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14 **UNITED STATES DISTRICT COURT**
15 **NORTHERN DISTRICT OF CALIFORNIA**

16 B.S.D. CROWN, LTD.,

17 Plaintiff,

18 v.
19

20 AMAZON.COM, INC., AMAZON WEB
21 SERVICES, INC. and AMAZON.COM
SERVICES, LLC

22 Defendants.
23
24

Case No. 3:24-CV-03503-JD

**PLAINTIFF B.S.D. CROWN, LTD.'S
PRELIMINARY CLAIM
CONSTRUCTIONS (PATENT L.R. 4-2)**

Pursuant to Patent L.R. 4-2 of the United States District Court for the Northern District of California and the Scheduling Order in this case (ECF No. 35), Plaintiff B.S.D. Crown, Ltd. (“Plaintiff” or “BSD”) hereby serves its Preliminary Claim Constructions and Intrinsic/Extrinsic Evidence for the terms of the Asserted Claims of U.S. Patent No. 8,934,887 (the “’887 Patent”) that each Party identified pursuant to Patent L.R. 4-1. The Parties met and conferred pursuant to Patent L.R. 4-1(b) and agreed that (1) Defendants’ term No. 3 and BSD’s term No. 7 would be consolidated, if possible, and (2) BSD’s Patent L.R. 4-1 terms Nos. 3, 5, and 8 need not be construed. BSD has asserted infringement of claims 11, 15, 16, 17, 20, 23, 24, and 25 of the ’887 Patent. The ’887 Patent is produced at BSD2_00000001, and all references to aa:bb-cc:dd pertain to that patent’s column and line numbers.

PLAINTIFF’S PRELIMINARY CLAIM CONSTRUCTIONS

Term/No.	Proposed Construction	Evidence
“A method for emulating a mobile device at a server” [Preamble Claims 11, 20] Amazon No. 1 BSD N/A	This term need not be interpreted because the preamble is not limiting.	<u>Intrinsic Support</u> “receiving, by the server” (14:42; 15:41.) “processing, by a mobile device operating system (OS) executed at the server.” (14:45-46.) “processing, by a same instance of a mobile device operating system (OS) executed at the server” (15:45-46.) “sending, by the server” (14:52; 15:54.) “server” (’887 Patent Abstract, “Systems and methods comprise a network in which a mobile device is configured as an input/output interface for a user such that actual processing, storage and network interfaces are performed or provided by a remote server”; <i>passim</i> , ’887 Patent.)
“a mobile device operating system (OS) executed at the server” [Claims 11, 15, 20] BSD No. 1	“an operating system executed at the server and capable of running on a mobile device”	<u>“mobile device”</u> <u>Intrinsic Support</u> “The current generation of mobile devices (e.g., smartphones, tablets and laptops) . . .” (1:27-29.) “FIG. 1 shows a conventional SW stack on a conventional mobile device. A conventional mobile device is a stand-alone entity in which the entire SW

Amazon No. 2

stack executes on the HW of the mobile device itself. A conventional SW Stack includes a HW abstraction layer (e.g., Kernel, drivers etc.) executing directly on the mobile device HW, an OS and applications executing on top of the OS.” (1:55-61)

“FIG. 4 is a block diagram of mobile device components and functionality according to an example embodiment;” (4:15-16.)

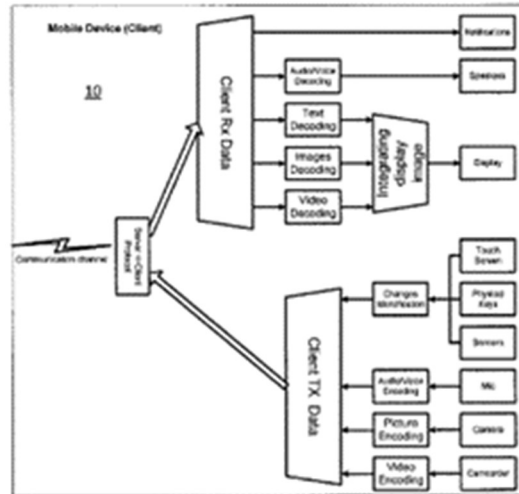


Fig. 4

“FIG. 5 is a block diagram of server components and functionality according to an example embodiment;” (4:17-18.)

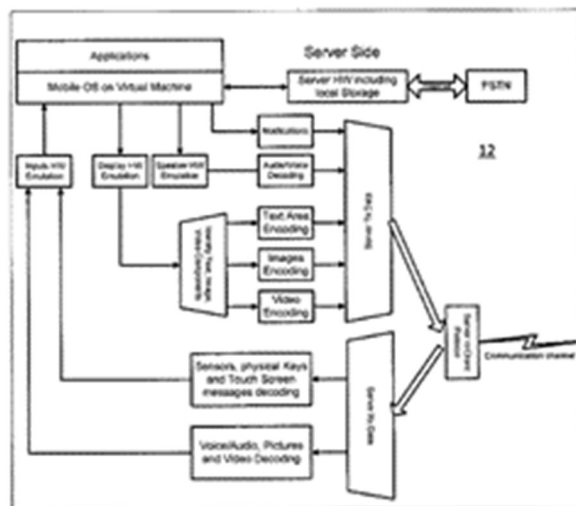


Fig. 5

“The mobile device 10 comprises a processor, a

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		<p>memory, input components (e.g., a touch screen, buttons, sensors, a camera, Bluetooth, etc.), a display, a speaker and at least one wireless transmitter/receiver.” (4:44-50.)</p> <p style="text-align: center;"><u>Extrinsic Support</u></p> <p>Exhibit A, Microsoft Computer Dictionary, Fifth Ed. 2002, p. 343</p> <p>Exhibit B, Wayback Machine 2015 https://dictionary.cambridge.org/us/dictionary/english/mobile-device</p> <p>Exhibit C, Wayback Machine 2011, https://www.merriam-webster.com/dictionary/mobile</p> <p><u>“mobile device operating system (OS) executed at the server”</u></p> <p style="text-align: center;"><u>Intrinsic Support</u></p> <p>“Example embodiments provide systems and methods for decoupling mobile device HW capabilities from actual mobile device performance and a user experience, which enables upgrading mobile device functionality, performance, OS and applications without the need to change the HW or the local SW of the mobile device itself.” (2:19-24.)</p> <p>“The server processes, by a mobile device operating system (OS) executed by the server, the input information to produce user interface information for reproducing at least one of the display, the audio and the hardware (HW) action by the HW component of the mobile device. The server sends the user interface information to the mobile device.” (3:18-24.)</p> <p>“The server processes, by a mobile device operating system (OS) executed by the server, the input information to produce user interface information for reproducing at least one of the display, the audio and the hardware (HW) action by the HW component of the mobile device. The server sends the user interface information to the mobile device.” (3:30-36.)</p> <p>“The server processes, by a same instance of a mobile device operating system (OS) executed by the server, the input information from each of the plurality of different mobile devices to produce user interface information for reproducing at least one of a display, audio and a HW action by a HW component of the mobile device. The server sends the user interface</p>
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		<p>information to at least one of the plurality of different mobile devices.” (3:41-49.)</p> <p>“The server processes, by a first mobile device operating system (OS) executed by the server, the first input information to produce first user interface information for reproducing at least one of a display, audio and a hardware (HW) action by a HW component of the mobile device. The server sends the first user interface information to the mobile device. The server receives second input information from the mobile device. The server processes, by a second mobile device operating system (OS) executed by the server, the second input information to produce second user interface information for reproducing at least one of a display, audio and a HW action by a HW component of the mobile device, wherein the second mobile device OS has at least one of a different OS type, a different OS version and a different OS instance than the first mobile device OS. The server sends the second user interface information to the mobile device.” (3:49-67.)</p> <p>“The mobile device 10 is configured to minor [<i>sic</i>] to the server 12 all or a portion of information input to the mobile device 10. That is, the mobile device 10 receives input information from the input components and sends the input information to the server 12 for processing by the server 12. The mobile device 10 (i.e., the hardware (HW) and local software (SW) of the mobile device 10) thus does not perform the processing locally at the mobile device 10 itself. For example, the mobile device 10 may mirror input information including touch screen gestures, pressed buttons, sensor data, audio data and video data to the server 12 over a packet based network, and the server 12 processes the input information to produce a display and/or audio output based on the input information. That is, the server 12 executes a mobile device operating system (OS) (e.g., Google Android 4.1 or Windows phone 8) and one or more applications (e.g., a Game or GPS navigation SW) on emulated mobile device HW based on the input information received from the mobile device 10. The server streams all animations and/or graphics changes, e.g., changes in games, web browsing and scrolling screens that occur on the virtual mobile device of the mobile OS and emulated HW, to the mobile device 10</p>
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		<p>as a stream of user interface information.” (4:33-5:8.)</p> <p>“Another trend in mobile device technology is the frequent change in OS versions (e.g., Google's Android OS has versions 2.x, 3.x, 4.x . . .) and the different types of OS's (e.g., Google's Android, Microsoft's Windows Mobile, Nokia's Symbian and Apple's iOS) on the market that require effectively different HW. When a new OS version is released, mobile device vendors cannot always upgrade each of the different mobile devices in their product line with the new OS version due to the large amount of time and effort needed to develop and test an upgrade path for each different device type. Mobile device manufacturers address different market segments by designing and manufacturing many mobile device variants, each with different HW capabilities and accompanying OS and applications tailored to the HW capabilities. This wide variety of devices often confuses customers and results in a large burden on the manufacturers for maintaining multiple SW versions.” (1:38-54.)</p> <p>“FIG. 1 shows a conventional SW stack on a conventional mobile device. A conventional mobile device is a stand-alone entity in which the entire SW stack executes on the HW of the mobile device itself. A conventional SW Stack includes a HW abstraction layer (e.g., Kernel, drivers etc.) executing directly on the mobile device HW, an OS and applications executing on top of the OS. The performance of a conventional mobile device is related to the HW capabilities of the mobile device.” (1:55-62.)</p> <p>“For example, the user interface information may be information representing a touch screen gesture to zoom in on a web page, and the information representing the gesture is sent from mobile device 10 toward server 12. The server 12 zooms in locally on the web page, i.e., by execution of the mobile device OS, and sends back toward mobile device 10 a stream of data including all of the web page zooming display information changing over time. For example, the stream of data is similar to a video stream which when reproduced by the mobile device 10 enables the mobile device 10 to display the zooming in on the web page without the mobile device 10 itself performing any of the processing associated with the zooming function. A display and/or audio output of the virtual</p>
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		<p>mobile device is thus constantly streamed to the mobile device 10 and reproduced thereon without the mobile device 10 being required to perform any of the processing for changes to the display and audio output.” (5:12-28.)</p> <p>“The server 12 emulates mobile device HW and executes or runs a mobile device OS and applications on the emulated HW to processes the input information received from the mobile device 10 (i.e., the mirrored input). That is, the server 12 executes an OS and one or more applications on emulated mobile device HW based on the input information received from the mobile device 10. For example, the server 12 processes the input information received from the mobile device 10 and produces user interface information including information for producing a display, audio and other feedback. The server 12 encapsulates the user interface information into data packets and sends the encapsulated user interface information to the mobile device 10, and the mobile device 10 produces a display and/or audio output based on the data sent by the server 12.” (5:28-43.)</p> <p>“FIG. 3 shows an example system solution SW stack separated between a mobile device and a server. Main SW (i.e., a mobile OS and applications) is executed on the server 12 on a server side. The mobile device 10 on a mobile device side executes only basic SW (e.g., a more basic OS or a simple SW protocol without an OS) which is required for basic functionality of the mobile device 10 before a network connection of the mobile device 10 to the server 12 executing the mobile OS and applications is achieved. Accordingly, the basic OS/simple SW executing on the mobile device 10 may be a different (and much simpler) OS or software protocol than the mobile OS executing on the server 12. The basic SW on the mobile device 10 is connected to the mobile SW on the server 12 by a wireless/fixed network.</p> <p>The basic SW executing on the mobile device 10 may be a server-to-client protocol which implements all of the basic functionality of the mobile device 10, e.g., battery monitoring, wireless network connectivity, power on/off and SW upgrade functionality. The basic SW may not be capable locally, i.e., without network connectivity to the mobile device OS executing on the server 12, of running applications and local user storage. Conventional methods for virtualizing PC</p>
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desktops over the Cloud are not suitable for a modern mobile devices which typically have many more capabilities than a conventional PC desktop. An end-to-end network system according to example embodiments provides for virtualized support of touch, multi-touch and gesture based interfaces, various sensors, GPS and Glonass type systems, seamless virtualized support of camera and camcorder functions, the ability for the mobile device 10 to user different virtualized OS's at the server 12, the ability for multiple different mobile devices 10 to use the same instance of a virtual machine, an optimized client-to-server protocol that functions on wireless networks having relatively low bandwidth and high bit error rate, the ability to pass in real time and high quality display graphics motions, e.g., menu scrolling, game action and videos, and the ability to perform voice calling or send a SMS seamlessly without the need to operate dedicated SW such as Skype which requires a logon procedure for its members.” (5:48-6:21.)

“That is, the mobile device 10 does not process the input information or detected changes to produce changes in a display or audio output of the mobile device 10. The mobile device 10 instead minors the information or changes input to the HW components of the mobile device 10 to the server 12 over the network connection. The server 12 processes the mirrored information and mirrors the emulated user interface information (e.g., display and speaker audio) back to the mobile device 10.” (6:58-66.)

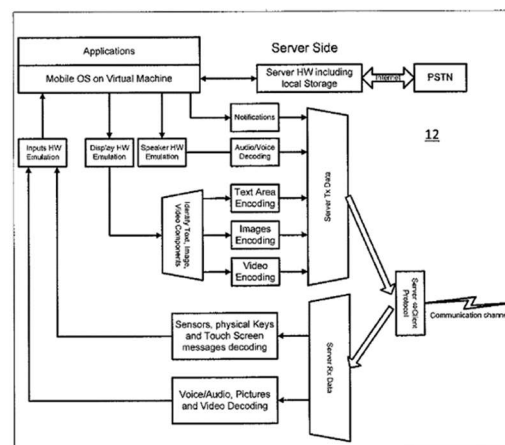


Fig. 5

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		<p>“FIG. 5 is a block diagram of server components and functionality according to an example embodiment. The server 12 may comprise a logical node located on a single physical node or on a plurality of different physical nodes. The server 12 executes the mobile OS (e.g., Google's Android or Microsoft's Windows Phone Mobile) and the applications (e.g., a game, web-browsing or GPS navigation program) for the mobile device 10 in a virtual machine (e.g., the virtual machine may be implemented using Oracle Virtual Box or VMware Player over Linux OS) and emulates mobile device HW to the mobile OS based on the input information received from the mobile device 10. For example, the server 12 receives the input information (e.g., sensor changes, key and touch screen input, audio data, video data, etc.) from the mobile device 10, decodes the input information (decoding audio, picture and video data and messages containing the sensor changes and screen input), and processes the input information by the emulated HW and the mobile OS and/or applications executing on the emulated HW. The server 12 thus emulates a user experience including the user interface and changes thereto.” (8:4-24.)</p> <p>“The server 12 is configured to support multiple mobile devices 10 using the same user instance. That is, a plurality of different mobile devices 10 may send input information to and receive user interface information from the same instance of an OS executed by the server 12. For example, a user may use a plurality of different mobile devices, e.g., a smartphone, a tablet, and a streamer, simultaneously on the same user instance.” (10:1-8.)</p> <p>“The server 12 decodes the audio/video data, processes and stores the audio/video data by the emulated HW and OS at the server 12 and sends (and encodes) the result of the processing to the mobile device 10 at S72 (each type of data being sent in a different data stream). For example, the server 12 processes the audio/video data to edit the video, e.g., to cut and swap video portions, add titles, etc. As another example, game applications may process the audio/video data to add it to graphics in real time.” (11:21-25.)</p>
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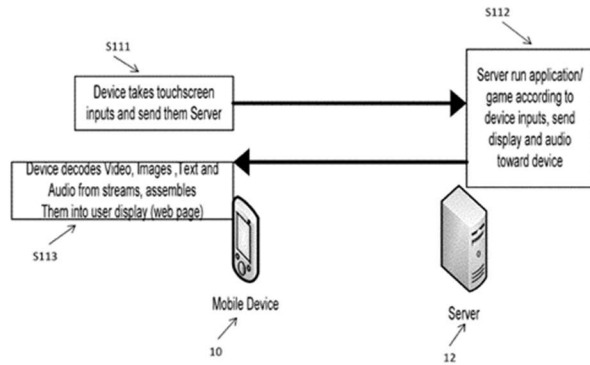


Fig. 11

“FIG. 11 is a flow diagram illustrating a system and method according to another example embodiment. For example, an example embodiment provides for running a game application. A mobile device 10 receives touchscreen inputs (or other inputs) and sends the input information to a server at S111. The server 12 executes an application, e.g., a game, on a mobile OS running on mobile device HW emulated on the server 12 based on the input information received and sent by the mobile device 10, and sends user interface information including display data and audio data to the mobile device 10 at S112. The mobile OS and emulated mobile device HW run on top of a normal OS of the server 12. The mobile device 10 receives the display and audio data and decodes video, image, text and audio data from the respective streams and assembles the data together into a user display with audio at S113.” (12:34-48.)

“A user (or multiple users) may use a plurality of different mobile devices (e.g., a smartphone, a tablet, etc.) with the same OS instance, thereby avoiding any need to pass data between different user mobile devices, reinstall applications, etc. For example, a user may own several different device, e.g., a cellular phone, a tablet, etc., and the user may use the same OS instance on the server 12 for each device.

Accordingly, all of the user's applications, pictures, data, contacts, etc. are synched to each of the devices automatically by the shared OS instance. The user thus does not need to install the same application separately on each device, or move pictures taken by the cellular phone to the tablet. The number of mobile device variants (e.g., different phone models) may be reduced because only physical interfaces (e.g., display,

		sensors, camera, and camcorder) are required to be permanently configured for the end user. A large number of mobile device variants based on different memory size, CPU power, etc. are therefore no longer required.” (13:10-29.)
“sending, by the server, the stream of user interface information” [Claims 11, 20] BSD No. 2 Amazon N/A	“sending, by the server, the stream of user interface information, where user interface information is data that can be used to recreate or produce a display (e.g., video and/or image), audio, text, and/or other feedback (e.g., notifications, HW action data) without any processing thereof other than the decoding and playback or reproduction of the user interface information itself by the mobile device”	Claim 20 should be read to include “stream of.” <i>See</i> 16:6-9, Claim 23 (“The method of claim 20, wherein the stream of user interface information comprises a plurality of different types of data and the server sends each different type of data to the mobile device in a separate data stream.”). <u>Stream</u> <u>Intrinsic Support</u> “For example, the stream of data is similar to a video stream which when reproduced by the mobile device 10 enables the mobile device 10 to display the zooming in on the web page without the mobile device 10 itself performing any of the processing associated with the zooming function. A display and/or audio output of the virtual mobile device is thus constantly streamed to the mobile device 10 and reproduced thereon without the mobile device 10 being required to perform any of the processing for changes to the display and audio output.” (5:19-28.) <u>Extrinsic Support</u> Exhibit A, Microsoft Computer Dictionary, Fifth Ed. 2002, p. 499 (definitions of “stream” and “streaming”). <u>User interface information</u> <u>Intrinsic Support</u> “The mobile device receives user interface information from the server.” (2:42-43.) “The server processes, by a mobile device operating system (OS) executed by the server, the input information to produce user interface information for reproducing at least one of the display, the audio and the hardware (HW) action by the HW component of the mobile device. The server sends the user interface information to the mobile device.” (3:18-24.) “The server processes, by a same instance of a mobile device operating system (OS) executed by the server,

the input information from each of the plurality of different mobile devices to produce user interface information for reproducing at least one of a display, audio and a HW action by a HW component of the mobile device. The server sends the user interface information to at least one of the plurality of different mobile devices.” (3:41-48.)

“The server processes, by a first mobile device operating system (OS) executed by the server, the first input information to produce first user interface information for reproducing at least one of a display, audio and a hardware (HW) action by a HW component of the mobile device. The server sends the first user interface information to the mobile device. The server receives second input information from the mobile device. The server processes, by a second mobile device operating system (OS) executed by the server, the second input information to produce second user interface information for reproducing at least one of a display, audio and a HW action by a HW component of the mobile device, wherein the second mobile device OS has at least one of a different OS type, a different OS version and a different OS instance than the first mobile device OS. The server sends the second user interface information to the mobile device.” (3:49-67.)

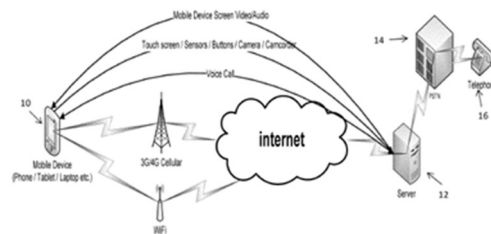


Fig. 2

“The server streams all animations and/or graphics changes, e.g., changes in games, web browsing and scrolling screens that occur on the virtual mobile device of the mobile OS and emulated HW, to the mobile device 10 as a stream of user interface information. The user interface information is data that can be used to recreate or produce a display and/or audio without any processing thereof other than the decoding and playback or reproduction of the user interface information itself by the mobile device 10. For example, the user interface information may be information representing a touch screen gesture to

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		<p>zoom in on a web page, and the information representing the gesture is sent from mobile device 10 toward server 12. The server 12 zooms in locally on the web page, i.e., by execution of the mobile device OS, and sends back toward mobile device 10 a stream of data including all of the web page zooming display information changing over time. For example, the stream of data is similar to a video stream which when reproduced by the mobile device 10 enables the mobile device 10 to display the zooming in on the web page without the mobile device 10 itself performing any of the processing associated with the zooming function. A display and/or audio output of the virtual mobile device is thus constantly streamed to the mobile device 10 and reproduced thereon without the mobile device 10 being required to perform any of the processing for changes to the display and audio output.” (5:3-28.)</p> <p>“For example, the server 12 processes the input information received from the mobile device 10 and produces user interface information including information for producing a display, audio and other feedback. The server 12 encapsulates the user interface information into data packets and sends the encapsulated user interface information to the mobile device 10, and the mobile device 10 produces a display and/or audio output based on the data sent by the server 12.” (5:35-43.)</p> <p>“The server 12 processes the mirrored information and mirrors the emulated user interface information (e.g., display and speaker audio) back to the mobile device 10. The mobile device 10 produces the display, speaker audio and/or a HW action of a hardware component (e.g., activates and/or controls a GPS and/or one or more sensors) based on the mirrored emulated user interface information.” (6:53-7:3.)</p> <p>“The basic functionality of the mobile device 10 further comprises intensive processing tasks, e.g., encoding/decoding of video, which may be accelerated by HW of the mobile device 10, notifications (receiving at the mobile device 10 from the server 12 notifications of new events and reporting them to the user (e.g., a telephone call, a new E-mail, a new SMS, etc. . . .)) and server-to-client protocol for decoding video, audio, image and text data (user interface information) separately streamed from the</p>
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		<p>server 12 to the mobile device 10, integration of the video, image and/or text data into display data for producing a display and reproduction thereof by the display screen with reproduction of audio data by the speaker.” (7:51-59.)</p> <p>“If the mobile OS on the server 12 receives input information to draw a circle on a display using GPU drivers, an emulated GPU driver at the server 12 processes the input information to draw the circle, stores the results in server memory, emulates the resulting display and sends user interface information for reproducing the resulting display toward mobile device 10.” (8:37-43.)</p> <p>“The server 12 is configured to support multiple mobile devices 10 using the same user instance. That is, a plurality of different mobile devices 10 may send input information to and receive user interface information from the same instance of an OS executed by the server 12. For example, a user may use a plurality of different mobile devices, e.g., a smartphone, a tablet, and a streamer, simultaneously on the same user instance.” (10:1-8.)</p> <p>“A server-to-client protocol at the server 12 separates the emulated user experience, i.e., the user interface data resulting from processing of the input information by the mobile OS and/or applications at the server 12, into different data streams including video, image, audio, notifications and text data streams.” (8:54-59.)</p> <p>“The server 12 executes an application, e.g., a game, on a mobile OS running on mobile device HW emulated on the server 12 based on the input information received and sent by the mobile device 10, and sends user interface information including display data and audio data to the mobile device 10 at S112. The mobile OS and emulated mobile device HW run on top of a normal OS of the server 12. The mobile device 10 receives the display and audio data and decodes video, image, text and audio data from the respective streams and assembles the data together into a user display with audio at S113.” (12:39-48.)</p> <p>“The server 12 executes a navigation application on a main OS running on mobile device HW emulated on the server 12 according to the GPS readings sent by the mobile device 10 and sends user interface information including display data and/or audio data</p>
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		<p>corresponding to an display or output of the navigation application to the mobile device 10 at S122.” (12:53-59.)</p> <p style="text-align: center;"><u>Extrinsic Support</u></p> <p>Exhibit A, Microsoft Computer Dictionary, Fifth Ed. 2002, p. 544 (definition of “user interface”)</p>
<p>“processing, (by a mobile device operating system (OS) executed at the server) the input information to produce a stream of user interface information for use in reproducing at the mobile device at least one of a display, audio and a hardware (HW) action by a HW component of the mobile device based on a same instance of the mobile device OS”</p> <p>[Claim 11]</p> <p>“a same instance of the mobile device OS processes the input information from the plurality of different mobile devices”</p> <p>[Claim 15]</p>	<p>“a mobile device OS executed at the server processes the input information received by the server to produce a stream of user interface information that is based on a same occurrence of the operating system executed at the server for use by the hardware (HW) component of the mobile device in reproducing at least one of a display, audio and a hardware (HW) action”</p> <p>“a same occurrence of the mobile device OS processes the input information from the plurality of</p>	<p><u>Intrinsic Support</u></p> <p>“According to an example embodiment, a method for emulating a mobile device at a server comprises receiving, by a server, input information from a plurality of different mobile devices. The server processes, by a same instance of a mobile device operating system (OS) executed by the server, the input information from each of the plurality of different mobile devices to produce user interface information for reproducing at least one of a display, audio and a HW action by a HW component of the mobile device. The server sends the user interface information to at least one of the plurality of different mobile devices.” (3:38-48.)</p> <p>“The server 12 is configured to support multiple mobile devices 10 using the same user instance. That is, a plurality of different mobile devices 10 may send input information to and receive user interface information from the same instance of an OS executed by the server 12. For example, a user may use a plurality of different mobile devices, e.g., a Smartphone, a tablet, and a streamer, simultaneously on the same user instance.</p> <p>The server 12 is configured to support a plurality of different mobile device users with each user using a different mobile OS or OS version. For example, the server 12 may emulate mobile device hardware for a first device manufactured by Samsung and executing Google's Android OS, and emulate mobile device hardware for a second device manufactured by Nokia and executing Google's Android OS. The server is configured to handle a high Scale of users, i.e., mobile devices 10, simultaneously without suffering degradation in performance.” (10:1-18.)</p> <p>“A user (or multiple users) may use a plurality of different mobile devices (e.g., a Smart phone, a tablet, etc.) with the same OS instance, thereby avoiding any</p>

<p>“processing, by a same instance of a mobile device operating system (OS) executed at the server, the input information to produce a stream of user interface information for use in reproducing at the different mobile devices at least one of the display, audio and the HW action by the HW components of the different mobile device based on the same instance of the mobile device OS” [Claim 20]</p> <p>BSD No. 4 Amazon N/A</p>	<p>different mobile devices.”</p> <p>“a same occurrence of a mobile device operating system (OS) executed at the server, processes the input information from each of the plurality of different mobile devices to produce user interface information based on the same occurrence of the mobile device OS for use by hardware (HW) components of the different mobile devices in reproducing at least one of the display, audio and the HW action”</p>	<p>need to pass data between different user mobile devices, reinstall applications, etc. For example, a user may own several different device, e.g., a cellular phone, a tablet, etc., and the user may use the same OS instance on the server 12 for each device. Accordingly, all of the user's applications, pictures, data, contacts, etc. are synched to each of the devices automatically by the shared OS instance.” (13:10-20.)</p> <p>“According to another example embodiment, a method for emulating a mobile device at a server comprises receiving, by a server, first input information from a mobile device. The server processes, by a first mobile device operating system (OS) executed by the server, the first input information to produce first user interface information for reproducing at least one of a display, audio and a hardware (HW) action by a HW component of the mobile device. The server sends the first user interface information to the mobile device. The server receives second input information from the mobile device. The server processes, by a second mobile device operating system (OS) executed by the server, the second input information to produce second user interface information for reproducing at least one of a display, audio and a HW action by a HW component of the mobile device, wherein the second mobile device OS has at least one of a different OS type, a different OS version and a different OS instance than the first mobile device OS. The server sends the second user interface information to the mobile device.” (3:49-67.)</p> <p><u>Extrinsic Support</u></p> <p>Exhibit D, Wayback Machine 2012 www.vocabulary.com:80/dictionary/instance</p> <p>Exhibit E, Wayback Machine 2011 http://thesaurus.com/browse/instance</p>
<p>“at least one of the display, the audio and the hardware (HW) action” [Claims 11, 20]</p>	<p>“at least one of each of the display, the audio and the hardware (HW) action”</p>	<p><u>Intrinsic Support</u></p> <p>“The mobile device 10 decodes and assembles the separate video, image and text data streams of the display data/user interface data into a display. The mobile device 10 enables different HW operations or actions according to requests from the server 12. For example, the mobile device 10 enables the camera</p>

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	<p>BSD No. 6</p> <p>Amazon N/A</p>	<p>and/or microphone in response to a request from the server 12. The mobile device 10 decodes the compressed audio of the user interface data and reproduces the audio at the speaker in coordination with the assembled display.” (10:56-64.)</p> <p>“The server 12 decodes the audio/video data, processes and stores the audio/video data by the emulated HW and OS at the server 12 and sends (and encodes) the result of the processing to the mobile device 10 at S72 (each type of data being sent in a different data stream). For example, the server 12 processes the audio/video data to edit the video, e.g., to cut and Swap video portions, add titles, etc. As another example, game applications may process the audio/video data to add it to graphics in real time. The mobile device 10 decodes the processed audio/video data from each stream, integrates the data from the separate streams together to produce a display and displays the result and reproduces the audio to the user at S73.” (11:21-33.)</p> <p>“For example, the server 12 merges the video from the first mobile device 10 with the video from the second mobile device 10 so that each user can see their own picture and the picture of the other user. The first and second mobile devices 10 receive the processed audio/video streams, decode the processed audio/video data from each stream, integrate the data from the separate streams to produce a display and display the results and reproduce the audio to the user at steps S84 and S85.” (11:54-62.)</p> <p>“The server 12 processes the mirrored information and mirrors the emulated user interface information (e.g., display and speaker audio) back to the mobile device 10. The mobile device 10 produces the display, speaker audio and/or a HW action of a hardware component (e.g., activates and/or controls a GPS and/or one or more sensors) based on the mirrored emulated user interface information. (6:63-7:3.)</p> <p>“The server streams all animations and/or graphics changes, e.g., changes in games, web browsing and Scrolling screens that occur on the virtual mobile device of the mobile OS and emulated HW, to the mobile device 10 as a stream of user interface information.” (5:3-8.)</p> <p>“For example, the user interface information may be</p>
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		<p>information representing a touch screen gesture to zoom in on a web page, and the information representing the gesture is sent from mobile device 10 toward server 12. The server 12 zooms in locally on the web page, i.e., by execution of the mobile device OS, and sends back toward mobile device 10 a stream of data including all of the web page zooming display information changing over time. For example, the stream of data is similar to a video stream which when reproduced by the mobile device 10 enables the mobile device 10 to display the zooming in on the web page without the mobile device 10 itself performing any of the processing associated with the zooming function. A display and/or audio output of the virtual mobile device is thus constantly streamed to the mobile device 10 and reproduced thereon without the mobile device 10 being required to perform any of the processing for changes to the display and audio output.” (5:12-28.)</p> <p>“If the mobile OS on the server 12 receives input information to draw a circle on a display using GPU drivers, an emulated GPU driver at the server 12 processes the input information to draw the circle, stores the results in server memory, emulates the resulting display and sends user interface information for reproducing the resulting display toward mobile device 10. If the mobile OS on the server attempts to send audio data to audio speaker drivers, an emulated audio speaker driver at the server 12 packages the audio data and sends the audio data to the mobile device 10 for reproduction. An emulated touch screen driver on the server 12 receives input information (e.g., coordinates) from the mobile device 10, converts the input information and emulates the touch screen driver toward the mobile OS. The mobile OS uses the input information to run the application and change the display accordingly, and the emulated display information is sent toward the mobile device 10.” (8:37-53.)</p> <p><u>Extrinsic Support</u></p> <p><i>See, e.g., SuperGuide Corp. v. DirecTV Enters., Inc.</i>, 358 F.3d 870 (Fed. Cir. 2004).</p>
“a quality of service” /	“characteristics of a service that	<p><u>Intrinsic Support</u></p> <p>“Each individual data stream has its own</p>

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	<p>“quality of service different from a quality of service of another of said separate data streams”</p> <p>[Claims 16, 24]</p> <p>BSD No. 7</p> <p>Amazon No. 3</p>	<p>bear on its ability to satisfy stated and implied needs of the user of the service”</p> <p>“One or more of the separate data streams has a quality of service (i.e., characteristics that bear on its ability to satisfy stated and implied needs of the user of the service) different from a quality of service (i.e., characteristics that bear on its ability to satisfy stated and implied needs of the user of the service) of another of the separate data streams”</p>	<p>characteristics, for example, an encoding method for efficient bandwidth (BW) utilization (e.g., Lossy vs. Lossless encoding), a quality of service (QoS), a bandwidth etc., which may be different from stream to stream. Intensive processing tasks, for example, encoding/decoding of video, may be accelerated by HW at the server 12.”</p> <p>“Each different type of data (e.g., voice, audio, image, video, notification, sensor, etc.) is sent between the server 12 and the mobile devices 10 in a separate stream. For example, audio data is sent from the server 12 to the mobile devices 10 (and vice-versa) in a first stream separate and different from a second stream in which video data is sent. Each stream comprises its own individual characteristics, which may be different from stream to stream. For example, each stream has an encoding/decoding type, a quality of service (QoS) and a bandwidth which may be different for each stream. For example, a maximum bandwidth is set low enough that use of the mobile device 10 and server 12 according to example embodiments is practical, and if there is no need for a high bandwidth, bandwidth is not unnecessarily consumed by the mobile device 10 and server 12. Each individual stream of data may have a different QoS so that a quality of experience (QoE) is optimal even if BW is lacking. For example, Voice and sensor data streams may typically have a higher QoS level than video data streams so that a user receives high quality calls and senses minimal lag of the user interface.” (9:26-46.)</p> <p>“The mobile device 10 and server 12 may be configured to achieve minimal latency for user interface related messages and data stream encoding. For example, a user should not feel that the mobile device 10 behaves differently from a conventional mobile device in which functionality is executed locally. Furthermore, the mobile device 10 selects streaming characteristics to maintain power dissipation efficiency similar to that of a conventional mobile device. QoS (e.g., QoS may be implemented using Layer 2 Vlan 0.1P bits or Layer3 DSCP bits) and an encoding type may be set based on a type of the stream. For example, a video stream may receive H.264 encoding/decoding and a lowest level QoS. A voice stream may receive lossless encoding and a</p>
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		<p>higher level of QoS. Bandwidth (BW) may be automatically calculated based on a bandwidth required for the type of stream. For example, a high-definition (HD) video stream may receive a higher BW, e.g., 10 Mb/s, a lower quality video stream may receive a lower BW, e.g., 1 Mb/s, and a voice stream may receive an even lower BW, e.g., 64 Kb/s. The server-to-client protocol at the mobile device 10 and the server 12 determines the streaming characteristics.” (9:47-67.)</p> <p>“The server 12 continuously analyzes display data/user interface information that is to be sent from server 12 the mobile device 10. . . . The server 12 processes and sends compressed audio to the mobile device 10 as a separate stream. Because audio and voice streams receive higher QoS than video streams, and assuming there is enough network BW, a sufficiently low latency for audio and voice data is maintained so that insignificant skew between video and audio playback occurs. For example, a video latency of 100 ms and an audio latency of 50 ms should not result in a skew between video and audio playback that is noticeable by the user.” (10:29-50.)</p> <p><u>Extrinsic Support</u></p> <p>Exhibit F, Recommendation ITU-T P.10/G.100 (2006) – Amendment 3, Dec. 2011, Vocabulary for performance and quality of service.</p> <p>Exhibit A, Microsoft Computer Dictionary, Fifth Ed. 2002, p. 432 (definitions of “quality of service” and “QoS”)</p>
<p>“the input information has not been processed to produce a display, audio and a hardware (HW) action by a corresponding HW component of the mobile devices”</p> <p>[Claim 20]</p>	<p>“the input information (i.e., information received by the server from the mobile device) has not been processed to produce a display, audio and a hardware action by a corresponding hardware</p>	<p><u>Intrinsic Support</u></p> <p>“According to an example embodiment, a method for operating a mobile device comprises executing, by a mobile device, a basic software (SW) protocol or operating system (OS) to receive input information from one or more hardware (HW) components of the mobile device, establish a network connection to a server, and send the input information to the server over the network connection without performing more detailed processing of the input information by the mobile device.” (2:25-33.)</p> <p>“According to another example embodiment, a method for operating a mobile device comprises</p>

1	BSD No. 9	component of	receiving, by a mobile device, a plurality of different
2	Amazon N/A	the mobile	types of data from one or more hardware (HW)
3		device”	components of the mobile device. The mobile device
4			sends each different type of data to a server in a
5			separate data stream.” (2:37-42.)
6			“According to another example embodiment, a
7			method for emulating a mobile device at a server
8			comprises receiving, by a server, input information
9			from at least one mobile device, wherein the input
10			information has not been processed to produce a
11			display, audio and a hardware (HW) action by a HW
12			component of a mobile device.” (3:13-18.)
13			“According to still another example embodiment, a
14			method for emulating a mobile device at a server
15			comprises receiving, by a server, input information
16			from at least one mobile device, wherein the input
17			information has not been processed to produce a
18			display, audio and a hardware (HW) action by a HW
19			component of a mobile device. The server processes,
20			by a mobile device operating system (OS) executed by
21			the server, the input information to produce user
22			interface information for reproducing at least one of
23			the display, the audio and the hardware (HW) action
24			by the HW component of the mobile device. The
25			server sends the user interface information to the
26			mobile device.” (3:25-37.)
27			“The mobile device 10 is configured to minor [<i>sic</i> ,
28			mirror] to the server 12 all or a portion of information
			input to the mobile device 10. That is, the mobile
			device 10 receives input information from the input
			components and sends the input information to the
			server 12 for processing by the server 12. The mobile
			device 10 (i.e., the hardware (HW) and local software
			(SW) of the mobile device 10) thus does not perform
			the processing locally at the mobile device 10 itself.
			For example, the mobile device 10 may mirror input
			information including touch screen gestures, pressed
			buttons, sensor data, audio data and video data to the
			server 12 over a packet based network, and the server
			12 processes the input information to produce a
			display and/or audio output based on the input
			information.” (4:53-5:3.)
			“For example, the stream of data is similar to a video
			stream which when reproduced by the mobile device
			10 enables the mobile device 10 to display the
			zooming in on the web page without the mobile device

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		<p>10 itself performing any of the processing associated with the zooming function. A display and/or audio output of the virtual mobile device is thus constantly streamed to the mobile device 10 and reproduced thereon without the mobile device 10 being required to perform any of the processing for changes to the display and audio output.” (5:19-28.)</p> <p>“The basic OS or SW protocol executing on the mobile device 10 is configured to activate the above-described HW/input components of the mobile device 10 and receive information (or detect changes) input thereto, as well as to establish a network connection to the server 12. However, the basic OS or SW protocol executing on the mobile device is not required to perform more detailed processing of the information or detected changes received from the HW of the mobile device 10. That is, the mobile device 10 does not process the input information or detected changes to produce changes in a display or audio output of the mobile device 10. The mobile device 10 instead minors [sic., mirrors] the information or changes input to the HW components of the mobile device 10 to the server 12 over the network connection. The server 12 processes the mirrored information and mirrors the emulated user interface information (e.g., display and speaker audio) back to the mobile device 10. The mobile device 10 produces the display, speaker audio and/or a HW action of a hardware component (e.g., activates and/or controls a GPS and/or one or more sensors) based on the mirrored emulated user interface information. “ (6:50-7:3.)</p> <p>“The input information from the user interface received by the mobile device 10 is sent from the mobile device 10 to the server 12 without any manipulation/processing thereof, except for optional data compression. For example, if a user touches the touch screen of the mobile device 10 in a specific area, the change identification unit identifies the change in input to the touch screen, e.g., coordinates of the specific area touched by the user, and the mobile device 10 sends the coordinates of the specific area to the server 12. If the area touched by the user changes, new coordinates for the new area now touched by the user are identified by the change identification unit and are sent to the server 12 by the mobile device 10. If the user releases his touch from the touch screen, the change identification unit identifies the change in</p>
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		<p>input to the touch screen and the mobile device 10 sends a touch screen release message to the server 12. The user interface input components of the mobile device 10, e.g., the microphone and camera, sample audio and/or video input thereto, and the corresponding audio/video/picture encoding encodes the sampled input for transmission. The mobile device 10 sends the encoded/sampled audio and/or video data encapsulated into packets toward server 12.</p> <p>The mobile device 10 implements basic functionality through the basic OS or SW protocol executing on the mobile device HW. The basic functionality of the mobile device 10 comprises powering up of the mobile device 10, monitoring battery power of the mobile device 10, upgrading the SW (e.g., the basic OS) of the mobile device 10, connecting the mobile device 10 to a WiFi network or a cellular network (which may be user configurable), unique identification of the mobile device 10 to the network and/or a local operator, and setting and negotiating HW capabilities (e.g., display resolution and size, sensor capabilities etc. . . .) of the mobile device 10.</p> <p>The basic functionality of the mobile device 10 further comprises receiving, identifying and encapsulating information input or changes made to a user interface (touch screen, physical keys, etc.) into messages/data streams for transmittal to the server 12, receiving, identifying and encapsulating HW sensor data and/or changes thereto into messages/data streams for transmittal to the server 12 (sensors include motion, environmental and position sensors), receiving, encoding (e.g., compression) and encapsulating camera and/or camcorder (e.g., picture and/or video data) and/or microphone (audio data) information and sending the encoded and encapsulated information to the server 12 (encoding may include compression performed to save network bandwidth). The basic functionality of the mobile device 10 further comprises intensive processing tasks, e.g., encoding/decoding of video, which may be accelerated by HW of the mobile device 10, notifications (receiving at the mobile device 10 from the server 12 notifications of new events and reporting them to the user (e.g., a telephone call, a new E-mail, a new SMS, etc. . . .)) and server-to-client protocol for decoding video, audio, image and text data (user</p>
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		<p>interface information) separately streamed from the server 12 to the mobile device 10, integration of the video, image and/or text data into display data for producing a display and reproduction thereof by the display screen with reproduction of audio data by the speaker.</p> <p>The mobile device 10 sends each type of data (e.g., voice, audio, image, video, notification, sensor, etc.) to the server 12 in a separate stream.” (7:4-7:65.)</p> <p>“That is, the mobile device 10 does not process the input information or detected changes to produce changes in a display or audio output of the mobile device 10.” (6:58-60.)</p> <p>“The server 12 processes the mirrored information and mirrors the emulated user interface information (e.g., display and speaker audio) back to the mobile device 10. The mobile device 10 produces the display, speaker audio and/or a HW action of a hardware component (e.g., activates and/or controls a GPS and/or one or more sensors) based on the mirrored emulated user interface information.” (6:63-7:3.)</p> <p>“The mobile device 10 decodes and assembles the separate video, image and text data streams of the display data/user interface data into a display. The mobile device 10 enables different HW operations or actions according to requests from the sever 12. For example, the mobile device 10 enables the camera and/or microphone in response to a request from the server 12. The mobile device 10 decodes the compressed audio of the user interface data and reproduces the audio at the speaker in coordination with the assembled display.” (10:56-64.)</p> <p><u>Extrinsic Support</u></p> <p>Exhibit G, Wayback Machine 2015 https://dictionary.cambridge.org/dictionary/english/produce</p> <p>Exhibit H, Wayback Machine 2011 https://www.merriam-webster.com/dictionary/produce</p> <p>Exhibit I, Wayback Machine 2012 https://www.collinsdictionary.com/dictionary/english/produce</p>
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1 Plaintiff reserves the right to refine this list by combining or dividing identified terms,
2 phrases, or clauses, in an effort to resolve any dispute that may arise as to the proper disposition
3 of the listed terms, phrases, or clauses. Plaintiff further reserves the right to include additional
4 portions of claims to provide context and clarity for the identified terms, phrases, or clauses.
5 Plaintiff's investigation and discovery is ongoing and, therefore, Plaintiff reserves the right to
6 amend and/or supplement the foregoing proposed terms in light of Defendants' preliminary
7 constructions and information learned through the course of discovery. Plaintiff further reserves
8 the right to amend its proposed claim constructions if Defendants amend or provide further detail
9 to their invalidity contentions. Plaintiff additionally reserves the right to rely on expert testimony
10 and opinions in rebuttal to any expert testimony or opinions presented through the course of
11 claim construction by Defendants.

12
13 Dated: January 10, 2025

14 By: /s/ Francisco Villegas

15 Francisco A. Villegas
16 Damir Cefo (*pro hac vice*)
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1 **CERTIFICATE OF SERVICE**

2 I, Evan M. Rosenbaum, certify/declare as follows:

3 I am a citizen of the United States, over the age of eighteen years and not a party to the
4 within entitled action. On this 10th day of January 2025, I served the attached:

- 5 • **PLAINTIFF B.S.D. CROWN, LTD.'S PRELIMINARY CLAIM**
6 **CONSTRUCTIONS (PATENT L.R. 4-2)**

7 on the interested party(ies) named below:

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23 ***SERVICES, LLC***

24 I caused true and correct copies of the above documents to be sent via e-mail to the e-mail
25 addressee(s) named above. I did not receive, within a reasonable amount of time after the
26 transmission, any electronic message or other indication that the transmission was unsuccessful.

27 /s/ Evan M. Rosenbaum

28 Evan M. Rosenbaum