publication No. 2003/0005455 A1 to Bowers, further in view of U.S. Patent Publication No. 2007/0107026 A1 to Sherer et al.

21. **As to Claim 43,** Bowers, Barrett and Witt teach the apparatus as in the parent claim 39.

Barrett further discloses key frames appear at the start of a GOP (Figs. 2 and 3a/b and paragraphs 29-31, teaching an MPEG Group of Pictures leading off with an "I frame", i.e., "key frame", thus teaching this limitation).

Sherer teaches wherein the key frames are identified by flagging the first key frame of a stream to be channel-switched to as a key frame (paragraph 39, “the stream server indicates channel change boundaries between unicast streams by ... using a marker bit or an explicit signal at the first I-frame of a new unicast stream", teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Sherer, in conjunction with the teachings of Barrett. In particular, Sherer, Barrett, Bowers and Witt are combinable to disclose and teach "wherein the key frames are identified by flagging each start of a GOP as a key frame". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Sherer, paragraphs 3-11).

22. **As to Claim 36,** please see rejection for Claim 43.

23. **As to Claim 29,** please see rejection for Claim 43.

***Conclusion***

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Mark Rinehart/
Supervisory Patent Examiner, Art Unit 2463

| Notice of References Cited | Application/Control No. 11/626,340 | Applicant(s)/Patent Under Reexamination JOHANSSON ET AL. | |
|---|---|---|---|
| | Examiner PETER CHENG | Art Unit 2463 | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|---|---|---|---|---|
| * | A | US-2003/0005455 | 01-2003 | Bowers, J. Rob | 725/90 |
| | B | US- | | | |
| | C | US- | | | |
| | D | US- | | | |
| | E | US- | | | |
| | F | US- | | | |
| | G | US- | | | |
| | H | US- | | | |
| | I | US- | | | |
| | J | US- | | | |
| | K | US- | | | |
| | L | US- | | | |
| | M | US- | | | |

**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
|---|---|---|---|---|---|---|
| | N | | | | | |
| | O | | | | | |
| | P | | | | | |
| | Q | | | | | |
| | R | | | | | |
| | S | | | | | |
| | T | | | | | |

**NON-PATENT DOCUMENTS**

| * | | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
| | U | |
| | V | |
| | W | |
| | X | |

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



Petitioner Disney Ex-1004, 0420

**EAST Search History**

**EAST Search History (Prior Art)**

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| S143 | 355 | (media or video) with aggregat$4 same (data$1base or stored or storage) same (encod$3 or real$1time) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2012/08/02 17:36 |
| S144 | 202 | (media or video) with aggregat$4 with ((data$1base or stored or storage) and (encod$3 or real$1time)) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2012/08/02 17:37 |
| S145 | 68 | (media or video) with aggregat$4 with (data$1base and (encod$3 or real$1time)) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2012/08/02 17:38 |
| S146 | 4 | (media or video) with aggregat$4 same (data$1base or stored or storage) same (encod$3 or real$1time) and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (quantit$3 or siz$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2012/08/02 17:47 |
| S147 | 20 | aggregat$4 same (data$1base or stored or storage) same (encod$3 or real$1time) and ((referenc$3 or base or key or common) near5 frame or i$1frame) with (quantit$3 or siz$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2012/08/02 17:48 |

**EAST Search History (Interference)**

<This search history is empty>

**8/7/2012 8:03:40 PM**
**C:\Users\pcheng\Documents\EAST\Workspaces\11626340.wsp**



Petitioner Disney Ex-1004, 0421

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| SEARCHED | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |
| ABOVE | UPDATED | 7/31/2010 | PC |
| ABOVE | UPDATED | 12/6/2010 | PC |
| ABOVE | UPDATED | 7/25/11 | PC |
| ABOVE | UPDATED | 10/14/11, 3/29/12 | PC |

| SEARCH NOTES | | |
|---|---|---|
| Search Notes | Date | Examiner |
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 (updated 3/9/2010) | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/09, 3/9/10, 7/31/10, 12/6/10, 7/25/11, 10/14/11, 3/29/12, 8/6/12 | pc |

| INTERFERENCE SEARCH | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| | | | |

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | **Examiner** | **Art Unit** |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | 04/03/2012 | 08/08/2012 | |
| | 1 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 2 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 3 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 4 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 5 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 6 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 7 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 8 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 9 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 10 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 11 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 12 | ✓ | ✓ | - | - | - | - | - | - | |
| | 13 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 14 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 15 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 16 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 17 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 18 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 19 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | |
| | 20 | ✓ | ✓ | - | - | - | - | - | - | |
| | 21 | | | ✓ | ✓ | - | - | - | - | |
| | 22 | | | ✓ | ✓ | - | - | - | - | |
| | 23 | | | ✓ | ✓ | - | - | - | - | |
| | 24 | | | ✓ | ✓ | - | - | - | - | |
| | 25 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 26 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 27 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 28 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 29 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 30 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 31 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 32 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 33 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 34 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 35 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 36 | | | | | ✓ | ✓ | ✓ | ✓ | |



Petitioner Disney Ex-1004, 0423

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | 04/03/2012 | 08/08/2012 | |
| | 37 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 38 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 39 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 40 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 41 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 42 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 43 | | | | | ✓ | ✓ | ✓ | ✓ | |
| | 44 | | | | | ✓ | ✓ | ✓ | ✓ | |



Petitioner Disney Ex-1004, 0424

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006US |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop AF, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on October 9, 2012.

Signed: /Amber Lundy/
Amber Lundy

# ***RESPONSE TO OFFICE ACTION***

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

Please consider the following remarks and arguments.

**Amendments to the Claims** begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.



Petitioner Disney Ex-1004, 0425

## IN THE CLAIMS

What is claimed is:

1-24. (Canceled)

25. (Currently Amended) A method, comprising:

receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer, the streaming server configured to receive the first media stream from a media aggregation server~~, wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm~~;

receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining at a streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame key frame as subsequent key frames~~a frame size using a processor at the streaming server~~;

receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

identifying ~~based on frame size~~ a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

26. (Previously Presented) The method of claim 25, wherein the first media stream is a first video stream and the second media stream is a second video stream.

27. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting frames larger than a particular size.

28. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting the start of a GOP.

29. (Previously Presented) The method of claim 25, wherein the key frames are identified by flagging each start of a GOP as a key frame.

30. (Previously Presented) The method of claim 25, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0426

31. (Previously Presented) The method of claim 25, wherein channel change does not occur until the second key frame can be provided to the client device.

32. (Currently Amended) A system, comprising:

an interface configured to receive a first media stream including a first plurality of frames and a second media stream including a second plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer and the second media stream received a the streaming server and maintained in a second channel buffer, the streaming server configured to receive the first media stream from a media aggregation server~~, wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm~~;

a processor configured to determine positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining at a streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame key frame as subsequent key frames~~a frame size using a processor at the streaming server~~;

wherein the processor is further configured to identify ~~based on frame size~~ a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

33. (Previously Presented) The method of claim 32, wherein the first media stream is a first video stream and the second media stream is a second video stream.

34. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting frames larger than a particular size.

35. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting the start of a GOP.

36. (Previously Presented) The method of claim 32, wherein the key frames are identified by flagging each start of a GOP as a key frame.

37. (Previously Presented) The method of claim 32, wherein the key frame is an I-frame.

38. (Previously Presented) The method of claim 32, wherein channel change does not occur until the second key frame can be provided to the client device.

39. (Currently Amended) A non-transitory computer readable medium, comprising:

computer code for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer, the



Petitioner Disney Ex-1004, 0427

streaming server configured to receive the first media stream from a media aggregation server~~,~~ ~~wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm~~;

computer code for receiving a second media stream including a second plurality of frames, the second media stream received a the streaming server and maintained in a second channel buffer;

computer code for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer, wherein determining positions of the plurality of key frames includes determining at a streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame key frame as subsequent key frames ~~a frame size using a processor at the streaming server~~;

computer code for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

computer code for identifying ~~based on frame size~~ a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

40. (Previously Presented) The computer readable medium of claim 39, wherein the first media stream is a first video stream and the second media stream is a second video stream.

41. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by detecting frames larger than a particular size.

42. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by detecting the start of a GOP.

43. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by flagging each start of a GOP as a key frame.

44. (Previously Presented) The computer readable medium of claim 39, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0428

## REMARKS/ARGUMENTS

Claims 25-44 are pending. The Specification was objected to because claims 25, 32, and 39 recite "wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm." To facilitate prosecution, claims 25, 32, and 39 have been amended to remove this recitation. This amendment is believed to introduce no new matter and is not believed to require any new search. This objection is believed overcome.

Claims 25-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the three-way combination of Barrett (2005/0081244) in view of Wu (2011/0131622) and further in view of Witt (20070044128).

To facilitate prosecution, the independent claims have been amended to recite "wherein determining positions of the plurality of key frames includes determining at a streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame key frame as subsequent key frames." This amendment is believed supported by the original Claims, Specification, and Drawings. For example, "In other examples, key frames may be identified based upon the size of the frame, as key frames are typically much larger than predictive frames. In other examples, only a subset of frames are decoded or partially decoded. In still other examples, once a key frame is determined, the streaming server determines the GOP size N and identifies each Nth frame following a key frame as a subsequent key frame. A variety of approaches can be used to determine key frames and predictive frames." (Present Application [0033])

The materials cited in the Office Action only describe using the structure or amount of data in a frame to determine whether a frame is a key frame at a streaming server. "FIG. 4 is a block diagram of the system according to invention principles. The streaming server 30 receives a video data stream from video source 28. In providing the video data in the system format, the server 30 begins by sending a signal to a key/delta frame determinator 32. The key/delta frame determinator determines if the received video data is either a key frame or a delta frame by analyzing the quantity and structure of the data in the received video data." (Witt [0033])



Petitioner Disney Ex-1004, 0429

In light of the above remarks for the independent claims, it is respectfully submitted that all pending claims are allowable. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached using the contact information provided below.

Please charge any additional fees or credit any overpayment to Deposit Account 50-5612.

Respectfully submitted,

/Audrey Kwan/
Avery Audrey Kwan
Reg. No. 46,850

Kwan & Olynick LLP
1300 Clay Street, Ste 600
Oakland, CA 94612
408-883-5025
akwan@kwanip.com



Petitioner Disney Ex-1004, 0430

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 13939676 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 09-OCT-2012 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 14:29:31 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | MOBIP006_Response_filed_10-09-12.pdf | 112376<br>ad0dfe4309dbacb5fff40e95a111a255cb5cfad8 | yes | 6 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Amendment After Final | 1 | 1 |
| | Claims | 2 | 4 |
| | Applicant Arguments/Remarks Made in an Amendment | 5 | 6 |
| **Warnings:** | | | |
| **Information:** | | | |
| | **Total Files Size (in bytes):** | 112376 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. 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.

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT | 10/09/2012 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * 20 | Minus | ** 23 | = 0 | X $ = | | OR | X $62= | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $250= | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/GAIL WOOTEN/

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.*

UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

19694 7590 10/18/2012

Kwan & Olynick LLP
1300 Clay St, Suite 600
Oakland, CA 94612

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| ART UNIT | PAPER NUMBER |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 10/18/2012 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@kwanip.com
alundy@kwanip.com
jferguson@kwanip.com



Petitioner Disney Ex-1004, 0434

| **Advisory Action Before the Filing of an Appeal Brief** | **Application No.** *11/626,340* | **Applicant(s)** JOHANSSON ET AL. |
|---|---|---|
| | **Examiner** PETER CHENG | **Art Unit** 2463 |

***--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

THE REPLY FILED 09 October 2012 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance;

   (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   *Examiner Note*: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☒ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

9. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.

12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____

13. ☐ Other: _____.

STATUS OF CLAIMS

14. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed: .
    Claim(s) objected to: .
    Claim(s) rejected: 25-44.
    Claim(s) withdrawn from consideration: 1-24.

| /Mark Rinehart/<br>Supervisory Patent Examiner, Art Unit 2463 | /P. C./<br>Examiner, Art Unit 2463 |
|---|---|



Petitioner Disney Ex-1004, 0435

Continuation of 3. NOTE: In each of the independent claims, Applicant has proposed to add the limitation "at a streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame key frame [sic] as subsequent key frames" and to delete the limitation "wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm", among other proposed amendments. These proposed claim amendments would change the scope of the claims and therefore would require further search and consideration. However, please note that applicant's proposed deletion of the limitation "wherein the media aggregation server obtains content from a database, a content provider, and an encoder farm", if properly entered into the record, would overcome the outstanding objection to the Specification.

Continuation of 11. does NOT place the application in condition for allowance because: The proposed claim amendments are not entered for consideration and therefore arguments drawn to them are moot.



Petitioner Disney Ex-1004, 0436

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006US |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop AF, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on October 9, 2012.

Signed: /Amber Lundy/
Amber Lundy

# ***RESPONSE TO OFFICE ACTION***

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

Please consider the following remarks and arguments.

**Amendments to the Claims** begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.

DO NOT ENTER: /P.C./
10/11/2012



Petitioner Disney Ex-1004, 0437

PTO/SB/30 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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 contains a valid OMB control number.

# Request for Continued Examination (RCE) Transmittal

Address to:
Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

| | |
|---|---|
| Application Number | 11/626,340 |
| Filing Date | January 23, 2007 |
| First Named Inventor | Kay Johansson |
| Art Unit | 2463 |
| Examiner Name | Cheng, Chi Tang P. |
| Attorney Docket Number | MOBIP006 |

**This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.**
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. Submission required under 37 CFR 1.114 Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

   a. ☑ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

      i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

      ii. ☑ Other Amendment filed on October 9, 2012

   b. ☐ Enclosed

      I. ☐ Amendment/Reply

      ii. ☐ Affidavit(s)/ Declaration(s)

      iii. ☐ Information Disclosure Statement (IDS)

      iv. ☐ Other _____

2. Miscellaneous

   a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

   b. ☐ Other _____

3. Fees The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

   a. ☐ The Director is hereby authorized to charge the following fees, any underpayment of fees, or credit any overpayments, to Deposit Account No. _____.

      i. ☐ RCE fee required under 37 CFR 1.17(e)

      ii. ☐ Extension of time fee (37 CFR 1.136 and 1.17)

      iii. ☐ Other _____

   b. ☐ Check in the amount of $ _____ enclosed

   c. ☑ Payment by credit card (Form PTO-2038 enclosed)

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

***SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED***

| | | | |
|---|---|---|---|
| Signature | /Audrey Kwan/ | Date | November 14, 2012 |
| Name (Print/Type) | Avery Audrey Kwan | Registration No. | 46,850 |

***CERTIFICATE OF MAILING OR TRANSMISSION***

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

| | | | |
|---|---|---|---|
| Signature | /Amber Lundy/ | | |
| Name (Print/Type) | Amber Lundy | Date | November 14, 2012 |

This collection of information is required by 37 CFR 1.114. 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 1.11 and 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: Mail Stop RCE, 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.*

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Attorney Docket Number:** | MOBIP006US |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| Request for continued examination | 1801 | 1 | 930 | 930 |
| | | **Total in USD ($)** | | **930** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 14231582 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Avery Audrey Kwan/Amber Lundy |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 14-NOV-2012 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 19:11:20 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Credit Card |
| Payment was successfully received in RAM | $930 |
| RAM confirmation Number | 7327 |
| Deposit Account | |
| Authorized User | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 1 | Request for Continued Examination (RCE) | MOBIP006_RCE_filed_11-14-12.pdf | 156079<br>afdaff0278f051607a1dda747b63fc1f739a469c | no | 1 |
| **Warnings:** | | | | | |
| This is not a USPTO supplied RCE SB30 form. | | | | | |
| **Information:** | | | | | |
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 30405<br>aee2b4d4500116f9723fc4d604b2edd7e57fcf13 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 186484 | | |

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**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 11/626,340 | 01/23/2007 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY ☐ RATE ($) | SMALL ENTITY ☐ FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT | 11/14/2012 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * 20 | Minus | ** 23 | = 0 | X $ = | | OR | X $62= | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $250= | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/JACQUELYN WILLIAMS/

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.**

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

19694 7590 12/26/2012

Kwan & Olynick LLP
1300 Clay St, Suite 600
Oakland, CA 94612

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |
| ART UNIT | PAPER NUMBER |
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 12/26/2012 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@kwanip.com
alundy@kwanip.com
jferguson@kwanip.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 November 2012*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)☒ Claim(s) *25-44* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *25-44* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

**Application Papers**

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/14/12 has been entered.

### *Claim Objections*

2. Claims 25, 32 and 39 are objected to because of the following informalities: (i) the recited phrase "received a the streaming server" appears to have a typographical error; (ii) the recited phrase "the first key frame key frame" also appears to have a typographical error; (iii) please verify whether in the recited phrase “determining at a streaming server a group of pictures (GOP) size N", the article of "streaming server" is supposed to be “a” or “the”. Appropriate correction is required.

### *Response to Arguments*

1. Please note that the objection to the specification has been withdrawn.

2. Please see the rejections set forth below, citing the reference Boyce, for teachings that teach the newly amended claim limitations.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 39, 32 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent No. 6,023,553 to Boyce et al.

3. **As to Claim 39**, Barrett discloses a computer readable medium (Fig. 3B, “channel change server 108” comprising “processor 206” and other components and paragraph 30, teaching that the "memory 204" comprises computer software instructions and codes, thus teaching “computer readable medium”), comprising:

computer code for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first channel buffer (Figs. 3B and 5 and paragraph 58, teaching that the channel change server 108, i.e., the streaming server, may accept one or more video streams 110 and buffer each such video stream 110, thus teaching this limitation) the streaming server configured to receive the first media stream from a media aggregation server (see, e.g.,

Figs. 3B and 5 and paragraph 58, teaching that the channel change server 108, i.e., the streaming server, may accept one or more video streams 110 from an “associated video provider 102”, i.e., a “media aggregation server”, thus teaching this limitation);

computer code for receiving a second media stream including a second plurality of frames, the second media stream received [at] the streaming server and maintained in a second channel buffer (Figs. 3B and 5 and paragraph 58, teaching that the channel change server 108, i.e., the streaming server, may accept one or more video streams 110 and buffer each such video stream 110, thus teaching this limitation);

computer code for determining positions of a plurality of key frames in the first channel buffer and the second channel buffer, the plurality of key frames including a first key frame in the first channel buffer and a second key frame in the second channel buffer (Figs. 3B and 5 and paragraph 59, teaching that in each buffered video stream 110, at least one I frame, i.e., "key frame", is retained (by the “I frame cacher 214” situated in the “channel change server 108”), thus teaching determining the position of such I/key frame in the buffer, thus teaching this limitation), wherein determining positions of the plurality of key frames includes determining such key frames at a streaming server (see discussion immediately above, where the channel change server 108, i.e., the streaming server, identifies the key frame(s) and stores such key frame(s) in the “I frame cacher 204”, thus teaching this limitation);

computer code for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream (Fig. 3B and Fig. 5 and

paragraphs 50-51 and 61, teaching that a "client 106" may send a "channel change request CCR" that is then detected at the "channel change server 108" that requests a change to a second video stream/channel, teaching this limitation);

computer code for identifying a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request (see, e.g., Figs. 5 and 3B and paragraphs 62 and 50-51, teaching that, for example, when a "channel change request CCR 212' or CCR 212"" is received/detected from a client 106, the next frame sent to the client 106 is the “first retained I frame 210’" and the "second retained I frame 210"" are sent, respectively in response to the CCR 212' and 212", such first/second retained I frames 210' and 210" being "available" in the buffer subsequent in time, after the reception of the CCR 212' and 212", respectively, thus teaching “the next available key frame is provided as the second key frame in response to the channel change request” and thus teaching this limitation) wherein no predictive frames are transmitted at the beginning of the channel change request (please see discussion above, where no predictive frame is sent to the CCR-sending client before the first/second retained I frame 210' or 210", as the case may be, thus teaching “wherein no predictive frames are transmitted at the beginning of the channel change request”).

Boyce discloses

determining positions of the plurality of key frames includes determining a group of pictures (GOP) size N and identifying Nth frames following the first key frame [key frame] as subsequent key frames (col. 6, lines 35-42, disclosing a scenario where the

GOP size is identified as 9 and "every 9th input frame will be an I-frame", thus teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Boyce, in conjunction with the teachings of Barrett. In particular, Boyce and Barrett are combinable to teach and disclose “wherein determining positions of the plurality of key frames includes determining at a streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame key frame as subsequent key frames.” The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7; Boyce, cols. 1-4).

4. **As to Claim 32,** please see rejection for Claim 39.

5. **As to Claim 25,** please see rejection for Claim 39.

1. **Claims 40, 44, 38, 26, 30, 31, 33 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent No. 6,023,553 to Boyce et al., further in view of U.S. Patent Publication No. 2011/0131622 to Wu.

6. **As to Claim 40**, please note that Barrett and Boyce disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the first media stream is a first video stream and the second media stream is a second video stream (paragraph 13, teaching multiple

broadcast media streams and paragraphs 14-24, teaching MPEG2 standard for video encoding, thus teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

7. **As to Claim 44**, please note that Barrett and Boyce disclose and teach the apparatus as in the parent claim 39.

Wu further discloses wherein the key frame is an I-frame (Fig. 2 and paragraphs 14-24, teaching MPEG2 standard for encoding frames wherein the "key/reference frame" is the so-called I-frame).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

8. **As to Claim 33,** please see rejection for Claim 40.

9. **As to Claim 37,** please see rejection for Claim 44.

10. **As to Claim 38**, please note that Barrett and Boyce disclose and teach the apparatus as in the parent claim 32.

Wu further discloses wherein channel change does not occur until the second key frame can be provided to the client device (paragraphs 13 and 30 and Fig. 5, teaching that "when a viewer changes channels, the client issues a request to join the new multicast. The previous I frame [i.e., key frame of the second media stream to which the viewer/client has switched] corresponding to that particular stream is immediately read from the cache memory" and "in process block 505, the VAM starts bursting from STRMBUF [i.e., the channel buffer for the new, second channel/stream] beginning with the preamble and first I frame into the port buffer PBUF", thus teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Barrett, paragraphs 1-7).

11. **As to Claim 26,** please see rejection for Claim 40.

12. **As to Claim 30,** please see rejection for Claim 44.

13. **As to Claim 31,** please see rejection for Claim 38.

1. **Claims 41-42, 34-35 and 27-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent No. 6,023,553 to Boyce et al., further in view of U.S. Patent Publication No. 2011/0131622 to Wu and U.S. Patent Publication No. 2007/0044128 A1 to Witt.

14. **As to Claim 41**, please note that Barrett and Boyce disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames have the largest frame size of the three types of MPEG frames, I, P and B frames (paragraph 15-18).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

Witt discloses and teaches wherein determining the plurality of key frames includes determining a frame size (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting frames larger than a particular size". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

15. **As to Claim 42**, please note that Barrett and Boyce disclose and teach the apparatus as in the parent claim 39.

Wu further discloses key frames appear at the start of a GOP (Fig. 2 and paragraph 15-18).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Wu, in conjunction with the teachings of Barrett. The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

Witt discloses and teaches wherein determining the plurality of key frames includes determining the structure of the received data (paragraph 34, teaching that "the video data is analyzed for the structure [i.e., "performing at least partial decoding of the media data"] and quantity of data [i.e., "determining a frame size"] to determine if the data is either a key frame or a delta frame", teaching this limitation)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Witt, in conjunction with the teachings of Wu. In particular, Wu and Witt are combinable to disclose and teach "wherein the key frames are identified by detecting the start of a GOP". The suggestion or motivation would have been in order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13).

16. **As to Claim 34,** please see rejection for Claim 41.

17. **As to Claim 35,** please see rejection for Claim 42.

18. **As to Claim 27,** please see rejection for Claim 41.

19. **As to Claim 28,** please see rejection for Claim 42.

20. **Claims 29, 36 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2005/0081244 A1 to Barrett et al., in view of U.S. Patent No. 6,023,553 to Boyce et al., further in view of U.S. Patent Publication No. 2007/0107026 A1 to Sherer et al.

21. **As to Claim 43,** Barrett and Boyce teach the apparatus as in the parent claim 39.

Barrett further discloses key frames appear at the start of a GOP (Figs. 2 and 3a/b and paragraphs 29-31, teaching an MPEG Group of Pictures leading off with an "I frame", i.e., "key frame", thus teaching this limitation).

Sherer teaches wherein the key frames are identified by flagging the first key frame of a stream to be channel-switched to as a key frame (paragraph 39, “the stream server indicates channel change boundaries between unicast streams by ... using a marker bit or an explicit signal at the first I-frame of a new unicast stream", teaching this limitation).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the methods and apparatuses as disclosed in Sherer, in conjunction with the teachings of Barrett. In particular, Sherer and Barrett are combinable to disclose and teach “wherein the key frames are identified by flagging each start of a GOP as a key frame”. The suggestion or motivation would have been in

order to ensure a more robust and efficient data communications system. (Witt, paragraphs 2 and 7; Wu, paragraphs 1-13; Sherer, paragraphs 3-11).

22. **As to Claim 36,** please see rejection for Claim 43.

23. **As to Claim 29,** please see rejection for Claim 43.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Mark Rinehart/
Supervisory Patent Examiner, Art Unit 2463

| Notice of References Cited | Application/Control No. 11/626,340 | Applicant(s)/Patent Under Reexamination JOHANSSON ET AL. | |
|---|---|---|---|
| | Examiner PETER CHENG | Art Unit 2463 | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|---|---|---|---|---|
| * | A | US-6,023,553 | 02-2000 | Boyce et al. | 386/329 |
| | B | US- | | | |
| | C | US- | | | |
| | D | US- | | | |
| | E | US- | | | |
| | F | US- | | | |
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| | U | |
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| | W | |
| | X | |

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



Petitioner Disney Ex-1004, 0458

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | **Examiner** | **Art Unit** |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | 04/03/2012 | 08/08/2012 | 12/18/2012 |
| | 1 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 2 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 3 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 4 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 5 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 6 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 7 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 8 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 9 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 10 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 11 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 12 | ✓ | ✓ | - | - | - | - | - | - | - |
| | 13 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 14 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 15 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 16 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 17 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 18 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 19 | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 20 | ✓ | ✓ | - | - | - | - | - | - | - |
| | 21 | | | ✓ | ✓ | - | - | - | - | - |
| | 22 | | | ✓ | ✓ | - | - | - | - | - |
| | 23 | | | ✓ | ✓ | - | - | - | - | - |
| | 24 | | | ✓ | ✓ | - | - | - | - | - |
| | 25 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 26 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 27 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 28 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 29 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 30 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 31 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 32 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 33 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 34 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 35 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 36 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |



Petitioner Disney Ex-1004, 0459

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 09/21/2009 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | 04/03/2012 | 08/08/2012 | 12/18/2012 |
| | 37 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 38 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 39 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 40 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 41 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 42 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 43 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 44 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |



Petitioner Disney Ex-1004, 0460

**EAST Search History**

**EAST Search History (Prior Art)**

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| S148 | 149 | ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) with (gop or group$3 near3 pictur$3) near3 siz$3 | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/12/16 19:15 |
| S149 | 32 | ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) with (gop or group$3 near3 pictur$3) near3 siz$3 with (next$3 or follow$3 or subsequen$4) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/12/16 19:22 |
| S150 | 364 | ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) with (gop or group$3 near3 pictur$3) near3 (number$3 or siz$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/12/17 12:42 |
| S151 | 110 | ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) with (gop or group$3 near3 pictur$3) near3 (number$3 or siz$3) with (next$3 or follow$3 or subsequen$4 or suc$1eed$5 or suc$1essiv$5 or predict$3) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/12/17 12:44 |
| S152 | 6 | ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) with (gop or group$3 near3 pictur$3) near3 (number$3 or siz$3) with (expect$5) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/12/17 18:42 |
| S153 | 23 | ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) with (gop or group$3 near3 pictur$3) near3 (number$3 or siz$3) with (expect$5 or every) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2012/12/17 18:48 |

**EAST Search History (Interference)**

< This search history is empty>

**12/18/2012 2:51:23 PM**
**C:\Users\pcheng\Documents\EAST\Workspaces\11626340.wsp**



Petitioner Disney Ex-1004, 0461

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

## SEARCHED

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |
| ABOVE | UPDATED | 7/31/2010 | PC |
| ABOVE | UPDATED | 12/6/2010 | PC |
| ABOVE | UPDATED | 7/25/11 | PC |
| ABOVE | UPDATED | 10/14/11, 3/29/12, 12/17/12 | PC |

## SEARCH NOTES

| Search Notes | Date | Examiner |
|---|---|---|
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM | 9/17/2009 (updated 3/9/2010) | pc |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/09, 3/9/10, 7/31/10, 12/6/10, 7/25/11, 10/14/11, 3/29/12, 8/6/12, 12/17/12 | pc |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| | | | |

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

| | |
|---|---|
| In re application of: Kay Johansson, et al. | Atty. Dkt. No.: MOBIP006US |
| Application No.: 11/626,340 | Examiner: Cheng, Chi Tang P |
| Filed: January 23, 2007 | Group: 2463 |
| Title: KEY FRAME DETECTION AND SYNCHRONIZATION | Confirmation: 1023 |

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on March 25, 2013.

Signed: /Amber Lundy/
Amber Lundy

# ***RESPONSE TO OFFICE ACTION***

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

Please consider the following remarks and arguments.

**Amendments to the Claims** begin on page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.



Petitioner Disney Ex-1004, 0463

## IN THE CLAIMS

What is claimed is:

1-24. (Canceled)

25. (Currently Amended) A method, comprising:

receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first ~~channel~~ buffer, the streaming server configured to receive the first media stream from a media aggregation server, wherein a plurality of buffers at the media aggregation server are allocated on a per group of pictures (GOP) basis;

receiving a second media stream including a second plurality of frames, the second media stream received ~~a~~ at the streaming server and maintained in a second ~~channel~~ buffer;

determining positions of a plurality of key frames in the first ~~channel~~ buffer and the second ~~channel~~ buffer, the plurality of key frames including a first key frame in the first ~~channel~~ buffer and a second key frame in the second ~~channel~~ buffer~~, wherein determining positions of the plurality of key frames includes determining at a streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame key frame as subsequent key frames~~;

receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

identifying a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

26. (Previously Presented) The method of claim 25, wherein the first media stream is a first video stream and the second media stream is a second video stream.

27. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting frames larger than a particular size.

28. (Previously Presented) The method of claim 25, wherein the key frames are identified by detecting the start of a GOP.

29. (Previously Presented) The method of claim 25, wherein the key frames are identified by flagging each start of a GOP as a key frame.

30. (Previously Presented) The method of claim 25, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0464

31. (Previously Presented) The method of claim 25, wherein channel change does not occur until the second key frame can be provided to the client device.

32. (Currently Amended) A system, comprising:

an interface configured to receive a first media stream including a first plurality of frames and a second media stream including a second plurality of frames, the first media stream received at a streaming server and maintained in a first ~~channel~~ buffer and the second media stream received ~~a~~ at the streaming server and maintained in a second ~~channel~~ buffer, the streaming server configured to receive the first media stream from a media aggregation server;

a processor configured to determine positions of a plurality of key frames in the first ~~channel~~ buffer and the second ~~channel~~ buffer, the plurality of key frames including a first key frame in the first ~~channel~~ buffer and a second key frame in the second ~~channel~~ buffer, wherein determining positions of the plurality of key frames includes determining at ~~a~~ the streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame ~~key frame~~ as subsequent key frames;

wherein the processor is further configured to identify a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

33. (Previously Presented) The method of claim 32, wherein the first media stream is a first video stream and the second media stream is a second video stream.

34. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting frames larger than a particular size.

35. (Previously Presented) The method of claim 32, wherein the key frames are identified by detecting the start of a GOP.

36. (Previously Presented) The method of claim 32, wherein the key frames are identified by flagging each start of a GOP as a key frame.

37. (Previously Presented) The method of claim 32, wherein the key frame is an I-frame.

38. (Previously Presented) The method of claim 32, wherein channel change does not occur until the second key frame can be provided to the client device.

39. (Currently Amended) A non-transitory computer readable medium, comprising:

computer code for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first ~~channel~~ buffer, the streaming server configured to receive the first media stream from a media aggregation server~~,~~;



Petitioner Disney Ex-1004, 0465

computer code for receiving a second media stream including a second plurality of frames, the second media stream received ~~a~~ at the streaming server and maintained in a second ~~channel~~ buffer;

computer code for determining positions of a plurality of key frames in the first ~~channel~~ buffer and the second ~~channel~~ buffer, the plurality of key frames including a first key frame in the first ~~channel~~ buffer and a second key frame in the second ~~channel~~ buffer, wherein determining positions of the plurality of key frames includes determining at ~~a~~ the streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame ~~key frame~~ as subsequent key frames;

computer code for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

computer code for identifying a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request.

40. (Previously Presented) The computer readable medium of claim 39, wherein the first media stream is a first video stream and the second media stream is a second video stream.

41. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by detecting frames larger than a particular size.

42. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by detecting the start of a GOP.

43. (Previously Presented) The computer readable medium of claim 39, wherein the key frames are identified by flagging each start of a GOP as a key frame.

44. (Previously Presented) The computer readable medium of claim 39, wherein the key frame is an I-frame.



Petitioner Disney Ex-1004, 0466

## REMARKS/ARGUMENTS

Claims 25-44 are pending. Claims 25, 32, and 39 are objected to because of informalities. Claims 25, 32, and 39 have been amended to address informalities. In the previous Office Action, claims 25-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the three-way combination of Barrett (2005/0081244) in view of Wu (2011/0131622) and further in view of Witt (20070044128). In the current Office Action, claims 25, 32, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barrett in view of Boyce (6,023,533).

To facilitate prosecution, the independent claims have been amended to recite ", wherein a plurality of buffers at the media aggregation server are allocated on a per group of pictures (GOP) basis." A previous amendment recitation that did not facilitate prosecution has been removed. The recitations "first channel buffer" and "second channel buffer" have also been replaced with "first buffer" and "second buffer." This amendment is believed supported by the original Claims, Specification, and Drawings. For example, "[0044] According to various embodiments, buffers 431, 433, 435, and 437 are provided on a per channel basis. In other examples, buffers are provided on a per GOP basis."

It is recognized that allocating buffers on a per GOP basis allows efficient access of key frames at the beginning of each GOP. The materials cited in the Office Action are not believed to teach or suggest any buffers allocated on a per GOP basis. Boyce only has one buffer to maintain any received I-frame, "In accordance with one exemplary embodiment of the present invention, I-frames included in a received video data stream are identified and stored in a buffer in the order they are received. As received I-frames are written to the buffer the previously stored I-frame is overwritten insuring that the most recently received I-frame is stored in the buffer at any give time." (Boyce: Summary) Barrett buffers a portion of a video stream irrespective of any GOP boundaries. "[0040] Channel change server 108 accepts video stream 110 (for each video channel) from video provider 102. Video stream bufferer 304 creates a buffered portion 312(T) of video stream 110 between a receive point (RP) and a send point (SP). Each currently-buffered buffered portion 312 is stored as buffered video stream 306. Buffered portion 312(T) corresponds to a current time "T". The receive point corresponds to the point along video stream 110 at which channel change server 108 is currently receiving from video provider 102. The send



Petitioner Disney Ex-1004, 0467

point corresponds to the point along video stream 110 at which channel change server 108 is currently sending toward clients 106." (Barrett: [0040])

In light of the above remarks for the independent claims, it is respectfully submitted that all pending claims are allowable. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached using the contact information provided below.

Please charge any additional fees or credit any overpayment to Deposit Account 50-5612.

Respectfully submitted,

/Audrey Kwan/
Avery Audrey Kwan
Reg. No. 46,850

Kwan & Olynick LLP
1300 Clay Street, Ste 600
Oakland, CA 94612
408-883-5025
akwan@kwanip.com



Petitioner Disney Ex-1004, 0468

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 15339984 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Avery Audrey Kwan |
| **Filer Authorized By:** | |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 25-MAR-2013 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 15:31:14 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | MOBIP006_amd_032513.pdf | 112922<br>5b0d469cce0ee8aa10eadb4e495cf78dddf7c842 | yes | 6 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Amendment/Req. Reconsideration-After Non-Final Reject | 1 | 1 |
| | Claims | 2 | 4 |
| | Applicant Arguments/Remarks Made in an Amendment | 5 | 6 |
| **Warnings:** | | | |
| **Information:** | | | |
| | **Total Files Size (in bytes):** | 112922 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. 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.

| PATENT APPLICATION FEE DETERMINATION RECORD<br>Substitute for Form PTO-875 | Application or Docket Number<br>11/626,340 | Filing Date<br>01/23/2007 | ☐ To be Mailed |
|---|---|---|---|

**ENTITY:** ☒ LARGE ☐ SMALL ☐ MICRO

## APPLICATION AS FILED – PART I

| | (Column 1) | (Column 2) | | |
|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | RATE ($) | FEE ($) |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| | | (Column 1) | | (Column 2) | (Column 3) | | |
|---|---|---|---|---|---|---|---|
| AMENDMENT | 05/17/2013 | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) |
| | Total (37 CFR 1.16(i)) | * 20 | Minus | ** 23 | = 0 | X $80 = | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $420 = | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | |
| | | | | | | TOTAL ADD'L FEE | **0** |

| | | (Column 1) | | (Column 2) | (Column 3) | | |
|---|---|---|---|---|---|---|---|
| AMENDMENT | | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) |
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | |
| | | | | | | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/VIOLA ROGERS/

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.*

| Examiner-Initiated Interview Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 11/626,340 | JOHANSSON ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHENG | 2463 | |

All participants (applicant, applicant's representative, PTO personnel):

(1) *PETER CHENG*. (3) *Audrey Kwan*.

(2) _____. (4) _____.

Date of Interview: *15 May 2013*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *25,32 and 39*.

Identification of prior art discussed: *n/a*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

*see examiner's amendment*.

**Applicant recordation instructions**: It is not necessary for applicant to provide a separate record of the substance of interview.

**Examiner recordation instructions**: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

| /P. C./<br>Examiner, Art Unit 2463 | /Mark Rinehart/<br>Supervisory Patent Examiner, Art Unit 2463 |
|---|---|



Petitioner Disney Ex-1004, 0472

UNITED STATES PATENT AND TRADEMARK OFFICE

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# NOTICE OF ALLOWANCE AND FEE(S) DUE

19694 7590 05/22/2013

Kwan & Olynick LLP
1300 Clay St, Suite 600
Oakland, CA 94612

| EXAMINER |
|---|
| CHENG, CHI TANG P |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2463 | |

DATE MAILED: 05/22/2013

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

TITLE OF INVENTION: Key Frame Detection and Synchronization

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1780 | $300 | $0 | $2080 | 08/22/2013 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

**HOW TO REPLY TO THIS NOTICE:**

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**





Petitioner Disney Ex-1004, 0473

## PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail** **Mail Stop ISSUE FEE**
**Commissioner for Patents**
**P.O. Box 1450**
**Alexandria, Virginia 22313-1450**
**or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

19694 7590 05/22/2013
Kwan & Olynick LLP
1300 Clay St, Suite 600
Oakland, CA 94612

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

**Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

| |
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| (Depositor's name) |
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

TITLE OF INVENTION: Key Frame Detection and Synchronization

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1780 | $300 | $0 | $2080 | 08/22/2013 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| CHENG, CHI TANG P | 2463 | 370-473000 |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee
❑ Publication Fee (No small entity discount permitted)
❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.
❑ Payment by credit card. Form PTO-2038 is attached.
❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).





Petitioner Disney Ex-1004, 0474

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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



Petitioner Disney Ex-1004, 0475

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

19694 7590 05/22/2013

Kwan & Olynick LLP
1300 Clay St, Suite 600
Oakland, CA 94612

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2463 | |

DATE MAILED: 05/22/2013

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 504 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 504 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.



PTOL-85 (Rev. 02/11)

Petitioner Disney Ex-1004, 0476

## Privacy Act Statement

**The Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

| Notice of Allowability | Application No. 11/626,340 | Applicant(s) JOHANSSON ET AL. | |
|---|---|---|---|
| | Examiner PETER CHENG | Art Unit 2463 | AIA (First Inventor to File) Status No |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--***

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *communication of 3/25/13*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *25-44*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   **Certified copies:**

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

   **Interim copies:**

   a) ☐ All b) ☐ Some c) ☐ None of the: Interim copies of the priority documents have been received.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**.

5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

| /P. C./<br>Examiner, Art Unit 2463 | /Mark Rinehart/<br>Supervisory Patent Examiner, Art Unit 2463 |
|---|---|



Petitioner Disney Ex-1004, 0478

## DETAILED ACTION

### *Response to Amendment*

1. Applicant has amended independent claims 25, 32 and 39. Claims 25-44 are pending.

## EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Audrey Kwan on 5/15/13.

## IN THE CLAIMS

4. The application has been further amended as follows:

5. **Claim 25** has been amended to read as follows:

"A method, comprising:

receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first buffer, the streaming

server configured to receive the first media stream from a media aggregation server, wherein a plurality of buffers at the ~~**media aggregation**~~**streaming** server are allocated on a per group of pictures (GOP) basis;

receiving a second media stream including a second plurality of frames, the second media stream received at the streaming server and maintained in a second buffer;

determining positions of a plurality of key frames in the first buffer and the second buffer, the plurality of key frames including a first key frame in the first buffer and a second key frame in the second buffer**, wherein determining positions of the plurality of key frames includes determining at the streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame as subsequent key frames**;

receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

identifying a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request."

6. **Claim 32** has been amended to read as follows:

"A system, comprising:

an interface configured to receive a first media stream including a first plurality of frames and a second media stream including a second plurality of frames, the first media stream received at a streaming server and maintained in a first buffer and the second media stream received at the streaming server and maintained in a second buffer, the streaming server configured to receive the first media stream from a media aggregation server**, wherein a plurality of buffers at the streaming server are allocated on a per group of pictures (GOP) basis**;

a processor configured to determine positions of a plurality of key frames in the first buffer and the second buffer, the plurality of key frames including a first key frame in the first buffer and a second key frame in the second buffer, wherein determining positions of the plurality of key frames includes determining at the streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame as subsequent key frames;

wherein the processor is further configured to identify a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request."

7. **Claim 39** has been amended to read as follows:

"A non-transitory computer readable medium, comprising:

computer code for receiving a first media stream including a first plurality of frames, the first media stream received at a streaming server and maintained in a first buffer, the streaming server configured to receive the first media stream from a media

aggregation server**, wherein a plurality of buffers at the streaming server are allocated on a per group of pictures (GOP) basis**;

computer code for receiving a second media stream including a second plurality of frames, the second media stream received at the streaming server and maintained in a second buffer;

computer code for determining positions of a plurality of key frames in the first buffer and the second buffer, the plurality of key frames including a first key frame in the first buffer and a second key frame in the second buffer, wherein determining positions of the plurality of key frames includes determining at the streaming server a group of pictures (GOP) size N and identifying Nth frames following the first key frame as subsequent key frames;

computer code for receiving a channel change request from a client device receiving the first media stream, the channel change request corresponding to a switch from the first media stream to the second media stream;

computer code for identifying a next available key frame associated with the second media stream, wherein the next available key frame is provided as the second key frame in response to the channel change request, wherein no predictive frames are transmitted at the beginning of the channel change request."

### *Response to Arguments*

8. The claim objections have been withdrawn.

9. Applicant's arguments with respect to the Section 103 rejection have been fully considered and are persuasive in light of the claim amendments herein. Therefore, the Section 103 rejection has been withdrawn in its entirety.

### *Allowable Subject Matter*

10. **Amended Claims 25-44** are allowed.

11. The following is an examiner's statement of reasons for allowance:

**Claims 25, 32 and 39** are allowable over prior art since the prior art does not disclose or render obvious the limitations recited therein as interpreted in light of the specification and in view of applicant's persuasive arguments.

1. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHENG whose telephone number is (571)272-9021. The examiner can normally be reached on M-Th, 8:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. C./
Examiner, Art Unit 2463

/Mark Rinehart/
Supervisory Patent Examiner, Art Unit 2463

# *Issue Classification*

| Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|
| 11626340 | JOHANSSON ET AL. |
| **Examiner** | **Art Unit** |
| PETER CHENG | 2463 |

**CPC**

| Symbol | | | | Type | Version |
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**CPC Combination Sets**

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**US ORIGINAL CLASSIFICATION**

| CLASS | SUBCLASS |
|---|---|
| 370 | 473 |

**CROSS REFERENCE(S)**

| CLASS | SUBCLASS (ONE SUBCLASS PER BLOCK) | | | | |
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**INTERNATIONAL CLASSIFICATION**

| CLAIMED | | | | | NON-CLAIMED | | | | |
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| /PETER CHENG/<br>Examiner.Art Unit 2463<br>(Assistant Examiner) | 5/15/13<br>(Date) | **Total Claims Allowed:**<br>20 |
| /Mark Rinehart/<br>Supervisory Patent Examiner, Art Unit 2463<br>(Primary Examiner) | (Date) | O.G. Print Claim(s): 25<br>O.G. Print Figure: 5 |

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
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| | 11626340 | JOHANSSON ET AL. |
| | **Examiner** | **Art Unit** |
| | PETER CHENG | 2463 |

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| /PETER CHENG/<br>Examiner.Art Unit 2463 | 5/15/13 | **Total Claims Allowed:** | |
| (Assistant Examiner) | (Date) | 20 | |
| /Mark Rinehart/<br>Supervisory Patent Examiner, Art Unit 2463 | | O.G. Print Claim(s) | O.G. Print Figure |
| (Primary Examiner) | (Date) | 25 | 5 |

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | **Examiner** | **Art Unit** |
| | PETER CHENG | 2463 |

☒ **Claims renumbered in the same order as presented by applicant** ☐ **CPA** ☐ **T.D.** ☐ **R.1.47**

| Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 17 | 9 | 33 | | | | | | | | | | |
| | 2 | | 18 | 10 | 34 | | | | | | | | | | |
| | 3 | | 19 | 11 | 35 | | | | | | | | | | |
| | 4 | | 20 | 12 | 36 | | | | | | | | | | |
| | 5 | | 21 | 13 | 37 | | | | | | | | | | |
| | 6 | | 22 | 14 | 38 | | | | | | | | | | |
| | 7 | | 23 | 15 | 39 | | | | | | | | | | |
| | 8 | | 24 | 16 | 40 | | | | | | | | | | |
| | 9 | 1 | 25 | 17 | 41 | | | | | | | | | | |
| | 10 | 2 | 26 | 18 | 42 | | | | | | | | | | |
| | 11 | 3 | 27 | 19 | 43 | | | | | | | | | | |
| | 12 | 4 | 28 | 20 | 44 | | | | | | | | | | |
| | 13 | 5 | 29 | | | | | | | | | | | | |
| | 14 | 6 | 30 | | | | | | | | | | | | |
| | 15 | 7 | 31 | | | | | | | | | | | | |
| | 16 | 8 | 32 | | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| /PETER CHENG/<br>Examiner.Art Unit 2463 | 5/15/13 | **Total Claims Allowed:** | |
| (Assistant Examiner) | (Date) | 20 | |
| /Mark Rinehart/<br>Supervisory Patent Examiner, Art Unit 2463 | | O.G. Print Claim(s) | O.G. Print Figure |
| (Primary Examiner) | (Date) | 25 | 5 |

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| CPC- SEARCHED | | |
|---|---|---|
| Symbol | Date | Examiner |
| | | |

| CPC COMBINATION SETS - SEARCHED | | |
|---|---|---|
| Symbol | Date | Examiner |
| | | |

| US CLASSIFICATION SEARCHED | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| 370 | 503, 509-513, 395.64 | 9/17/2009 | pc |
| 709 | 203, 208-209 | 9/17/2009 | pc |
| ABOVE | UPDATED | 3/9/2010 | PC |
| ABOVE | UPDATED | 7/31/2010 | PC |
| ABOVE | UPDATED | 12/6/2010 | PC |
| ABOVE | UPDATED | 7/25/11 | PC |
| ABOVE | UPDATED | 10/14/11, 3/29/12, 12/17/12, 5/15/13 | PC |

| SEARCH NOTES | | |
|---|---|---|
| Search Notes | Date | Examiner |
| PLUS | 9/17/2009 | pc |
| consulted with Ian Moore (Primary) in class 370 re patentability and search issues | 9/16/2009 | pc |
| inventors search in PALM and EAST for double patenting | 9/17/2009 (updated 3/9/2010, 5/15/13) | pc |

| SEARCH NOTES | | |
|---|---|---|
| **Search Notes** | **Date** | **Examiner** |
| EAST (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) - see search history printout | 9/17/09, 3/9/10, 7/31/10, 12/6/10, 7/25/11, 10/14/11, 3/29/12, 8/6/12, 12/17/12, 5/15/13 | pc |
| consulted with Mark Rinehart SPE in class 370 re patentability | 5/15/13 | pc |

| INTERFERENCE SEARCH | | | |
|---|---|---|---|
| **US Class/ CPC Symbol** | **US Subclass / CPC Group** | **Date** | **Examiner** |
| | Interference search - see search history printout | 5/15/13 | pc |

| | |
|---|---|
| | |



Petitioner Disney Ex-1004, 0489

**EAST Search History**

**EAST Search History (Prior Art)**

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L1 | 8864 | (370/503,509-513,395.64,473).CCLS. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2013/05/15 18:59 |
| L2 | 3 | l1 and (buffer$3 or cach$4) with (gop$4 or group$3 near3 pictur$3) and ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) same (gop or group$3 near3 pictur$3 or number$3 or siz$3) and channel$4 with chang$4 | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2013/05/15 19:01 |
| L3 | 119 | l1 and ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) same (gop or group$3 near3 pictur$3 or number$3 or siz$3) and (channel$4 with chang$4 or (buffer$3 or cach$4) with (gop$4 or group$3 near3 pictur$3)) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2013/05/15 19:02 |
| L4 | 167 | (mobitv).as. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2013/05/15 19:03 |
| L5 | 64 | (kay with johan$2son or kent with karl$2son).in. | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2013/05/15 19:04 |
| L6 | 8 | l4 and (buffer$3 or cach$4) with (gop$4 or group$3 near3 pictur$3) and ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) same (gop or group$3 near3 pictur$3 or number$3 or siz$3) and channel$4 with chang$4 | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2013/05/15 19:05 |
| L7 | 8 | l5 and (buffer$3 or cach$4) with (gop$4 or group$3 near3 pictur$3) and ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) same (gop or group$3 near3 pictur$3 or number$3 or siz$3) and channel$4 with chang$4 | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | ADJ | ON | 2013/05/15 19:05 |

**EAST Search History (Interference)**

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L8 | 2 | ((buffer$3 or cach$4) with (gop$4 or group$3 near3 pictur$3) and ((referenc$3 or base or key) near5 frame or i$1frame or i near1 frame$1) same (gop or group$3 near3 pictur$3 or number$3 or siz$3) and channel$4 with chang$4).clm. | US-PGPUB; USPAT; UPAD | ADJ | ON | 2013/05/15 19:06 |

**5/ 15/ 2013 7:08:13 PM**
**C:\ Users\ pcheng\ Documents\ EAST\ Workspaces\ 11626340.wsp**

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | **Examiner** | **Art Unit** |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 05/15/2013 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | 04/03/2012 | 08/08/2012 | 12/18/2012 |
| | 1 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 2 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 3 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 4 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 5 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 6 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 7 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 8 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 9 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 10 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 11 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 12 | - | ✓ | - | - | - | - | - | - | - |
| | 13 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 14 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 15 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 16 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 17 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 18 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 19 | - | ✓ | ✓ | ✓ | - | - | - | - | - |
| | 20 | - | ✓ | - | - | - | - | - | - | - |
| | 21 | - | | ✓ | ✓ | - | - | - | - | - |
| | 22 | - | | ✓ | ✓ | - | - | - | - | - |
| | 23 | - | | ✓ | ✓ | - | - | - | - | - |
| | 24 | - | | ✓ | ✓ | - | - | - | - | - |
| 1 | 25 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 | 26 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3 | 27 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 4 | 28 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 5 | 29 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 | 30 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 7 | 31 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 8 | 32 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 9 | 33 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 10 | 34 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 11 | 35 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 12 | 36 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |



Petitioner Disney Ex-1004, 0492

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 11626340 | JOHANSSON ET AL. |
| | Examiner | Art Unit |
| | PETER CHENG | 2463 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 05/15/2013 | 03/10/2010 | 07/31/2010 | 12/06/2010 | 07/25/2011 | 10/14/2011 | 04/03/2012 | 08/08/2012 | 12/18/2012 |
| 13 | 37 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 14 | 38 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 15 | 39 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 16 | 40 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 17 | 41 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 18 | 42 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 19 | 43 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 20 | 44 | = | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

## PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail** **Mail Stop ISSUE FEE**
**Commissioner for Patents**
**P.O. Box 1450**
**Alexandria, Virginia 22313-1450**
**or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

19694 7590 05/22/2013
Kwan & Olynick LLP
1300 Clay St, Suite 600
Oakland, CA 94612

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

**Certificate of Mailing or Transmission**
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

| | |
|---|---|
| Sally Austin | (Depositor's name) |
| /Sally Austin/ | (Signature) |
| 08-22-13 | (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 1023 |

TITLE OF INVENTION: Key Frame Detection and Synchronization

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1780 | $300 | $0 | $2080 | 08/22/2013 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| CHENG, CHI TANG P | 2463 | 370-473000 |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Kwan & Olynick LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: MOBITV, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Emeryville, CA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☒ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).





Petitioner Disney Ex-1004, 0494

5. **Change in Entity Status** (from status indicated above)

| | |
|---|---|
| ❑ Applicant certifying micro entity status. See 37 CFR 1.29 | NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. |
| ❑ Applicant asserting small entity status. See 37 CFR 1.27 | NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status. |
| ❑ Applicant changing to regular undiscounted fee status. | NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable. |

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Avery Audrey Kwan/ Date 08-22-13

Typed or printed name Avery Audrey Kwan Registration No. 46,850

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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



Petitioner Disney Ex-1004, 0495

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 11626340 |
| **Filing Date:** | 23-Jan-2007 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Filer:** | Avery Audrey Kwan/Sally Austin |
| **Attorney Docket Number:** | MOBIP006US |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| Utility Appl Issue Fee | 1501 | 1 | 1780 | 1780 |
| Publ. Fee- Early, Voluntary, or Normal | 1504 | 1 | 300 | 300 |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Extension-of-Time:** | | | | |
| **Miscellaneous:** | | | | |
| | | | **Total in USD ($)** | **2080** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 16656459 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Avery Audrey Kwan/Sally Austin |
| **Filer Authorized By:** | Avery Audrey Kwan |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 22-AUG-2013 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 13:11:40 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Credit Card |
| Payment was successfully received in RAM | $2080 |
| RAM confirmation Number | 13361 |
| Deposit Account | |
| Authorized User | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 1 | Issue Fee Payment (PTO-85B) | MOBIP006_IssueFee_filed_0822132.pdf | 2058418<br>9b6d247f322b6cd8a0dd8633305e802c931a455d | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 31888<br>db32bb43d684b8ebeff979203b3d172628a2d8ff | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | | **Total Files Size (in bytes):** | 2090306 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NO. | ISSUE DATE | PATENT NO. | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 09/24/2013 | 8542705 | MOBIP006US | 1023 |

19694 7590 09/04/2013

Kwan & Olynick LLP
2000 Hearst Street, Suite 305
Berkeley, CA 94709

# ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 655 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Kay Johansson, Oakland, CA;
Kent Karlsson, Sodertalie, SWEDEN;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

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 | REQUEST ID |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US | 122248 |

## Acknowledgement of Change to Small Entity Status

The entity status change request below filed through Private PAIR on 09/30/2020 has been accepted.

**CERTIFICATIONS:**

**Change of Entity Status:**

X Applicant asserting small entity status. See 37 CFR 1.27.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

**This portion must be completed by the signatory or signatories making the entity status change in accordance with 37 CFR 1.4(d)(4).**

| | |
|---|---|
| **Signature:** | /Avery Audrey Kwan/ |
| **Name:** | Avery Audrey Kwan |
| **Registration Number:** | 42963 |

PTO/SB/81 (01-09)
Approved for use through 03/31/2021 OMB 0651-0035
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.

# POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

| | |
|---|---|
| Application Number | See Attached Schedule 1 |
| Filing Date | See Attached Schedule 1 |
| First Named Inventor | See Attached Schedule 1 |
| Title | See Attached Schedule 1 |
| Art Unit | See Attached Schedule 1 |
| Examiner Name | See Attached Schedule 1 |
| Attorney Docket No. | See Attached Schedule 1 |

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

*OR*

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

75563

*OR*

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

| Practitioner(s) Name | Registration Number | Practitioner(s) Name | Registration Number |
|---|---|---|---|
| | | | |

Please recognize or change the correspondence address for the above-identified application to:

☒ The address associated with the above-mentioned Customer Number:

*OR*

☐ The address associated with Customer Number:

*OR*

☐ Firm or Individual Name

| | | | | | |
|---|---|---|---|---|---|
| Address | | | | | |
| City | | State | | Zip | |
| Country | | Telephone | | Email | |

I am the:

☐ Applicant/Inventor.

*OR*

☒ Assignee of record of the entire interest. See 37 CFR 3.71.

*Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on* _____

**SIGNATURE of Applicant or Assignee of Record**

| | | | |
|---|---|---|---|
| Signature | [signature] | Date | 12/1/20 |
| Name | KEVIN TANJI | Telephone | 510-719-5332 |
| Title and Company | Authorized Signatory TIVO CORPORATION | | |

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.



Petitioner Disney Ex-1004, 0502

| 11/626,340 | Key Frame Detection and Synchronization | MOBIP006US | 06-03-2021::16:30:06 |
|---|---|---|---|

## Bibliographic Data

| | | | |
|---|---|---|---|
| Application Number: | 11/626,340 | Correspondence Address Customer Number: | 19694 |
| Filing or 371 (c) Date: | 01-23-2007 | Status: | Patented Case |
| Application Type: | Utility | Status Date: | 09-04-2013 |
| Examiner Name: | CHENG, CHI TANG P | Location: | ELECTRONIC |
| Group Art Unit: | 2463 | Location Date: | - |
| Confirmation Number: | 1023 | Earliest Publication No: | US 2008-0175273 A1 |
| Attorney Docket Number: | MOBIP006US | Earliest Publication Date: | 07-24-2008 |
| Class / Subclass: | 370/473 | Patent Number: | 8,542,705 |
| First Named Inventor: | Kay Johansson , Oakland, CA (US) | Issue Date of Patent: | 09-24-2013 |
| First named Applicant: | - | International Registration Number (Hague): | - |
| Entity Status: | Small | International Registration Publication Date: | - |
| AIA (First Inventor to File): | No | | |

Title of Invention: Key Frame Detection and Synchronization

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Petitioner Disney Ex-1004, 0503

PTO/SB/96 (07-09)
Approved for use through 11/30/2020 OMB 0651-0031
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# STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: TIVO CORPORATION

Application No./Patent No.: See Attached Schedule 1 Filed/Issue Date: See Attached Schedule 1

Titled:

See Attached Schedule 1

TIVO CORPORATION (Name of Assignee) , a Corporation (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. [X] the assignee of the entire right, title, and interest in;

2. [ ] an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or

3. [ ] an assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made) the patent application/patent identified above by virtue of either:

A. [ ] An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____ , Frame _____ , or for which a copy thereof is attached.

**OR**

B. [X] A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: See Attached Schedule 1 To: See Attached Schedule 1
The document was recorded in the United States Patent and Trademark Office at Reel _____ , Frame _____ , or for which a copy thereof is attached.

2. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____ , Frame _____ , or for which a copy thereof is attached.

3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____ , Frame _____ , or for which a copy thereof is attached.

[ ] Additional documents in the chain of title are listed on a supplemental sheet(s).

[x] As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

| /Maxim A. Rapoport/ | 06-03-2021 |
|---|---|
| Signature | Date |
| Maxim A .Rapoport | Registration No. 67,675 |
| Printed or Typed Name | Title |

| 11626340 | Key Frame Detection and Synchronization | MOBIP008US | 08-03-2021:16:40:45 |
|---|---|---|---|

# Patent Assignment Abstract of Title

**Total Assignments: 3**

**Application #:** 11626340 **Filing Dt:** 01/23/2007 **Patent #:** 8542705 **Issue Dt:** 09/24/2013

**PCT #:** NONE **Intl Reg #:** **Publication #:** US20080175273 **Pub Dt:** 07/24/2008

**Inventors:** Kay Johansson, Kent Karlsson

**Title:** Key Frame Detection and Synchronization

**Assignment: 1**

**Reel/Frame:** 018793 / 0915 **Received:** 01/23/2007 **Recorded:** 01/23/2007 **Mailed:** 01/23/2007 **Pages:** 3

**Conveyance:** ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

**Assignors:** JOHANSSON, KAY **Exec Dt:** 01/22/2007

KARLSSON, KENT **Exec Dt:** 01/22/2007

**Assignee:** MOBITV, INC.
6425 CHRISTIE AVE., 5TH FLOOR
EMERYVILLE, CALIFORNIA 94608

**Correspondent:** BEYER WEAVER LLP
500 12TH STREET, SUITE 200
OAKLAND, CA 94607

**Assignment: 2**

**Reel/Frame:** 041718 / 0395 **Received:** 02/15/2017 **Recorded:** 02/15/2017 **Mailed:** 03/27/2017 **Pages:** 22

**Conveyance:** SECURITY INTEREST (SEE DOCUMENT FOR DETAILS).

**Assignor:** MOBITV, INC. **Exec Dt:** 02/03/2017

**Assignee:** ALLY BANK
300 PARK AVENUE
4TH FLOOR
NEW YORK, DISTRICT OF COLUMBIA 10022

**Correspondent:** STEWART WALSH
1025 VERMONT AVE NW, SUITE 1130
NATIONAL CORPORATE RESEARCH, LTD
WASHINGTON, DC 20005

**Assignment: 3**

**Reel/Frame:** 046761 / 0718 **Received:** 08/10/2018 **Recorded:** 08/10/2018 **Mailed:** 09/03/2018 **Pages:** 28

**Conveyance:** SECURITY INTEREST (SEE DOCUMENT FOR DETAILS).

**Assignor:** MOBITV, INC. **Exec Dt:** 08/03/2018

**Assignee:** ALLY COMMERICAL FINANCE LLC
300 PARK AVENUE, 4TH FLOOR
NEW YORK, NEW YORK 10022

**Correspondent:** JOANNA MCCALL
1025 VERMONT AVE NW, SUITE 1130
COGENCY GLOBAL INC.
WASHINGTON, DC 20005

Search Results as of: 08/03/2021 16:40:42 PM

***Disclaimer:***
***Assignment information on the assignment database reflects assignment documents that have been actually recorded.***
***If the assignment for a patent was not recorded, the name of the assignee on the patent application publication or patent may be different.***
***If you have any comments or questions concerning the data displayed, contact OPR / Assignments at 571-272-3350***

Close Window



Petitioner Disney Ex-1004, 0505

# PATENT ASSIGNMENT AGREEMENT

This PATENT ASSIGNMENT AGREEMENT (this "**Agreement**"), is made and delivered as of May 31, 2021, by MobiTV, Inc., a Delaware corporation ("**MobiTV**") and MobiTV Services, Inc., a Delaware corporation and wholly owned subsidiary of MobiTV ("**Services**" and together with MobiTV, "**Assignors**") and TiVo Corporation, a Delaware corporation ("**Assignee**"). Capitalized terms used but not defined herein shall have the respective meanings given to such terms in the Purchase Agreement (as defined below).

WHEREAS, MobiTV and Services are debtors and debtors in possession in cases filed under Chapter 11 of the United States Bankruptcy Code, jointly administered in *In re MobiTV, Inc.*, case no. 21-10457-LSS (the "**Cases**"), pending in the United States Bankruptcy Court for the District of Delaware (the "**Bankruptcy Court**");

WHEREAS, Assignors and Assignee are parties to that certain Asset Purchase Agreement made and entered into as of May 12, 2021 (the "**Purchase Agreement**"), and the transactions contemplated by the Purchase Agreement have been approved by the Bankruptcy Court pursuant to that certain *Order (A) Approving the Sale Of Substantially All of the Debtors' Assets Free and Clear of All Liens, Claims, Interests, and Encumbrances, and (B) Approving the Assumption And Assignment Of Executory Contracts and Unexpired Leases* (the "**Sales Order**") which has been entered by the Bankruptcy Court [Bankruptcy Court Dkt. No. 292], and become effective;

WHEREAS, pursuant to the Purchase Agreement, Assignors have agreed to sell to the Purchasing Entity, and Assignee has agreed that the Purchasing Entity will purchase from Assignors, the Purchased Assets;

WHEREAS, for the purposes of this Agreement, the Purchasing Entity has been designated by Assignee as Assignee; and

WHEREAS, the execution and delivery of this Agreement is required by Section 6.1(b)(iii) and Section 6.2(b)(iv) of the Purchase Agreement pursuant to which Assignors will irrevocably assign and transfer to the Assignee the Patents included in the Purchased Assets to Assignee.

NOW, THEREFORE, in consideration of the foregoing and the covenants and agreements herein contained, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and intending to be legally bound hereby, Assignee and Assignors do hereby agree as follows:

1. Patent Assignment. Subject to the terms and conditions of the Purchase Agreement and the Sales Order, Assignors do hereby sell, transfer, assign, convey and deliver to Assignee, and Assignee hereby does purchase, acquire and accept from Assignors, all right, title and interest in and to the following, free and clear of Liens, Claims, interests or Encumbrances except to the extent provided in the Sales Order, whether or not the due date of any maintenance fees, annuities and the like thereof have lapsed, all Assignors' right, title, and interest in and to (i) all United States and foreign Patents included in the Purchased Assets, including without



Petitioner Disney Ex-1004, 0506

limitation, those Patents listed in Schedule A attached hereto and the inventions disclosed therein, (ii) all reissues, divisionals, re-examinations, renewals, extensions, provisionals, continuations, and continuations in part thereof, (iii) all foreign counterparts to any Patents described in clauses (i) and (ii), regardless of whether such foreign counterpart Patents are listed on Schedule A, (iv) all Patent Documents, (v) all Patents which claim direct or indirect priority to, or to which direct or indirect priority is claimed by, any of the Patents described in clauses (i), (ii), or (iii) (collectively, the "**Assigned Patents**"), and (vi) all rights, claims, and privileges relating to the Assigned Patents throughout the world, including without limitation all rights to the underlying inventions, to claim priority on the basis thereof, to prosecute and maintain the Assigned Patents, to have any and all registrations issued in the name of Assignee, to sue and recover damages for past, present, and future infringement, to obtain injunctive or other equitable relief, and to collect royalties and other payments under or on account of any of the Assigned Patents in each case, regardless of whether in existence prior to, as of or after the Effective Date.

2. Commissioner of Patents. Assignors do hereby request and authorize the Commissioner of Patents and Trademarks of the United States of America and all other corresponding patent offices or authorities of other jurisdictions to issue letters patent, certificates of invention, utility models, or other governmental grants or issuances that may be granted upon any of the Assigned Patents and the inventions included in the Assigned Patents to Assignee or Assignee's nominee, successor or assign.

3. Further Assurances. Assignors shall cooperate with Assignee, at Assignee's request, to enable Assignee to enjoy the fullest extent of the right, title and interest herein conveyed in the United States and other countries. Such cooperation by Assignors shall include prompt production of pertinent facts and documents, giving of testimony, executing of assignment, petitions, oaths, specifications, declarations or other papers, and other assistance: (a) for obtaining, perfecting and maintaining in Assignee or its assignees or successors the right, title and interest herein conveyed, (b) for complying with any duty of disclosure, (c) for prosecuting any of said applications, (d) for filing and prosecuting substitute, divisional, continuing or additional applications covering said Assigned Patents, (e) for filing and prosecuting applications for reissue of any of said Assigned Patents, (f) for interference or other priority proceedings involving said Assigned Patents, (g) for legal proceedings involving the Assigned Patents, any applications therefor and any patents granted thereon, including opposition proceedings, cancellation proceedings, priority contests, public use proceedings, reexamination proceedings, compulsory licensing proceedings, infringement actions and court actions, and (h) for obtaining from Assignors' counsel, transfer to Assignee of all relevant documents and materials related to the Assigned Patents. Assignee shall direct its employees (including all employed inventors for any of the Assigned Patents) to provide such cooperation, and to assist Assignee in obtaining such cooperation from any other inventors of any of the Assigned Patents (whether then employed or not). Assignors irrevocably constitute and appoint Assignee, with full power of substitution, to be their true and lawful attorney, and in their name, place or stead, to execute, acknowledge, swear to and file, all instruments, conveyances, certificates, agreements and other documents, and to take any action which shall be necessary, appropriate or desirable to effectuate the transfer, or prosecution of the Assigned Patents in accordance herewith; provided, however, that such power shall be exercised by Assignee only if Assignors fail to promptly take the necessary actions required hereunder to affect or record such transfer, or for prosecution of such Assigned Patents following Assignee's reasonable request, and being given a reasonable



Petitioner Disney Ex-1004, 0507

opportunity to do so. This power of attorney shall be deemed to be coupled with an interest and shall be irrevocable.

4. Terms of the Purchase Agreement. Notwithstanding anything to the contrary herein, Assignors and Assignee are executing and delivering this Agreement in accordance with and subject to all of the terms and provisions of the Purchase Agreement (including, without limitation, the acknowledgement and disclaimer set forth in Section 2.16 thereof). In the event of a conflict between the terms and conditions of this Agreement and the terms and conditions of the Purchase Agreement, the terms and conditions of this Agreement shall govern, supersede and prevail.

5. Governing Law; Venue; Waiver of Jury Trial. This Agreement shall be construed in accordance with, and governed in all respects by, the internal laws of the State of Delaware, without giving effect to the principles of conflicts of laws. The remaining provisions of Section 9.13 (Governing Law; Jurisdiction) and 9.15 (Waiver of Jury Trial) of the Purchase Agreement are incorporated herein by reference *mutatis mutandis* as if set forth herein.

6. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall constitute an original and all of which, when taken together, shall constitute one agreement. The exchange of a fully executed Agreement (in counterparts or otherwise) by facsimile or by electronic delivery in .pdf format shall be sufficient to bind the parties to the terms and condition of this Agreement.

7. Amendment; Waiver. Any provision of this Agreement may be amended or waived if, and only if, such amendment or waiver is in writing and signed, in the case of an amendment, by each party or, in the case of a waiver, by the party against whom the waiver is to be effective.

*[Signature Page Follows]*



Petitioner Disney Ex-1004, 0508

IN WITNESS WHEREOF, the parties have caused this Patent Assignment Agreement to be executed as of the date first set forth above.

**ASSIGNORS**

**MOBITV, INC.**

By: Charles Nooney
Name: Charles Nooney
Title: Chief Executive Officer

**MOBITV SERVICES, INC.**

By: Charles Nooney
Name: Charles Nooney
Title: Chief Executive Officer

**ASSIGNEE**

**TIVO CORPORATION**

By: _____
Name: Paul E. Davis
Title: General Counsel and Corporate Secretary

*[Signature Page to Patent Assignment Agreement]*

DocuSign Envelope ID: 60FF2629-5E6B-49FE-A2C8-BA343B7D018F

IN WITNESS WHEREOF, the parties have caused this Patent Assignment Agreement to be executed as of the date first set forth above.

**ASSIGNORS**

**MOBITV, INC.**

By:_____
Name: Charles Nooney
Title: Chief Executive Officer

**MOBITV SERVICES, INC.**

By:_____
Name: Charles Nooney
Title: Chief Executive Officer

**ASSIGNEE**

**TIVO CORPORATION**

By: DocuSigned by: Paul Davis 31EE24114F4A4C8...
Name: Paul E. Davis
Title: General Counsel and Corporate Secretary

*[Signature Page to Patent Assignment Agreement]*

## SCHEDULE A

## ASSIGNED PATENTS

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBID001 | CONNECTING DONGLE | D721374 | US | 29/485,906 | 3/24/2014 |
| MOBID002 | TEXTURED DONGLE | D730904 | US | 29/511,097 | 12/5/2014 |
| MOBIP002 | METHODS AND APPARATUS FOR IMPLEMENTING DYNAMIC PROGRAM GUIDES ON MOBILE DEVICES | 7818769 | US | 11/542,620 | 10/2/2006 |
| MOBIP002C1US | METHODS AND APPARATUS FOR IMPLEMENTING DYNAMIC PROGRAM GUIDES ON MOBILE DEVICES | 9516252 | US | 12/882,061 | 9/14/2010 |
| MOBIP002C2 | METHODS AND APPARATUS FOR IMPLEMENTING DYNAMIC PROGRAM GUIDES ON MOBILE DEVICES | | US | 15/340,917 | 11/1/2016 |
| MOBIP003US | PROXY OPERATIONS ON CLIENT DEVICES | 7743113 | US | 11/542,683 | 10/2/2006 |
| MOBIP004US | INTELLIGENT PROGRAM GUIDE TIME SLOT SELECTION | 8661468 | US | 11/542,616 | 10/2/2006 |
| MOBIP005C1 | METHODS AND APPARATUS FOR PROVIDING MEDIA ON MOBILE DEVICES | 8301164 | US | 13/425,925 | 3/21/2012 |
| MOBIP005C2 | METHODS AND APPARATUS FOR PROVIDING MEDIA ON MOBILE DEVICES | 8862151 | US | 13/663,399 | 10/29/2012 |
| MOBIP005C3 | METHODS AND APPARATUS FOR PROVIDING MEDIA ON MOBILE DEVICES | 9143816 | US | 14/277,120 | 5/14/2014 |
| MOBIP005US | METHODS AND APPARATUS FOR PROVIDING MEDIA ON MOBILE DEVICES | 8165598 | US | 11/859,688 | 9/21/2007 |
| MOBIP006C1 | KEY FRAME DETECTION AND SYNCHRONIZATION | 9036655 | US | 13/973,178 | 8/22/2013 |
| MOBIP006C2 | KEY FRAME DETECTION AND SYNCHRONIZATION | 9332048 | US | 14/689,029 | 4/16/2015 |
| MOBIP006US | KEY FRAME DETECTION AND SYNCHRONIZATION | 8542705 | US | 11/626,340 | 1/23/2007 |
| MOBIP012GB | MOSAIC VIDEO CONTENT SELECTION MECHANISM | 2469398 | GB | 1009235 | 11/24/2008 |
| MOBIP013GB | REAL-TIME MOST WATCHED GUIDE ORDERING AND GENERATION | 2467489 | GB | 1008879 | 11/24/2008 |
| MOBIP016C1 | DYNAMIC ADVERTISEMENT STREAM REPLACEMENT | 10554932 | US | 15/954,290 | 4/16/2018 |



Petitioner Disney Ex-1004, 0511

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBIP016C2 | DYNAMIC ADVERTISEMENT STREAM REPLACEMENT | | US | 16/749,950 | 1/22/2020 |
| MOBIP016GB | DYNAMIC ADVERTISEMENT STREAM REPLACEMENT | 2471241 | GB | 1016996 | 4/10/2009 |
| MOBIP016US | DYNAMIC ADVERTISEMENT STREAM REPLACEMENT | 9955122 | US | 12/101,883 | 4/11/2008 |
| MOBIP018C1 | MODIFICATION OF LIVE STREAMS | 8831006 | US | 14/022,103 | 9/9/2013 |
| MOBIP018C2 | MODIFICATION OF LIVE STREAMS | 9031078 | US | 14/454,569 | 8/7/2014 |
| MOBIP018US | MODIFICATION OF LIVE STREAMS | 8559438 | US | 12/101,895 | 4/11/2008 |
| MOBIP020C1US | FAST SETUP RESPONSE PREDICTION | 8200831 | US | 13/118,244 | 5/27/2011 |
| MOBIP020C2 | FAST SETUP RESPONSE PREDICTION | 8504698 | US | 13/468,788 | 5/10/2012 |
| MOBIP020C3 | FAST SETUP RESPONSE PREDICTION | 8990407 | US | 13/935,174 | 7/3/2013 |
| MOBIP020US | FAST SETUP RESPONSE PREDICTION | 7979557 | US | 12/101,893 | 4/11/2008 |
| MOBIP022C1US | CONTENT SERVER MEDIA STREAM MANAGEMENT | 8782275 | US | 12/345,534 | 12/29/2008 |
| MOBIP022C2 | CONTENT SERVER MEDIA STREAM MANAGEMENT | 9591044 | US | 14/298,491 | 6/6/2014 |
| MOBIP022C3 | CONTENT SERVER MEDIA STREAM MANAGEMENT | 10015221 | US | 15/411,455 | 1/20/2017 |
| MOBIP022C4 | CONTENT SERVER MEDIA STREAM MANAGEMENT | 10440079 | US | 16/025,993 | 7/2/2018 |
| MOBIP022C5 | CONTENT SERVER MEDIA STREAM MANAGEMENT | 10826958 | US | 16/555,969 | 8/29/2019 |
| MOBIP022C6 | CONTENT SERVER MEDIA STREAM MANAGEMENT | | US | 17/037,244 | 9/29/2020 |
| MOBIP022US | CONTENT SERVER MEDIA STREAM MANAGEMENT | 9003051 | US | 12/101,913 | 4/11/2008 |
| MOBIP023C1 | NETWORK OPTIMIZED DISTRIBUTION | 8718094 | US | 13/796,511 | 3/12/2013 |
| MOBIP023US | NETWORK OPTIMIZED DISTRIBUTION | 8406254 | US | 12/101,905 | 4/11/2008 |
| MOBIP025US | CLIENT CAPABILITY ADJUSTMENT | 8612620 | US | 12/101,914 | 4/11/2008 |
| MOBIP026US | DISTRIBUTED AND SCALABLE CONTENT STREAMING ARCHITECTURE | 9003050 | US | 12/101,889 | 4/11/2008 |
| MOBIP031C1 | SYSTEM AND METHOD FOR MODIFYING MEDIA STREAMS USING METADATA | 10250841 | US | 13/530,310 | 6/22/2012 |
| MOBIP031C2 | SYSTEM AND METHOD FOR MODIFYING MEDIA STREAMS USING METADATA | | US | 16/372,294 | 4/1/2019 |
| MOBIP034US | EVENT BASED INTERACTIVE ANIMATION | 8259118 | US | 12/334,384 | 12/12/2008 |



Petitioner Disney Ex-1004, 0512

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBIP036C1 | DISTRIBUTED SCHEDULING OF MEDIA CHANNEL PLAYOUT | 10645436 | US | 14/489,442 | 9/17/2014 |
| MOBIP036C2 | DISTRIBUTED SCHEDULING OF MEDIA CHANNEL PLAYOUT | | US | 16/842,650 | 4/7/2020 |
| MOBIP036US | DISTRIBUTED SCHEDULING OF MEDIA CHANNEL PLAYOUT | 8856821 | US | 12/353,922 | 1/14/2009 |
| MOBIP037US | SYSTEM FOR AUTOMATIC MANAGEMENT OF APPLICATIONS ON REMOTE DEVICES | 8707288 | US | 12/371,491 | 2/13/2009 |
| MOBIP039US | FUNCTIONAL PRESENTATION LAYER IN A LIGHTWEIGHT CLIENT ARCHITECTURE | 8477136 | US | 12/371,513 | 2/13/2009 |
| MOBIP042US | IMPLICIT MECHANISM FOR DETERMINING USER RESPONSE TO MEDIA | 8875167 | US | 12/563,935 | 9/21/2009 |
| MOBIP043GB | DISTRIBUTED CONTRIBUTION OF DISPARATE INTERACTIVE ELEMENTS | 2489840 | GB | 1208776.3 | 12/8/2010 |
| MOBIP044GB | DATA MEASUREMENT AND FEEDBACK MECHANISM USING AN APPLICATION FRAMEWORK | 2489149 | GB | 1211394 | 12/8/2010 |
| MOBIP047C1 | RETRIEVAL AND DISPLAY OF RELATED CONTENT USING TEXT STREAM DATA FEEDS | 9635081 | US | 14/639,554 | 3/5/2015 |
| MOBIP047C2 | RETRIEVAL AND DISPLAY OF RELATED CONTENT USING TEXT STREAM DATA FEEDS | 10122782 | US | 15/460,131 | 3/15/2017 |
| MOBIP047US | RETRIEVAL AND DISPLAY OF RELATED CONTENT USING TEXT STREAM DATA FEEDS | 8996496 | US | 12/708,350 | 2/18/2010 |
| MOBIP048/ID2140 | TILE BASED MEDIA CONTENT SELECTION | 8887202 | US | 13/053,093 | 3/21/2011 |
| MOBIP048C1 | TILE BASED MEDIA CONTENT SELECTION | 10261657 | US | 14/522,106 | 10/23/2014 |
| MOBIP048C2 | TILE BASED MEDIA CONTENT SELECTION | | US | 16/382,014 | 4/11/2019 |
| MOBIP048GB | TILE BASED MEDIA CONTENT SELECTION | 2497624 | GB | 1218207.7 | 3/21/2011 |
| MOBIP050US | FRAGMENTED FILE STRUCTURE FOR LIVE MEDIA STREAM DELIVERY | 9596522 | US | 12/794,572 | 6/4/2010 |
| MOBIP052US | USER AND DEVICE AUTHENTICATION FOR MEDIA SERVICES | 8719921 | US | 13/220,436 | 8/29/2011 |
| MOBIP053C1 | MEDIA RIGHTS MANAGEMENT ON MULTIPLE DEVICES | 9223944 | US | 14/553,040 | 11/25/2014 |



Petitioner Disney Ex-1004, 0513

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBIP053US | MEDIA RIGHTS MANAGEMENT ON MULTIPLE DEVICES | 8910302 | US | 13/220,435 | 8/29/2011 |
| MOBIP056US | USER BASED ELECTRONIC PROGRAM GUIDES | 9083999 | US | 13/223,157 | 8/31/2011 |
| MOBIP057US | LOCATION AWARE TRAVEL MEDIA | 9307378 | US | 12/962,434 | 12/7/2010 |
| MOBIP058C1 | METHODS AND APPARATUS FOR BROADCAST AND MULTICAST/UNICAST TRANSITION | 9161094 | US | 13/943,829 | 7/17/2013 |
| MOBIP058DE | METHODS AND APPARATUS FOR BROADCAST AND MULTICAST/UNICAST TRANSITION | | DE | 11 2012 001 769 | 4/12/2012 |
| MOBIP058GB | METHODS AND APPARATUS FOR BROADCAST AND MULTICAST/UNICAST TRANSITION | 2508726 | GB | 1319805.6 | 4/12/2012 |
| MOBIP058US | METHODS AND APPARATUS FOR BROADCAST AND MULTICAST/UNICAST TRANSITION | 8514824 | US | 13/091,050 | 4/20/2011 |
| MOBIP059C1 | NON-INTRUSIVE ADVERTISEMENT PRESENTATION | | US | 16/841,578 | 4/6/2020 |
| MOBIP059US | NON-INTRUSIVE ADVERTISEMENT PRESENTATION | 10643238 | US | 12/941,908 | 11/8/2010 |
| MOBIP061/2250-1 | MEDIA CONVERGENCE PLATFORM | 9277260 | US | 13/227,367 | 9/7/2011 |
| MOBIP063C1 | LOCATION BASED ACCESS CONTROL FOR CONTENT DELIVERY NETWORK RESOURCES | 9398112 | US | 14/495,815 | 9/24/2014 |
| MOBIP063C2 | LOCATION BASED ACCESS CONTROL FOR CONTENT DELIVERY NETWORK RESOURCES | 10447801 | US | 15/188,951 | 6/21/2016 |
| MOBIP063C3 | LOCATION BASED ACCESS CONTROL FOR CONTENT DELIVERY NETWORK RESOURCES | | US | 16/555,999 | 8/29/2019 |
| MOBIP063US | LOCATION BASED ACCESS CONTROL FOR CONTENT DELIVERY NETWORK RESOURCES | 8874750 | US | 13/074,989 | 3/29/2011 |
| MOBIP065C1 | CONTEXTUALLY AWARE CLIENT BUFFER THRESHOLDS | 9635080 | US | 14/280,269 | 5/16/2014 |
| MOBIP065C2 | CONTEXTUALLY AWARE CLIENT BUFFER THRESHOLDS | 10250659 | US | 15/460,145 | 3/15/2017 |
| MOBIP065GB | CONTEXTUALLY AWARE CLIENT BUFFER THRESHOLDS | 2506047 | GB | 1322070.2 | 5/4/2012 |
| MOBIP065US | CONTEXTUALLY AWARE CLIENT BUFFER THRESHOLDS | 8769144 | US | 13/111,151 | 5/19/2011 |



Petitioner Disney Ex-1004, 0514

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBIP068C1 | REAL-TIME PROCESSING CAPABILITY BASED QUALITY ADAPTATION | 10263875 | US | 14/635,877 | 3/2/2015 |
| MOBIP068DE | REAL-TIME PROCESSING CAPABILITY BASED QUALITY ADAPTATION | | DE | 11 2012 001 770 | 4/13/2012 |
| MOBIP068GB | REAL-TIME PROCESSING CAPABILITY BASED QUALITY ADAPTATION | 2505113 | GB | 1319806.4 | 4/13/2012 |
| MOBIP068US | REAL-TIME PROCESSING CAPABILITY BASED QUALITY ADAPTATION | 8990351 | US | 13/090,959 | 4/20/2011 |
| MOBIP069 | LIVE MEDIA CONTENT DISCOVERY AND MANAGEMENT | 9307295 | US | 13/362,674 | 1/31/2012 |
| MOBIP070C1 | DISTRIBUTED SCALABLE ENCODER RESOURCES FOR LIVE STREAMS | | US | 16/157,065 | 10/10/2018 |
| MOBIP070US | DISTRIBUTED SCALABLE ENCODER RESOURCES FOR LIVE STREAMS | 10136165 | US | 13/232,870 | 9/14/2011 |
| MOBIP072US | LOCALIZED REDUNDANCY FOR FRAGMENT PROCESSING | 9197900 | US | 13/232,888 | 9/14/2011 |
| MOBIP074C1US | SYSTEM AND METHOD FOR LOCATION BASED INTERACTION WITH A DEVICE | 9525637 | US | 13/171,367 | 6/28/2011 |
| MOBIP074US | SYSTEM AND METHOD FOR LOCATION BASED INTERACTION WITH A DEVICE | 8024186 | US | 11/439,543 | 5/24/2006 |
| MOBIP075US | INTELLIGENT DEVICE MEDIA STREAM CACHING | 8719440 | US | 13/232,909 | 9/14/2011 |
| MOBIP076US | TRANSFORMATION SYSTEM AND METHOD TO INCREASE THE LEMPEL-ZIV COMPRESSIBILITY OF IMAGES WITH MINIMAL V | 7031540 | US | 10/241,876 | 9/12/2002 |
| MOBIP077 | METHOD AND SYSTEM OF PERFORMING TRANSACTIONS USING SHARED RESOURCES AND DIFFERENT APPLICATIONS | 7073178 | US | 10/342,113 | 1/14/2003 |
| MOBIP077C1 | EFFICIENT MULTI-PROTOCOL SOFTWARE ARCHITECTURE WITH SHARED RESOURCES FOR DIFFERENT APPLICATIONS | 7818758 | US | 11/415,748 | 5/2/2006 |



Petitioner Disney Ex-1004, 0515

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBIP078 | SYSTEM AND METHOD FOR STORAGE AND RETRIEVAL OF ARBITRARY CONTENT AND APPLICATION DATA | 7469300 | US | 10/345,593 | 1/16/2003 |
| MOBIP082US | MULTI-TIERED CACHING MECHANISM FOR THE STORAGE AND RETRIEVAL OF CONTENT MULTIPLE VERSIONS | 7130872 | US | 10/345,886 | 1/16/2003 |
| MOBIP083 | PLUG-IN API FOR MODULAR NETWORK TRANSACTION PROCESSING | 7117506 | US | 10/360,172 | 2/7/2003 |
| MOBIP084 | PLUG-IN API FOR PROTOCOL AND PAYLOAD TRANSFORMATION | 7246360 | US | 10/360,952 | 2/7/2003 |
| MOBIP085C1 | FRAGMENT SERVER DIRECTED DEVICE FRAGMENT CACHING | 9491213 | US | 14/022,166 | 9/9/2013 |
| MOBIP085C2 | FRAGMENT SERVER DIRECTED DEVICE FRAGMENT CACHING | 10057607 | US | 15/288,828 | 10/7/2016 |
| MOBIP085C3 | FRAGMENT SERVER DIRECTED DEVICE FRAGMENT CACHING | | US | 16/043,080 | 7/23/2018 |
| MOBIP085US | FRAGMENT SERVER DIRECTED DEVICE FRAGMENT CACHING | 8560719 | US | 13/232,913 | 9/14/2011 |
| MOBIP086 | ENHANCED STARTUP AND CHANNEL CHANGE FOR FRAGMENTED MEDIA STREAM DELIVERY | 9219929 | US | 13/405,824 | 2/27/2012 |
| MOBIP087 | ENHANCED GROUP OF PICTURES (GOP) ALIGNMENT IN MEDIA STREAM VARIANTS | 9338482 | US | 13/308,062 | 11/30/2011 |
| MOBIP089 | SCALABLE WATERMARK INSERTION FOR FRAGMENTED MEDIA STREAM DELIVERY | 9330429 | US | 13/399,377 | 2/17/2012 |
| MOBIP090 | EFFICIENT DELINEATION AND DISTRIBUTION OF MEDIA SEGMENTS | 9462302 | US | 13/403,552 | 2/23/2012 |
| MOBIP091 | CONTROL OF PERSPECTIVE IN MULTI-DIMENSIONAL MEDIA | 9201495 | US | 13/454,332 | 4/24/2012 |
| MOBIP092 | SEARCH-BASED NAVIGATION OF MEDIA CONTENT | 9785639 | US | 13/457,608 | 4/27/2012 |
| MOBIP092C1 | SEARCH-BASED NAVIGATION OF MEDIA CONTENT | 10628477 | US | 15/688,415 | 8/28/2017 |
| MOBIP092C2 | SEARCH-BASED NAVIGATION OF MEDIA CONTENT | | US | 16/841,135 | 4/6/2020 |
| MOBIP093 | CLOSED CAPTIONING MANAGEMENT SYSTEM | 9516371 | US | 13/454,606 | 4/24/2012 |



Petitioner Disney Ex-1004, 0516

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBIP093C1 | CLOSED CAPTIONING MANAGEMENT SYSTEM | 10122961 | US | 15/340,925 | 11/1/2016 |
| MOBIP093C2 | CLOSED CAPTIONING MANAGEMENT SYSTEM | 10523896 | US | 16/179,131 | 11/2/2018 |
| MOBIP093C3 | CLOSED CAPTIONING MANAGEMENT SYSTEM | | US | 16/696,740 | 11/26/2019 |
| MOBIP094 | CHARACTER BASED SEARCH AND DISCOVERY OF MEDIA CONTENT | 9552124 | US | 15/376,547 | 12/12/2016 |
| MOBIP094C1 | CHARACTER BASED SEARCH AND DISCOVERY OF MEDIA CONTENT | 10812863 | US | 15/376,547 | 12/12/2016 |
| MOBIP094C2 | CHARACTER BASED SEARCH AND DISCOVERY OF MEDIA CONTENT | | | 17/035,156 | 9/28/2020 |
| MOBIP095 | COMBINED BROADCAST AND UNICAST DELIVERY | 8949451 | US | 13/535,870 | 6/28/2012 |
| MOBIP095C1 | COMBINED BROADCAST AND UNICAST DELIVERY | 9769236 | US | 14/576,176 | 12/18/2014 |
| MOBIP095DE | COMBINED BROADCAST AND UNICAST DELIVERY | | DE | 11 2013 002 247 | 4/26/2013 |
| MOBIP095GB | COMBINED BROADCAST AND UNICAST DELIVERY | 2515931 | GB | 1416930.4 | 4/26/2013 |
| MOBIP103 | EYE TRACKING BASED DEFOCUSING | 8990843 | US | 13/661,308 | 10/26/2012 |
| MOBIP105 | OPTIMIZING VIDEO CLARITY | 9386331 | US | 13/558,545 | 7/26/2012 |
| MOBIP105C1 | OPTIMIZING VIDEO CLARITY | 9787747 | US | 15/176,019 | 6/7/2016 |
| MOBIP106 | WATERMARKING OF DIGITAL VIDEO | 8818021 | US | 13/625,262 | 9/24/2012 |
| MOBIP107 | WATERMARKING OF IMAGES | 9292897 | US | 13/646,520 | 10/5/2012 |
| MOBIP108 | PERSONALIZED TIMELINE PRESENTATION | 8793582 | US | 13/591,493 | 8/22/2012 |
| MOBIP108C1 | PERSONALIZED TIMELINE PRESENTATION | 9715334 | US | 14/306,221 | 6/16/2014 |
| MOBIP108C2 | PERSONALIZED TIMELINE PRESENTATION | 10346008 | US | 15/622,275 | 6/14/2017 |
| MOBIP108C3 | PERSONALIZED TIMELINE PRESENTATION | 10346009 | US | 15/622,282 | 6/14/2017 |
| MOBIP108C4 | PERSONALIZED TIMELINE PRESENTATION | 10831353 | US | 16/419,447 | 5/22/2019 |
| MOBIP110 | VIDEO EFFICACY MEASUREMENT | 8832721 | US | 13/674,430 | 11/12/2012 |
| MOBIP110C1 | VIDEO EFFICACY MEASUREMENT | 9769523 | US | 14/454,535 | 8/7/2014 |
| MOBIP111 | FEEDBACK LOOP CONTENT RECOMMENDATION | 8881209 | US | 13/661,294 | 10/26/2012 |
| MOBIP111C1 | FEEDBACK LOOP CONTENT RECOMMENDATION | 10095767 | US | 14/503,357 | 9/30/2014 |
| MOBIP111C2 | FEEDBACK LOOP CONTENT RECOMMENDATION | 10885063 | US | 16/116,873 | 8/29/2018 |
| MOBIP111C3 | FEEDBACK LOOP CONTENT RECOMMENDATION | | US | 17/115,736 | 12/08/2020 |



Petitioner Disney Ex-1004, 0517

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBIP118 | DIGITAL RIGHTS MANAGEMENT FOR HTTP-BASED MEDIA STREAMING | 9892239 | US | 13/752,533 | 1/29/2013 |
| MOBIP118C1 | DIGITAL RIGHTS MANAGEMENT FOR HTTP-BASED MEDIA STREAMING | 10146918 | US | 15/824,955 | 11/28/2017 |
| MOBIP118C2 | DIGITAL RIGHTS MANAGEMENT FOR HTTP-BASED MEDIA STREAMING | | US | 16/201,717 | 11/27/2018 |
| MOBIP119 | SCALABLE NETWORKED DIGITAL VIDEO RECORDINGS VIA SHARD-BASED ARCHITECTURE | 9229944 | US | 13/752,540 | 1/29/2013 |
| MOBIP119DE | SCALABLE NETWORKED DIGITAL VIDEO RECORDINGS VIA SHARD-BASED ARCHITECTURE | | DE | 11 2014 000 242 | 1/28/2014 |
| MOBIP120 | GEOGRAPHIC CONTEXT WEIGHTED CONTENT RECOMMENDATION | 8732737 | US | 13/749,915 | 1/25/2013 |
| MOBIP122 | PRIORITIZED SIDE CHANNEL DELIVERY FOR DOWNLOAD AND STORE MEDIA | 9338204 | US | 13/749,932 | 1/25/2013 |
| MOBIP123 | EFFICIENT COMMON STORAGE OF PARTIALLY ENCRYPTED CONTENT | 10182038 | US | 13/953,482 | 7/29/2013 |
| MOBIP123C1 | EFFICIENT COMMON STORAGE OF PARTIALLY ENCRYPTED CONTENT | | US | 16/211,106 | 12/5/2018 |
| MOBIP125 | FAST ENCODING OF LIVE STREAMING MEDIA CONTENT | 9838455 | US | 14/491,950 | 9/19/2014 |
| MOBIP125C1 | FAST ENCODING OF LIVE STREAMING MEDIA CONTENT | | US | 15/799,361 | 10/31/2017 |
| MOBIP126 | CAMERA CAPTURE FOR CONNECTED DEVICES | 10348951 | US | 14/515,476 | 10/15/2014 |
| MOBIP127 | SPLIT SCREEN TELECONFERENCING | 9967345 | US | 14/506,515 | 10/3/2014 |
| MOBIP129 | UNIFIED PLAYLIST | 10264322 | US | 14/625,548 | 2/18/2015 |
| MOBIP129C1 | UNIFIED PLAYLIST | | US | 16/382,011 | 4/11/2019 |
| MOBIP130 | INTERMEDIATE KEY FRAME SELECTION AND ANIMATION | 10440443 | US | 14/613,916 | 2/4/2015 |
| MOBIP130C1 | INTERMEDIATE KEY FRAME SELECTION AND ANIMATION | 10873787 | US | 16/550,428 | 8/26/2019 |
| MOBIP130C2 | INTERMEDIATE KEY FRAME SELECTION AND ANIMATION | | US | 17/100,747 | 11/20/2020 |



Petitioner Disney Ex-1004, 0518

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| MOBIP131 | MEDIA SEEK MECHANISMS | 10440076 | US | 14/642,814 | 3/10/2015 |
| MOBIP131C1 | MEDIA SEEK MECHANISMS | | US | 16/550,421 | 8/26/2019 |
| MOBIP132 | LIVE CONSECUTIVE AD INSERTION | 9510025 | US | 14/730,211 | 6/3/2015 |
| MOBIP132C1 | LIVE CONSECUTIVE AD INSERTION | 10116971 | US | 15/338,254 | 10/28/2016 |
| MOBIP132C2 | LIVE CONSECUTIVE AD INSERTION | | US | 16/151,290 | 10/3/2018 |
| MOBIP133 | SELF-CONFIGURATION OF WIRELESS CONNECTIONS | 10355923 | US | 14/929,497 | 11/2/2015 |
| MOBIP133C1 | SELF-CONFIGURATION OF WIRELESS CONNECTIONS | | US | 16/435,038 | 6/7/2019 |
| MOBIP134 | LEAN PRIVATE COPY OF MEDIA CONTENT WITHIN NETWORK-BASED DIGITAL VIDEO RECORDINGS | 10531146 | US | 15/612,780 | 6/2/2017 |
| MOBIP134C1 | LEAN PRIVATE COPY OF MEDIA CONTENT WITHIN NETWORK-BASED DIGITAL VIDEO RECORDINGS | | US | 16/684,841 | 11/15/2019 |
| MOBIP134CA | LEAN PRIVATE COPY OF MEDIA CONTENT WITHIN NETWORK-BASED DIGITAL VIDEO RECORDINGS | | CA | 2991222 | 1/8/2018 |
| MOBIP135 | SYSTEM AND METHOD FOR SMOOTH TRANSITION OF LIVE AND REPLAY PROGRAM GUIDE DISPLAYS | 10178423 | US | 15/623,337 | 6/14/2017 |
| MOBIP135C1 | SYSTEM AND METHOD FOR SMOOTH TRANSITION OF LIVE AND REPLAY PROGRAM GUIDE DISPLAYS | 10555019 | US | 16/211,110 | 12/5/2018 |
| MOBIP135C2 | SYSTEM AND METHOD FOR SMOOTH TRANSITION OF LIVE AND REPLAY PROGRAM GUIDE DISPLAYS | | US | 16/749,947 | 1/22/2020 |
| MOBIP135CA | SYSTEM AND METHOD FOR SMOOTH TRANSITION OF LIVE AND REPLAY PROGRAM GUIDE DISPLAYS | | CA | 2990905 | 1/5/2018 |
| MOBIP136 | SYSTEM AND METHOD FOR STORING MULTIMEDIA FILES USING AN ARCHIVE FILE FORMAT | 10349108 | US | 15/685,971 | 8/24/2017 |
| MOBIP136C2 | SYSTEM AND METHOD FOR STORING MULTIMEDIA FILES USING AN ARCHIVE FILE FORMAT | | US | 16/843,548 | 4/8/2020 |
| MOBIP136C3 | SYSTEM AND METHOD FOR STORING MULTIMEDIA FILES USING AN ARCHIVE FILE FORMAT | | US | 16/871,792 | 5/11/2020 |
| MOBIP137 | DYNAMIC DIGITAL OBJECT PLACEMENT IN VIDEO STREAM | 10750212 | US | 16/133,236 | 9/17/2018 |
| MOBIP137C1 | DYNAMIC DIGITAL OBJECT PLACEMENT IN VIDEO STREAM | | US | 16/930,725 | 7/16/2020 |



Petitioner Disney Ex-1004, 0519

| Docket No. | Title | Patent Number | Country | App. No. | Filing Date |
|---|---|---|---|---|---|
| | PROPRIETARY ACCESS CONTROL ALGORITHMS IN CONTENT DELIVERY NETWORKS | | GB | GB1318854.5 | 2/22/2012 |
| | IMPLICIT MECHANISM FOR DETERMINING USER RESPONSE TO MEDIA | 2485713 | GB | GB1203176.1 | 9/21/2010 |
| | SYSTEM AND METHOD FOR THE PACKAGING AND DISTRIBUTION OF DATA | | IN | 531/CHENP/2005 | 9/16/2005 |

Petitioner Disney Ex-1004, 0520

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 42894384 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 19694 |
| **Filer:** | Maxim Rapoport/Shari Jackson |
| **Filer Authorized By:** | Maxim Rapoport |
| **Attorney Docket Number:** | MOBIP006US |
| **Receipt Date:** | 03-JUN-2021 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 18:33:39 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Power of Attorney | 11626340-POA.pdf | 4277833<br>2a6f21bc94a8bb40b8dc8e6339434e938468739e | no | 2 |

**Warnings:**

| Information: | | | | | |
|---|---|---|---|---|---|
| 2 | Assignee showing of ownership per 37 CFR 3.73 | 11626340-Statement.pdf | 554392<br>7737b22a66eed88e3cee09b42cfd5446a9995760 | no | 17 |
| Warnings: | | | | | |
| Information: | | | | | |
| | | Total Files Size (in bytes): | 4832225 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

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 |
|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US |

**CONFIRMATION NO. 1023**

**POA ACCEPTANCE LETTER**

75563
Haley Guiliano LLP (Xperi)
75 Broad Street
Suite 1000
New York, NY 10004-3226

*OC000000126194553*

Date Mailed: 06/11/2021

## NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/03/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ltaba/



Petitioner Disney Ex-1004, 0523

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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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 |
|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | MOBIP006US |

**CONFIRMATION NO. 1023**

**POWER OF ATTORNEY NOTICE**

19694
Kwan & Olynick LLP
2000 Hearst Avenue, Suite 305
Berkeley, CA 94709

*OC000000126194514*

Date Mailed: 06/11/2021

## NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/03/2021.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ltaba/



Petitioner Disney Ex-1004, 0524

PATENTS
001444-0006-101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

Inventors : Kay Johansson et al.

Patent No. : 8,542,705

Issued : September 24, 2013

On :
Application No. 11/626,340 Confirmation No.: 1023

Filed : January 23, 2007

For : Key Frame Detection and Synchronization

New York, New York 10004
June 16, 2021

Mail Stop PETITION
Hon. Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

SUBMISSION OF FEE DEFICIENCY
UNDER 37 C.F.R. § 1.28(c)

Sir:

The undersigned hereby notifies the Patent and Trademark Office that status as a small entity for the purpose of paying fees in the above-identified patent, as previously claimed by Patentee, is no longer believed to be appropriate and fees will henceforth be paid at the undiscounted rate.

Patentee submits herewith payment of fees which were mistakenly paid at the small entity rate for the above-identified patent. The fees paid and the respective discrepancies due are itemized herein below in compliance with 37 C.F.R. § 1.28(c)(2).

| Fee Description | Date Paid | Current Fee (Undiscounted) | Fee Paid (Small Entity) | Balance Due |
|---|---|---|---|---|
| 8th-Year Maintenance Fee with surcharge | June 9, 2021 | $4,260,00 | $2,130.00 | $2,130.00 |

Patentee understands, pursuant to 37 C.F.R. § 1.28(d), that this deficiency payment operates as a loss of notification of status under 37 C.F.R. § 1.27(g)(2).

Please charge Deposit Account No. 06-1075, from which the undersigned is authorized to draw, in the amount of $2,130.00, covering the balance due as set forth above. The Director is hereby authorized to charge any further deficiency in fees paid, asserted to be paid, or which should have been paid, in connection the above-identified patent, to the aforementioned Deposit Account No. 06-1075.

Respectfully submitted,

/Maxim A. Rapoport/

Maxim A. Rapoport
Reg. No. 67,675
Attorney for Patentee
HALEY GUILIANO LLP
Customer No. 75563
75 Broad Street, Suite 1000
New York, New York 10004
Tel.: (646) 973-2500



Petitioner Disney Ex-1004, 0526

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 42998132 |
| **Application Number:** | 11626340 |
| **International Application Number:** | |
| **Confirmation Number:** | 1023 |
| **Title of Invention:** | Key Frame Detection and Synchronization |
| **First Named Inventor/Applicant Name:** | Kay Johansson |
| **Customer Number:** | 75563 |
| **Filer:** | Maxim Rapoport/Barbara Mullady |
| **Filer Authorized By:** | Maxim Rapoport |
| **Attorney Docket Number:** | 001444-0006-101 |
| **Receipt Date:** | 16-JUN-2021 |
| **Filing Date:** | 23-JAN-2007 |
| **Time Stamp:** | 11:18:08 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Petition for review by the Office of Petitions | 001444-0006-101_Top_Up_Main_Fee.pdf | 81165<br>ef61959bd13299caddb6949766e0f1f59cbfdc60 | no | 2 |

**Warnings:**

| Information: | |
|---|---|
| Total Files Size (in bytes): | 81165 |

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**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 11/626,340 | 01/23/2007 | Kay Johansson | 001444-0006-101 | 1023 |

75563 7590 10/15/2021

Haley Guiliano LLP (Xperi)
75 Broad Street
Suite 1000
New York, NY 10004-3226

| EXAMINER | |
|---|---|
| CHENG, CHI TANG P | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2463 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 10/15/2021 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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HGPatentDocket@hglaw.com
haleyguiliano_PAIR@firsttofile.com

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In re Patent No. 8,542,705
Issue Date: September 24, 2013
Application No. 11/626,340
Filing or 371(c) Date: January 23, 2007
Attorney Docket No. **001444-0006-101**

DECISION ON PETITION

This is a Notice regarding the request for acceptance of a fee deficiency submission under 37 CFR 1.28(c) filed June 16, 2021.

The Office no longer investigates or rejects original or reissue applications under 37 CFR 1.56. 1098 Off. Gaz. Pat. Office 502 (January 3, 1989). Therefore, nothing in this Notice is intended to imply that an investigation was done.

The fee deficiency submission under 37 CFR 1.28(c) is **ACCEPTED**. Accordingly, status as a small entity has been removed and any future fee(s) submitted must be paid at the undiscounted rate.

Inquiries related to this communication should be directed to the undersigned at (571) 272-4584.

/JOANNE L BURKE/
Lead Paralegal Specialist, OPET