

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Title: VERIFIABLE DEVICE ASSISTED SERVICE USAGE BILLING
WITH INTEGRATED ACCOUNTING, MEDIATION AC-
COUNTING, AND MULTI-ACCOUNT

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PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES

PATENT NO. 8,588,110 PURSUANT TO 35 U.S.C. §§ 311–319,

37 C.F.R. § 42

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EXHIBITS

SAMSUNG -1001 U.S. Patent No. 8,588,110 to Raleigh (“the ’110 Patent”)

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Dec. 29, 2023

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CLAIMS

Claim	Identifier	Claim Language
1	[1.1]	A wireless device comprising:
	[1.2]	one or more modems for enabling the wireless device to communicate over at least two wireless networks, the at least two wireless networks comprising a first wireless network and a second wireless network;
	[1.3]	a user interface;
	[1.4]	memory configured to store:
	[1.5]	a first service policy associated with the first wireless network, the first service policy configured to at least assist in reducing data usage associated with a first service activity over the first wireless network,
	[1.6]	the first service activity being less than all service activities available to the wireless device,
	[1.7]	the first service policy for enabling control of the first service activity on the first wireless network that is different from how the first service activity is controlled on the second wireless network; and
	[1.8]	one or more processors for executing one or more agents, the one or more agents configured to:
	[1.9]	obtain, through the user interface, a user input specifying at least an aspect of the first service policy,
	[1.10]	identify that the wireless device is connected to the first wireless network,
	[1.11]	identify an intended, attempted, or successful data communication over the first wireless network, the intended, attempted, or successful data communication over the first wireless network

		being associated with the first service activity, and
	[1.12]	apply the first service policy.
2	[2]	The wireless device recited in claim 1, wherein the first service activity is associated with an application on the wireless device, a network communication end point, a traffic type, a content type, a download, an upload, or a combination of these.
3	[3.1]	The wireless device recited in claim 1, wherein the one or more agents are further configured to: identify that the wireless device is connected to the second wireless network,
	[3.2]	identify an intended, attempted, or successful data communication over the second wireless network, the intended, attempted, or successful data communication over the second wireless network being associated with the first service activity, and
	[3.3]	apply the first service policy.
4	[4.1]	The wireless device recited in claim 1, wherein the memory is further configured to store a second service policy associated with the second wireless network, the second service policy configured to assist in reducing data usage over the second wireless network associated with the first service activity, and wherein the one or more agents are further configured to:
	[4.2]	identify that the wireless device is connected to the second wireless network,
	[4.3]	identify an intended, attempted, or successful data communication over the second wireless network, the intended, attempted, or successful data communication over the second wireless

		network being associated with the first service activity, and
	[4.4]	apply the second service policy.
5	[5]	The wireless device recited in claim 1, wherein reducing data usage comprises blocking the first service activity.
6	[6]	The wireless device recited in claim 1, wherein reducing data usage comprises blocking the first service activity when the wireless device is connected to the first wireless network and allowing the first service activity when the wireless device is connected to the second wireless network.
7	[7]	The wireless device recited in claim 1, wherein reducing data usage comprises throttling or traffic shaping the first service activity.
8	[8]	The wireless device recited in claim 1, wherein reducing data usage comprises delaying the first service activity, or assigning the first service activity to a lower-priority traffic queue than a traffic queue to which the first service activity would otherwise be assigned.
9	[9]	The wireless device recited in claim 1, wherein the first service policy is dependent on a network type, a roaming network connection condition, a WiFi network condition, a background download condition, a user designation that the first service activity is non-critical, a geographic location, or a combination of these.
10	[10]	The wireless device recited in claim 1, wherein the first service activity comprises a background activity or a software update, and wherein reducing data usage comprises delaying, deferring, throttling, or blocking the first service activity.

11	[11]	The wireless device recited in claim 1, wherein reducing data usage comprises directing communications associated with the first service activity to a particular network end point, route, or tunnel.
12	[12.1]	The wireless device recited in claim 1, wherein the one or more agents comprise a policy control agent and one or more low-level policy agents, and the policy control agent is configured to:
	[12.2]	obtain the first service policy,
	[12.3]	obtain information about the first service activity,
	[12.4]	based on the information about the first service activity and the first service policy, determine a low-level policy rule or setting for the one or more low-level policy agents, the low-level policy rule or setting for assisting in achieving the first service policy, and
	[12.5]	provide the low-level policy rule or setting to the one or more low-level agents.
13	[13]	13. The wireless device recited in claim 12, wherein the one or more low-level policy agents comprise an application interface agent, a policy implementation agent, a service monitor agent, or a combination of these.
14	[14.1]	The wireless device recited in claim 1, wherein the first service policy is further configured to assist the one or more agents in: determining a usage measure associated with the first service activity, and
	[14.2]	presenting information about the usage measure through the user interface.
15	[15.1]	The wireless device recited in claim 1, wherein the first service policy is further configured to assist the one or more agents to: detect that a service usage pattern associated with the first service activity has occurred, or that a service

		usage amount associated with the first service activity has been consumed, and
	[15.2]	in response to detecting that the service usage pattern associated with the first service activity has occurred, or that the service usage amount associated with the first service activity has been consumed, present a notification through the user interface.
16	[16]	The wireless device recited in claim 1, wherein the first service policy is further configured to assist the one or more agents in presenting a notification through the user interface, the notification comprising information associated with the first service activity.
17	[17]	The wireless device recited in claim 1, wherein the first service policy is further configured to assist the one or more agents in presenting a notification through the user interface, the notification providing information about a roaming network or a roaming condition of the wireless device.
18	[18.1]	The wireless device recited in claim 1, wherein the first service policy is further configured to assist the one or more agents in: presenting a notification through the user interface, the notification providing information about one or more available wireless networks, and
	[18.2]	obtaining a first user response through the user interface, the first user response indicating a selection of one of the one or more available wireless networks.

19	[19]	The wireless device recited in claim 1, wherein the first service policy is further configured to assist the one or more agents in presenting a notification through the interface, the notification for providing an indication that data usage over the first wireless network associated with the first service activity has reached a particular amount or a limit.
20	[20.1]	The wireless device recited in claim 1, wherein the first service policy is further configured to assist the one or more agents in presenting a notification through the user interface, the notification for notifying a user about a particular condition associated with the first service activity, and wherein the one or more agents are further configured to:
	[20.2]	assist in presenting the notification through the user interface,
	[20.3]	obtain a user response to the notification through the user interface, and
	[20.4]	restrict or quarantine communications over the first wireless network or over the second wireless network unless the user response comprises an acknowledgment of the particular condition associated with the first service activity.
21	[21]	The wireless device recited in claim 1, wherein the one or more agents are further configured to obtain at least a portion of the first service policy from a network element.
22	[22.1]	The wireless device recited in claim 1, wherein the first service policy is further configured to assist the one or more agents to: determine a usage measure associated with the first service activity,
	[22.2]	generate a report based on the usage measure, and
	[22.3]	assist in sending the report to a network element over the first wireless network or over the second wireless network.

23	[23.1]	The wireless device recited in claim 1, wherein, after obtaining the user input, the one or more agents are further configured to: send a message to a network element, the message configured to provide information about the user input, and
	[23.2]	obtain at least a portion of the first service policy from the network element.
24	[24]	The wireless device recited in claim 1, wherein the first wireless network is a cellular network or a roaming network.
25	[25.1]	The wireless device recited in claim 1, wherein the one or more modems include a wireless wide-area network modem for enabling the wireless device to communicate over at least the first wireless network and a local-area network modem for enabling the wireless device to communicate with one or more end-user devices over a local-area network,
	[25.2]	and wherein the one or more agents are further configured to assist in providing an intermediate networking device forwarding service for forwarding traffic between a particular end-user device of the one or more end-user devices and at least one network communication end point over the first wireless network, and
	[25.3]	wherein the first service activity includes traffic associated with the particular end-user device.
26	[26.1]	A wireless device comprising:
	[26.2]	means for obtaining, through a user interface of the wireless device, a user input specifying at least an aspect of a first service policy,
	[26.3]	the first service policy configured to at least assist in reducing data usage associated with a first service activity over the first wireless network,
	[26.4]	the first service activity being less than all service activities available to the wireless device,

	[26.5]	the first service policy for enabling control of the first service activity on the first wireless network that is different from how the first service activity is controlled on a second wireless network;
	[26.6]	means for identifying that the wireless device is connected to the first wireless network;
	[26.7]	means for identifying an intended, attempted, or successful data communication over the first wireless network, the intended, attempted, or successful data communication being associated with the first service activity; and
	[26.8]	means for applying the first service policy.
27	[27.1]	A non-transitory computer-readable storage medium storing machine-executable instructions that, when executed by one or more processors of a wireless device, cause the one or more processors to:
	[27.2]	obtain, through a user interface of the wireless device, a user input specifying at least an aspect of a first service policy,
	[27.3]	the first service policy configured to at least assist in reducing data usage associated with a first service activity over the first wireless network,
	[27.4]	the first service activity being less than all service activities available to the wireless device,
	[27.5]	the first service policy for enabling control of the first service activity on the first wireless network that is different from how the first service activity is controlled on a second wireless network;
	[27.6]	identify that the wireless device is connected to the first wireless network;
	[27.7]	identify an intended, attempted, or successful data communication over the first wireless network, the intended, attempted, or successful data communication being associated with the first service activity; and

	[27.8]	apply the first service policy.
28	[28]	The non-transitory computer-readable storage medium recited in claim 27, wherein reducing data usage comprises blocking the first service activity.
29	[29]	The non-transitory computer-readable storage medium recited in claim 27, wherein the first service activity comprises a background activity or a software update, and wherein reducing data usage comprises delaying, deferring, throttling, or blocking the first service activity.
30	[30.1]	The non-transitory computer-readable storage medium recited in claim 27, wherein, when executed by the one or more processors of the wireless device, the machine-executable instructions further cause the one or more processors to:
	[30.2]	determine a usage measure associated with the first service activity; and
	[30.3]	cause information about the usage measure to be presented through a user interface of the wireless device.

Samsung Electronics Co., Ltd. (“Petitioner” or “Samsung”) petitions for *In-ter Partes* Review (“IPR”) of claims 1-30 (“the Challenged Claims”) of U.S. Patent No. 8,588,110 (“the ’110 Patent”). Compelling evidence presented in this Petition demonstrates a reasonable likelihood that Samsung will prevail with respect to the Challenged Claims.

I. REQUIREMENTS FOR IPR

A. Grounds for Standing

Petitioner certifies that the ’110 Patent is available for IPR. This petition is being filed within one year of service of a complaint against Samsung. Samsung is not barred or estopped from requesting review of the Challenged Claims on the below-identified grounds.

B. Challenge and Relief Requested

Samsung requests an IPR of the Challenged Claims on the grounds below. Dr. McDaniel provides supporting testimony in his Declaration. SAMSUNG-1003, ¶¶[1]-[434]

Ground	Claim(s)	§103
1A	1-16, 19, 21, 23-24, 27-30	Jobs-Jones-Rao
1B	17-18, 24	Jobs-Jones-Rao-Bocking
1C	20	Jobs-Jones-Rao-Cunningham
1D	22	Jobs-Jones-Rao-Padmanabhan

Ground	Claim(s)	§103
1E	25	Jobs-Jones-Rao-Ibrahim
2	26	Jobs-Jones-Rao-Bocking-Cunningham

Reference	Filing	Publication
Jobs	12/23/2005	6/28/2007
Jones	1/19/2006	10/9/2012
Rao	7/22/2005	2/23/2006
Bocking	9/15/2004	4/6/2006
Cunningham	9/14/2004	1/26/2006
Padmanabhan	3/14/2005	9/14/2006
Ibrahim	7/26/2006	1/31/2008

C. Claim Construction

1. Overview

All claim terms should be construed according to the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. §42.100. Petitioner submits that the claim elements listed below should be construed for purposes of this proceeding, and that the remaining claim terms do not require a formal construction for purposes of demonstrating that the claims are obvious based on Grounds 1A-1E in this Petition. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d

1355, 1361 (Fed. Cir. 2011); SAMSUNG-1003, ¶¶[45]-[68].

Petitioner reserves the right to respond to any constructions offered by Patent Owner or adopted by the Board. For this proceeding, Petitioner has construed the claims consistent with Patent Owner's infringement allegations before the district court. Petitioner reserves the right to pursue different constructions before the district court.

2. Means-plus-function elements

Petitioner addresses the elements below under §112, ¶6 (“§112(6)”). Consistent with the requirements of 37 C.F.R. §42.104(b)(3), this Petition identifies the “specific portions of the specification” that describe structures that correspond to the recited function of each §112(6) element.

Claim 26 describes a device, not a method. SAMSUNG-1001, 165:20-38. Elements [26.2] and [26.6]-[26.8] each refer to “means for” performing a function without recitation of structure. SAMSUNG-1003, ¶¶[49]-[52]. Thus, each claim element “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” 35 U.S.C. §112(6).

The '110 patent discloses a device that “includes a processor.” SAMSUNG-1001, FIGS. 9-15; 26:43-45, 26:52-26; *see generally id.*, 26:43-36:64 (describing device embodiments). The '110 patent explains that, in some embodiments, “the

service processor 115 is implemented on the processor” of the device and “this implementation can be in part or whole accomplished in software stored, implemented and/or executed on the processor.” SAMSUNG-1001, 28:51-55.

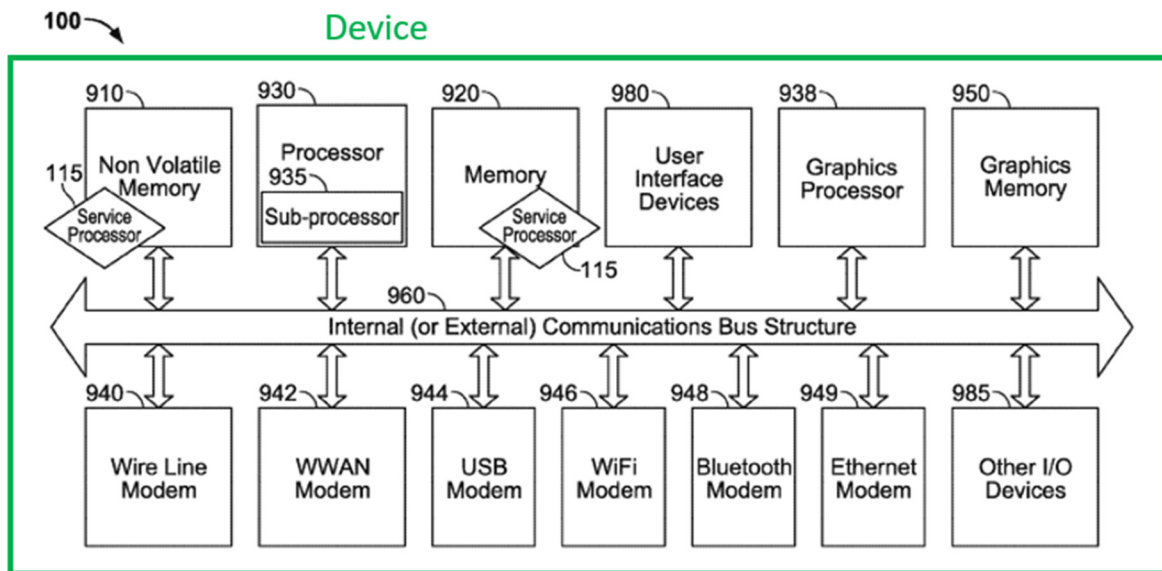


FIG. 9

SAMSUNG-1001, FIG. 9 (annotated).

FIG. 16 is “a functional diagram illustrating a device-based service processor 115 and a service controller” that “provides relatively full featured device based service processor implementation and service controller implementation.”

SAMSUNG-1001, 36:65-37:2.

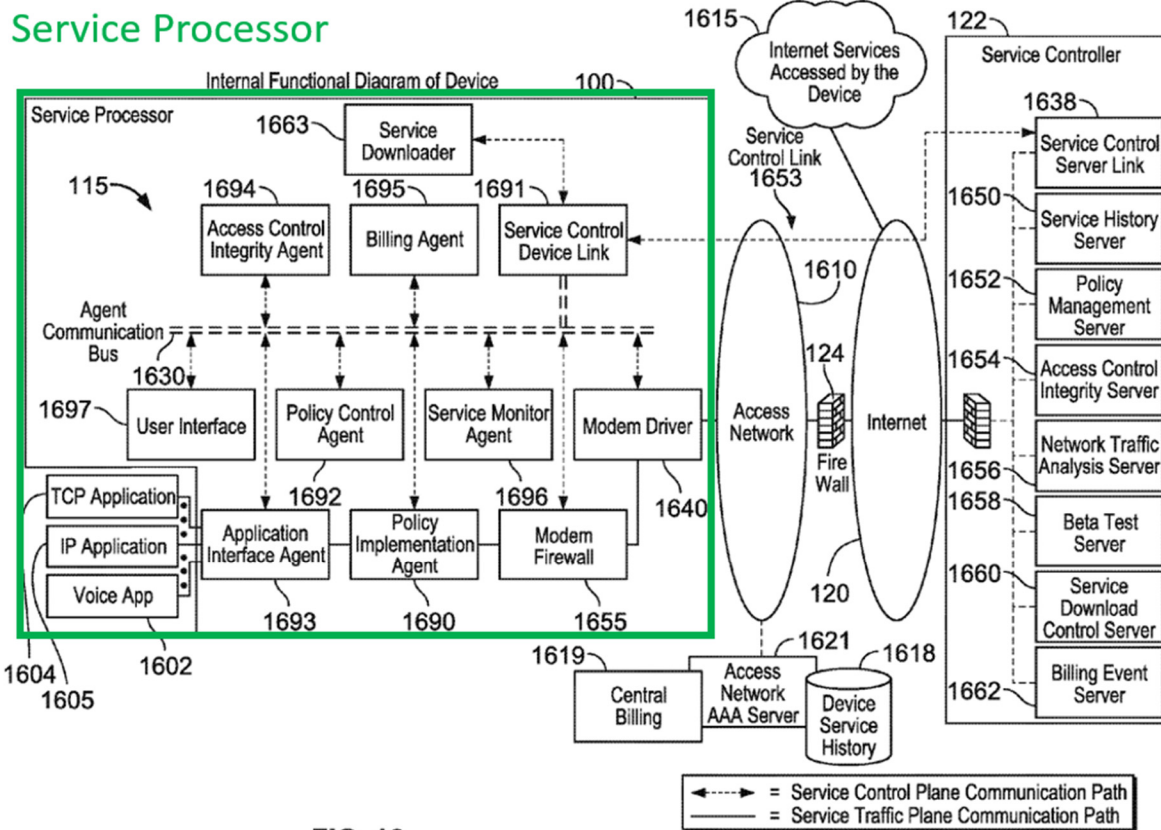


FIG. 16

SAMSUNG-1001, FIG. 16 (annotated)

Since the service processor is implemented on the processor, the corresponding structure for each of the “means for” elements is a processor configured to perform respective algorithm steps for the recited function corresponding to each element. *In re Aoyama*, 656 F.3d 1293, 1297 (Fed. Cir.2011); *WMS Gaming, Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999); *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994); SAMSUNG-1003, ¶[52].

[26.2]

[26.2] recites the function of obtaining, through a user interface of the wireless device, a user input specifying at least an aspect of a first service policy. Processor and user interface (UI) device(s), such as a touch screen, are collectively responsible for obtaining a user input specifying at least an aspect of a first service policy. SAMSUNG-1001, 27:15-29; 28:41-48; SAMSUNG-1003, ¶[53].

The '110 patent states the device includes a UI device component “for communicating with user interface devices,” such as touch screens. SAMSUNG-1001, 28:41-48. The “*user interface 1697 provides the user with information and accepts user choices or preferences* on one or more of the following: ... *service plan selection or change* ... and/or other service related information, settings, and/or options.” SAMSUNG-1001, 65:41-51.¹ Service policy functionality includes “notifying user of service overages,” which “[s]ends a notification message or screen to the UI to inform the user that the one or more aspects of service usage has exceeded the specified limits of one or more service plans.” SAMSUNG-1001, FIG. 42D. Since the service plan selection or change defines the plan’s “specified limits,” a POSITA would have understood that user input specifying a service plan selection or change specifies an aspect of the service policy. SAMSUNG-1003, ¶[54].

Thus, the corresponding structure includes a UI and a processor configured

¹ All emphasis is added unless otherwise indicated.

to perform the algorithm steps of providing the user with information and accepting user choices or preferences on, e.g., service plan selection or change, and/or other service related information, settings, and/or options. SAMSUNG-1001, 27:15-29; 28:41-48, 65:41-51; SAMSUNG-1003, ¶[55].

[26.6]

[26.6] recites the function of identifying that the wireless device is connected to the first wireless network.

Processor 930 is responsible for identifying that the wireless device is connected to the first wireless network. SAMSUNG-1003, ¶¶[56]-[58]; SAMSUNG-1001, 27:15-29.

The '110 patent discloses algorithm steps for identifying that the device is connected to the first wireless network: “the device recognizes which *type of network it is currently connecting* to (e.g., *looking up in a local or network table for the current base station connected to*, and/or *the information is broadcast to the device upon the connection with the base station*), that is, whether it is a macro-cell, microcell, picocell or femtocell.” SAMSUNG-1001, 51:4-13.

Thus, the corresponding structure includes a processor configured to perform the algorithm steps of recognizing the type of network to which the device is currently connecting, e.g., by looking up the information in a local or network table. SAMSUNG-1001, 51:4-13; SAMSUNG-1003, ¶[59].

[26.7]

[26.7] recites the function of identifying an intended, attempted, or successful data communication over the first wireless network, the intended, attempted, or successful data communication being associated with the first service activity.

Processor 930 is responsible for identifying an intended, attempted, or successful data communication over the first wireless network. SAMSUNG-1003, ¶¶[60]-[62].

The '110 patent provides algorithm steps for performing the function: “the service monitor agent 1696 *implements traffic inspection points between the applications and the networking stack application interface*, such as the sockets API.” SAMSUNG-1001, 53:51-55. The '110 patent explains that “[t]raffic inspection can be accomplished in several ways, including, for example, implementing a T-buffer at each socket connection and feeding the side traffic into a traffic flow analyzer, which in combination with a mapping of application to socket provides much of the information listed above.” *Id.*, 53:58-63.

The service monitoring agent runs on the service processor, which is implemented on processor 930. SAMSUNG-1001, 29:10-32, FIG. 16; SAMSUNG-1003, ¶[63].

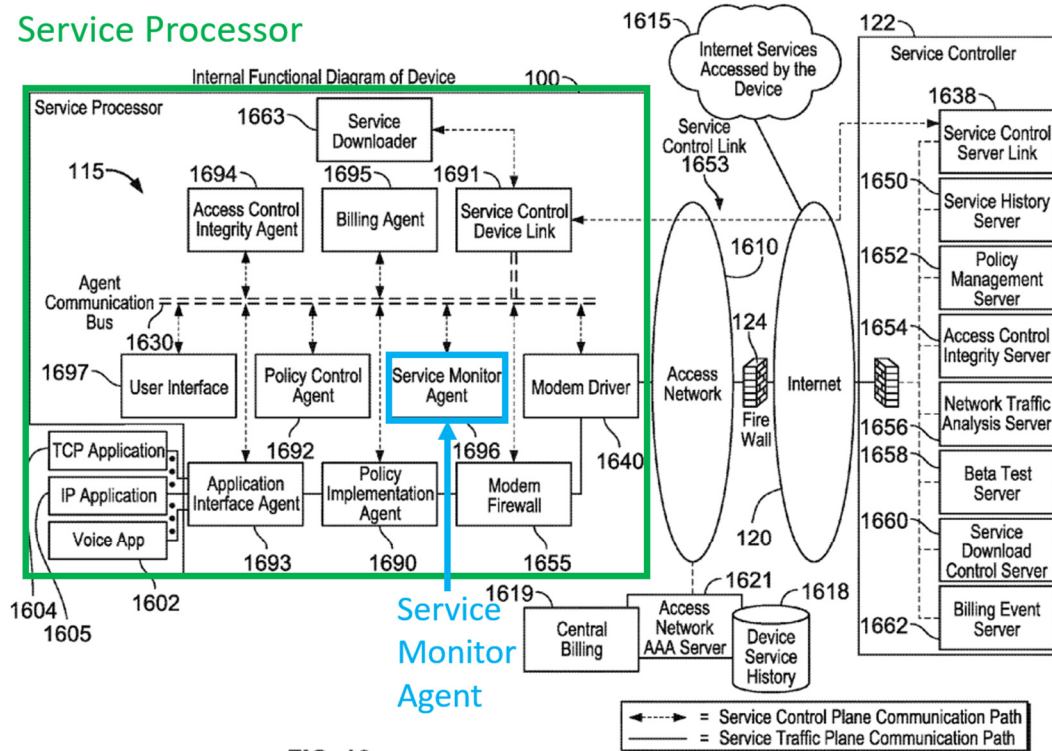


FIG. 16

SAMSUNG-1001, FIG. 16 (annotated).

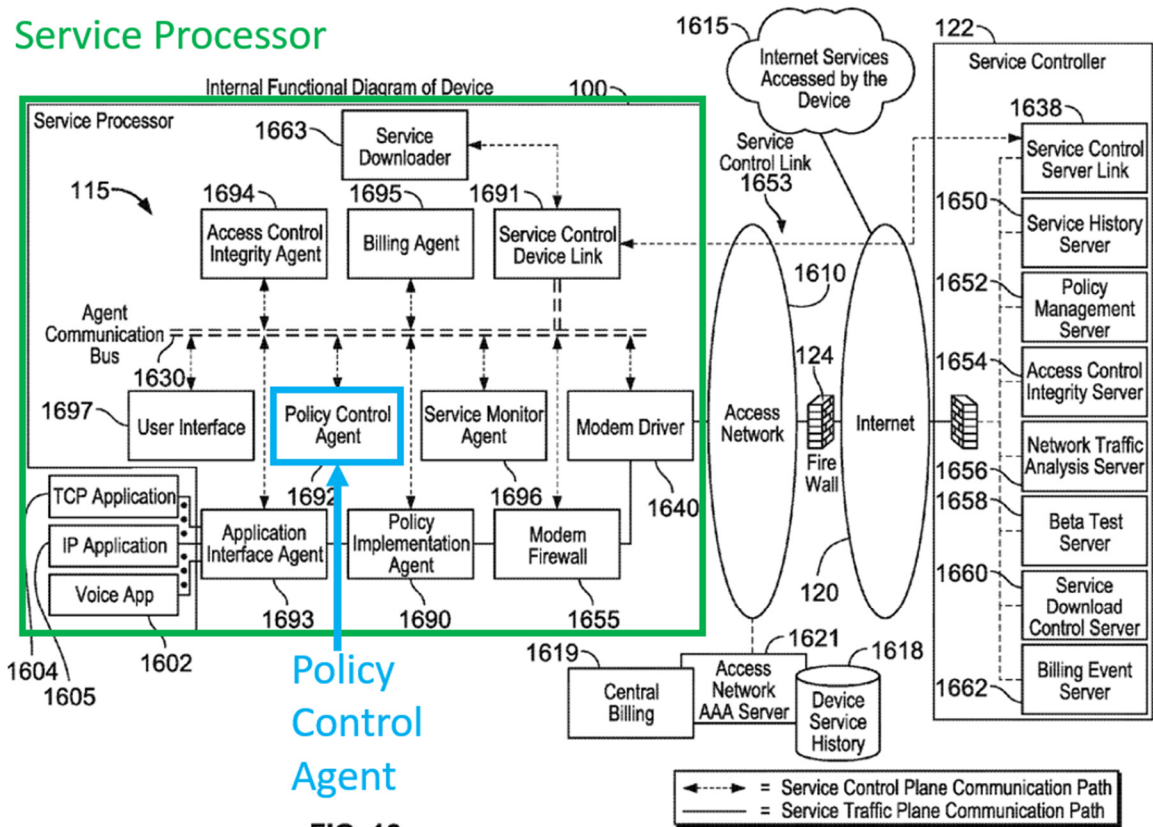
Thus, the corresponding structure includes a processor configured to perform the algorithm steps of implementing traffic inspection points between the applications and the networking stack application interface using a T-buffer at socket connections and feeding the side traffic into a traffic flow analyzer. SAMSUNG-1001, 29:10-32, 53:51-55, 58-63, FIG. 16; SAMSUNG-1003, ¶[64].

[26.8]

[28.8] recites the function of applying the first service policy.

Processor 930 is responsible for applying the first service policy. SAMSUNG-1003, ¶[66]. The '110 patent states that “the policy control agent 1692 is

instructed, for example, by the user, through billing agent 1695 to *perform a service control algorithm.*” SAMSUNG-1001, 48:38-40. The policy control agent executes on the processor. SAMSUNG-1003, ¶¶[65]-[66].



SAMSUNG-1001, FIG. 16 (annotated).

The '110 patent provides multiple algorithms that apply policies. SAMSUNG-1003, ¶[67]. Examples include: (i) *“the traffic shaping algorithm can simply reduce traffic speed for all applications and traffic types successively until*

the service usage projections are within service usage limits for the present service billing period,” and (ii) “the traffic shaping algorithm can identify the highest traffic usage applications and/or websites and successively reduce traffic speed just for the highest usage applications and/or websites until the service usage projections are within service usage limits for the present service billing period.” SAMSUNG-1001, 48:38-49:1.

Thus, the corresponding structure includes a processor configured to perform the algorithm steps of performing a service control that reduces traffic speed for all applications and traffic types successively until the service usage projections are within service usage limits for the present service billing period. SAMSUNG-1001, 48:38-49:1; SAMSUNG-1003, ¶[68].

II. THE '110 PATENT

A. Brief Description

The '110 Patent is directed to a “services policy communication system and method.” SAMSUNG-1001, Abstract. It describes “a communications device [that] implements a service policy for assisting billing for the communications device use of a service on a network; and monitors use of the service based on the service policy, in which a local service usage is synchronized with a network-based service usage.” *Id.*

B. Prosecution History

During prosecution, Applicant amended the claims only in response to a restriction requirement, and an allowance followed. SAMSUNG-1002, 454-470, 704. The Office never considered Jones, Bocking, Padmanabhan, or Ibrahim and did not consider the combinations forming Grounds 1A-1E or 2. *Generally*, SAMSUNG-1002; SAMSUNG-1003, ¶[120].

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

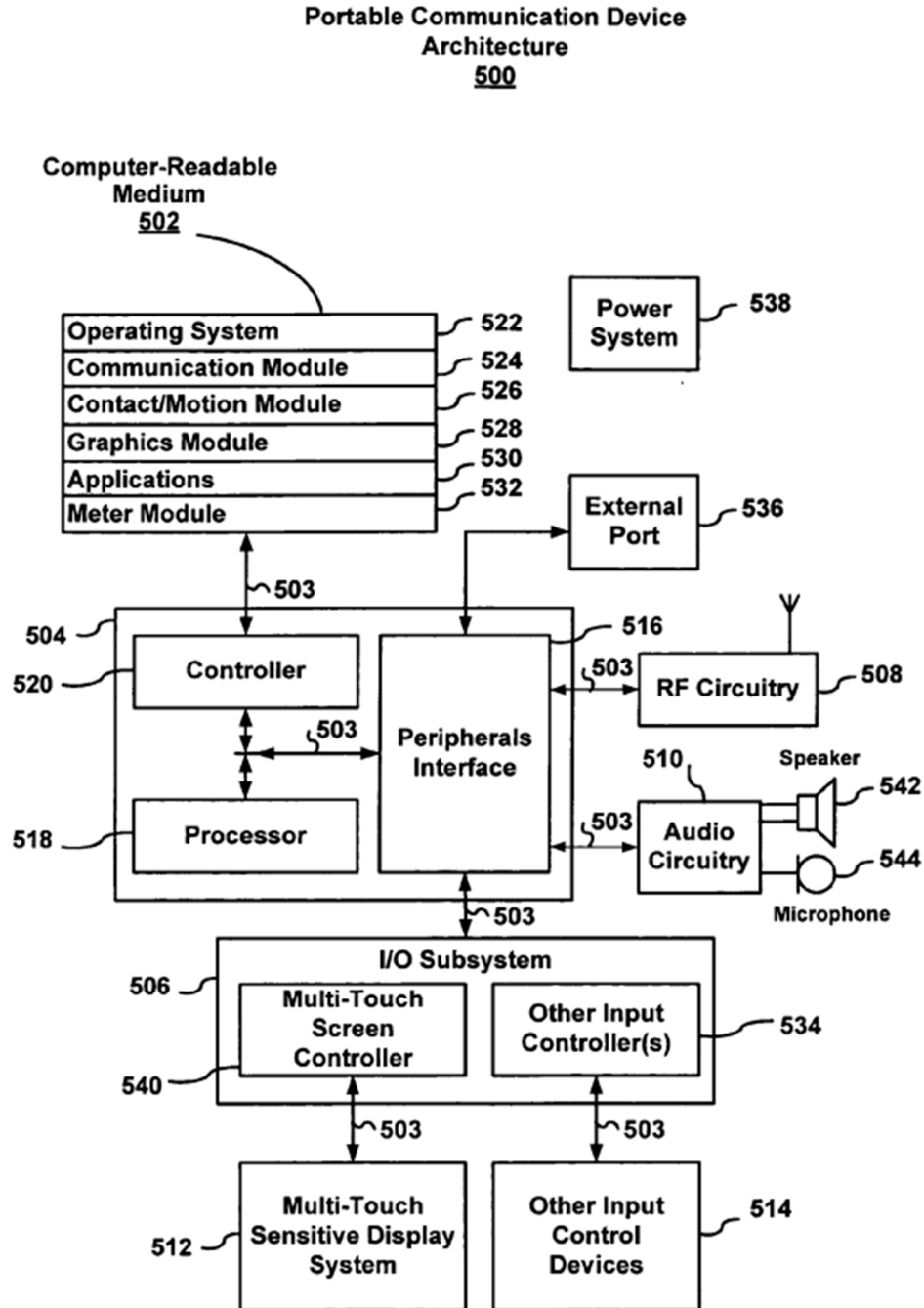
A. Ground 1A: Jobs-Jones-Rao renders claims 1-16, 19, 21, 23-24, and 27-30 obvious

1. Jobs-Jones-Rao

(a) Jobs²

Jobs discloses a portable communication device with a processor that “automatically and repeatedly present[s] an updated account usage metric for an account associated with usage of the portable communication device,” e.g., “an account balance associated with usage of the portable communication device.” SAMSUNG-1005, [0004].

² Descriptions of the references and prior art combinations are incorporated into each mapping.

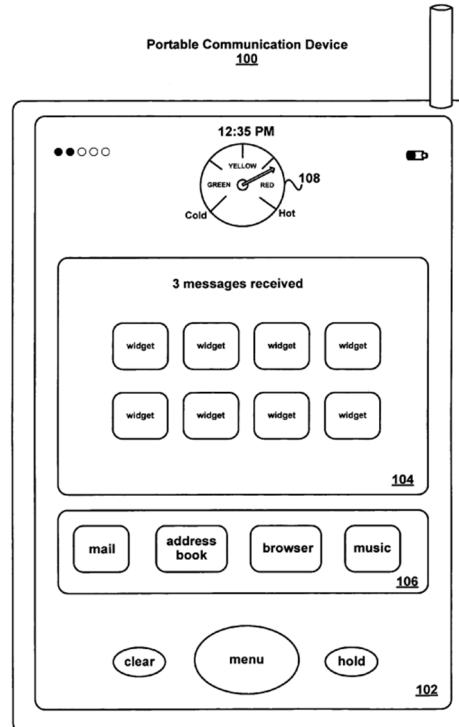


SAMSUNG-1005, FIG. 5.

The device includes conventional components such as CPU(s), memory, display, and “RF circuitry” to communicate information “over a wireless link or network.” SAMSUNG-1005, [0040]-[0049], FIG. 5; SAMSUNG-1003, ¶¶[121]-

[128]. The RF circuitry communicates with other devices using “RF communication protocols (e.g., TDMA, CDMA, etc.) and known mobile networking protocols (e.g., GSM, ANSI-41, etc.),” and communicates “with other devices over the Internet using Voice-Over-Internet Protocol (VoIP).” *Id.* The device includes applications, e.g., email and VoIP. *Id.*, [0042], [0050].

The device further displays usage information, including “a remaining balance on an account” and/or “the user’s resource usage rate” as compared to a “user-selected budget for the account.” SAMSUNG-1005, [0018], [0052]. FIG. 1 (below) shows “a portable communication device for displaying one or more account balances.” SAMSUNG-1005, [0010]; *see id.*, [0011]-[0012], FIGS. 2A-3.



SAMSUNG-1005, FIG. 1

When the device's "account balance drops below a respective threshold value," a menu "is automatically displayed and the user is prompted to make a selection," such as changing calling plan or increasing budget. SAMSUNG-1005, [0029], [0034], FIG. 3.

(b) **Jones**

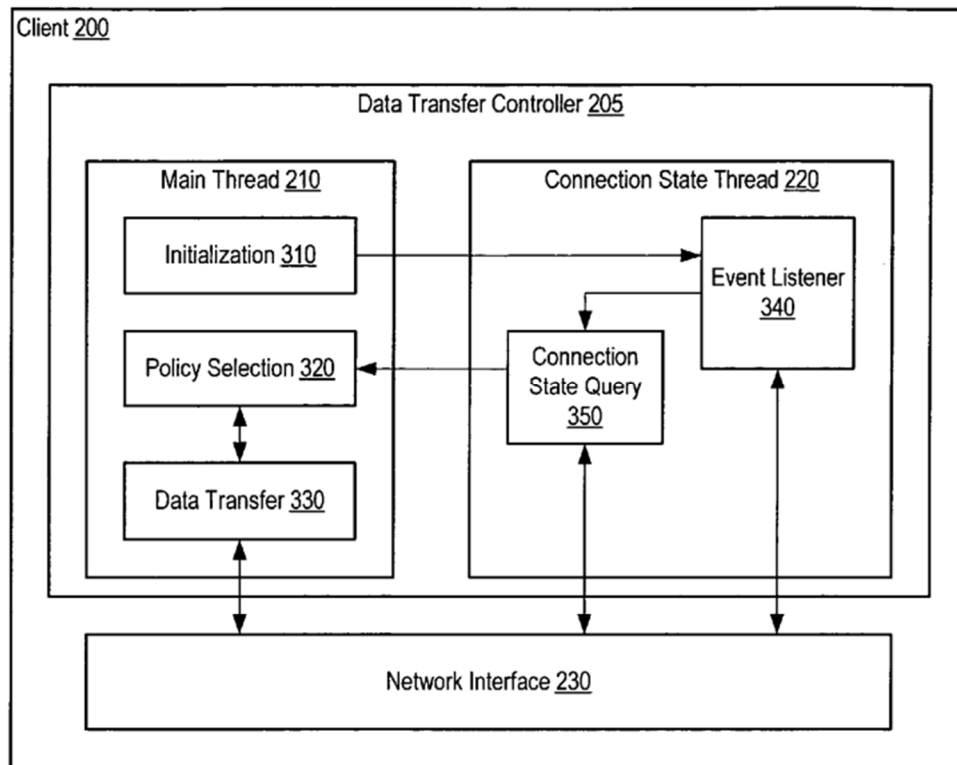
Jones discloses techniques for "managing data transfers between client computers and a computer network" where client devices include a "data transfer controller" and "data transfer rules." SAMSUNG-1006, Abstract, 5:13-6:23. It is common for client computers to dynamically connect "to the enterprise network through a variety of connection types"; the "method of connection to the enterprise network may change frequently as the mobile user travels from place to place." *Id.*, 1:11-17. "[E]ach mobile computer may connect to a network via modem, wireless local area network (LAN), direct wired LAN, wireless connection through a wide area network (WAN)," etc., and the capabilities of each connection differ. *Id.*, 3:17-29. A POSITA³ would have understood that Jones's modem can be wireless. SAMSUNG-1003, ¶¶[129]-[132] (citing SAMSUNG-1045).

"Because of the differing capabilities of various connection types, it is generally desirable for software applications to be able to determine if and when a net-

³ See SAMSUNG-1003, §IV.

work connection changes.” SAMSUNG-1006, 1:30-36. Knowledge of the connection type is important since “it is generally desirable for enterprises to protect the data that resides on mobile computing devices via some type of backup mechanism,” but “changes to the connection type by mobile users tend to complicate any backup mechanism.” *Id.*, 3:30-32, 47-51. “[I]f the connection type is slow, such as via a modem, a user who is attempting to access e-mail or browse the internet may be frustrated as the available bandwidth is consumed by backup data transfers.” *Id.*, 3:55-58. Therefore, it is desirable for policies to “adjust the frequency of data backups according to the identity of the user, the type of connection, and/or the bandwidth of the connection” and “to determine whether to backup individual files based on the combination of file size and connection type.” *Id.*, 3:60-67. Rules can prohibit data transfer over certain connection types. *Id.*, 5:25-26.

To provide such policy-based management, Jones teaches a client that includes a main thread and a connection state thread (FIG. 3, below), which apply rules for data transfer. SAMSUNG-1006, 4:27-48, FIG. 3.



SAMSUNG-1006, FIG. 3

(c) **Rao**

Rao discloses a “remote access architecture” for “peer-to-peer communications and remote access connectivity.” SAMSUNG-1007, Abstract, [0098]. Rao addresses inefficient use of network resources when network communications are “processed in the order generated by the activity of a user and applications of the client,” which is not “always desirable” because network packets for background applications may be processed ahead of network packets for foreground applications, causing increased latency and reduced quality voice communication. SAMSUNG-1007, [0003]; SAMSUNG-1003, ¶[133].

Rao addresses these inefficiencies through a prioritization scheme providing “application-aware, client-specific prioritization of packet traffic” achieved by augmenting the client with a remote access client (RAC) (FIG. 5A, below) that interacts with the applications and network stack. SAMSUNG-1007, [0003], [0089], [0098]-[0100]; SAMSUNG-1003, ¶¶[134]-[135].

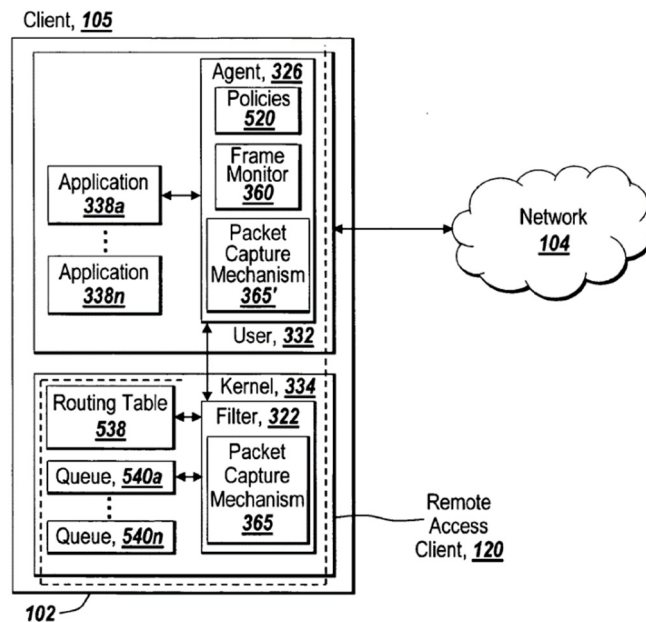


Fig. 5A

SAMSUNG-1007, FIG. 5A

RAC includes agent 326 with frame monitor 360 with “policies and logic for applying a policy to a received packet.” SAMSUNG-1007, [0108]. The agent uses policies “to apply a priority to network packets of applications 338a-338n in accordance with the prioritization rules specified or indicated by the policies.” SAMSUNG-1007, [0189]. RAC places “network packets into queues 540a-540n

in support of the priorities,” and “the network packets are communicated from the queues 540a-540n according to the determined priorities for the network packets.” SAMSUNG-1007, [0191], [0194]. Rao’s policies can be specified, e.g., by name, type of application, or type of “protocols used by the applications.” SAMSUNG-1007, [0182]-[0184]; SAMSUNG-1003, ¶¶[136]-[138].

RAC’s agent indicates priority to a low-level filter that places network packets into queues in support of the priorities, and “the network packets are communicated from the queues 540a-540n according to the determined priorities for the network packets.” SAMSUNG-1007, [0190]-[0191], [0194]; SAMSUNG-1003, ¶[139].

To enable configuration of such policies, Rao’s agent “provide[s] a configuration mechanism such as a user interface, graphical or otherwise, design[ed] and constructed for configuring or specifying the policies.” SAMSUNG-1007, [0183]; SAMSUNG-1003, ¶[140]-[141].

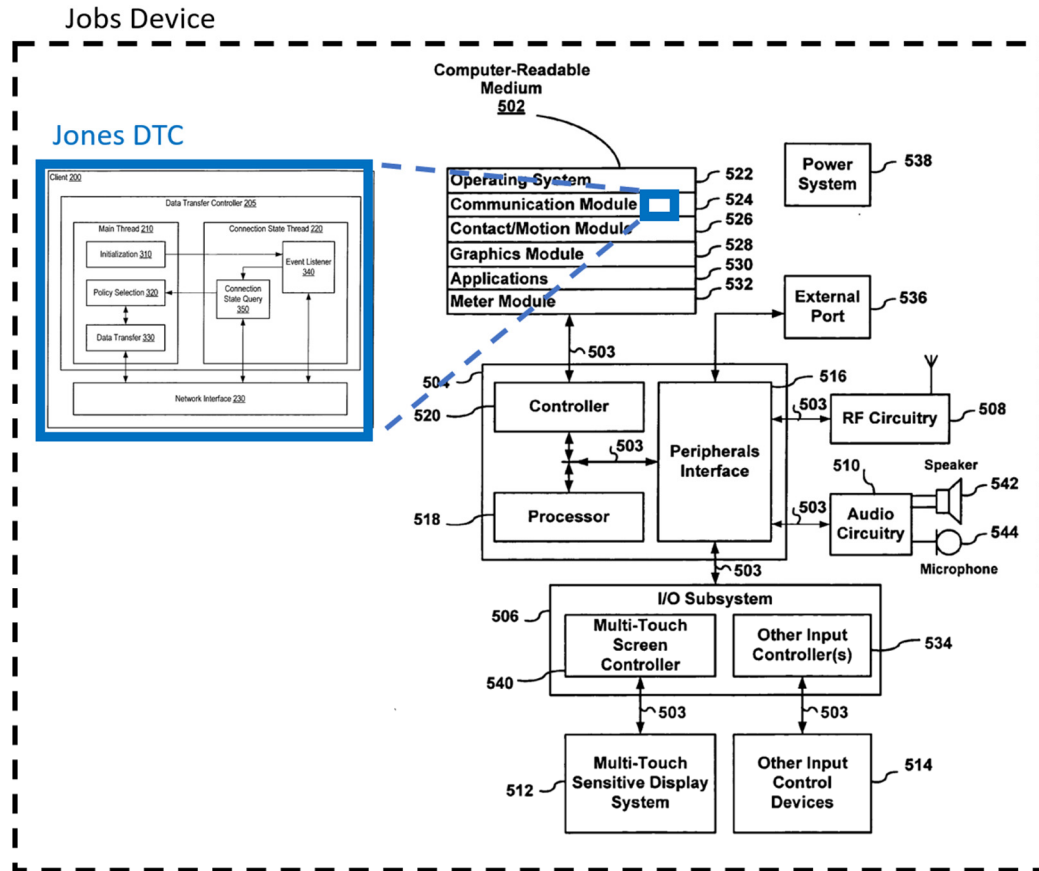
(d) Combination

Jobs-Jones

Jobs describes a portable device such as a mobile telephone that includes applications, e.g., web browser, email, a telephone communication client, SMS, VoIP, etc., and can upload/download multimedia files. SAMSUNG-1005, [0017], [0019], [0040], [0042], [0044], [0050].

Jones explains it is desirable “to protect the data that resides on mobile computing devices via some type of backup mechanism,” which a POSITA would have recognized includes Jobs’s device—a mobile device. SAMSUNG-1006, 1:47-50; SAMSUNG-1003, ¶¶[141]-[142].

The resulting Jobs-Jones Device (JJD) is a wireless device includes memory, processor(s), wireless modems (RF circuitry), an operating system (e.g., LINUX), etc., per Jobs, augmented with a data transfer controller (DTC), per Jones, that detects connection state and applies policies (allowing or prohibiting data transfer), per Jones (illustrated below). §III.A.1.a; SAMSUNG-1006, Abstract, 2:5-15, 2:29-40, 5:13-32; SAMSUNG-1003, ¶¶[144]-[146].



JJD, SAMSUNG-1005, FIG. 5 (annotated); SAMSUNG-1006, FIG. 3 (annotated); SAMSUNG-1003, ¶[144].

Per Jobs, network access is enabled by a service provider through a service plan that includes data and/or voice services and corresponding resource limits. SAMSUNG-1005, [0002]; SAMSUNG-1003, ¶[147]. When a trigger occurs, JJD presents usage metrics. SAMSUNG-1005, [0034], [0036]; SAMSUNG-1003, ¶[148]. Triggers can occur when predefined amount of resource usage occurs and/or when usage rates exceed a threshold. SAMSUNG-1005, [0036]; SAMSUNG-1003, ¶[148]. Per Jobs, a UI that enables users to alter resource limits.

SAMSUNG-1005, [0033], FIG. 3; SAMSUNG-1003, ¶[148]. Per Jobs, applications that access device resources include, e.g., SMS, browsers, VoIP, email, etc. SAMSUNG-1005, [0019], [0042], [0050]; SAMSUNG-1003, ¶[148].

JJD further includes backup software, per Jones, since a POSITA would have understood that devices, such as in Jobs, can become disabled, and thus would have been motivated to include a backup capability so data from applications (e.g., contacts, photos, etc.), per Jobs, are protected. SAMSUNG-1006, 1:47-49; SAMSUNG-1003, ¶[149]. Further, on slow connections, “a user who is attempting to access e-mail or browse the internet may be frustrated as the available bandwidth is consumed by backup data transfers” (per Jones); JJD addresses this concern by reducing network usage on certain networks by altering the frequency of or prohibiting data transfer, depending on policy decisions. SAMSUNG-1006, 1:55-58; §III.A.1.b; SAMSUNG-1003, ¶[149]. Also per Jones, JJD includes policies that prohibit data transfer over certain connection types. SAMSUNG-1006, 5:25-26; SAMSUNG-1003, ¶[150].

In operation, JJD “monitors the state of [the] network interface” and applies rules to data transfers based on “the desired functionality, type of connection, connection bandwidth, user priorities, etc.” SAMSUNG-1006, 4:37-48, 5:13-15; SAMSUNG-1003, ¶[151]. Examples of rules include prohibiting data transfer on a connection type (e.g., GSM), reducing the frequency of backup on a connection

type (e.g., CDMA), and permitting data transfer on another connection type.

SAMSUNG-1006, 1:60-64, 5:13-15, 5:25-32; SAMSUNG-1003, ¶[151]. Rules can be specified using both connection type and user priority. SAMSUNG-1006, 5:13-15; SAMSUNG-1003, ¶[151]. Policies are configured through a UI, per Jones, which explains, “a user may be presented with a graphical user interface through which each policy may be selected and configured in successive operations.” SAMSUNG-1006, 6:38-41; SAMSUNG-1003, ¶¶[151]-[152].

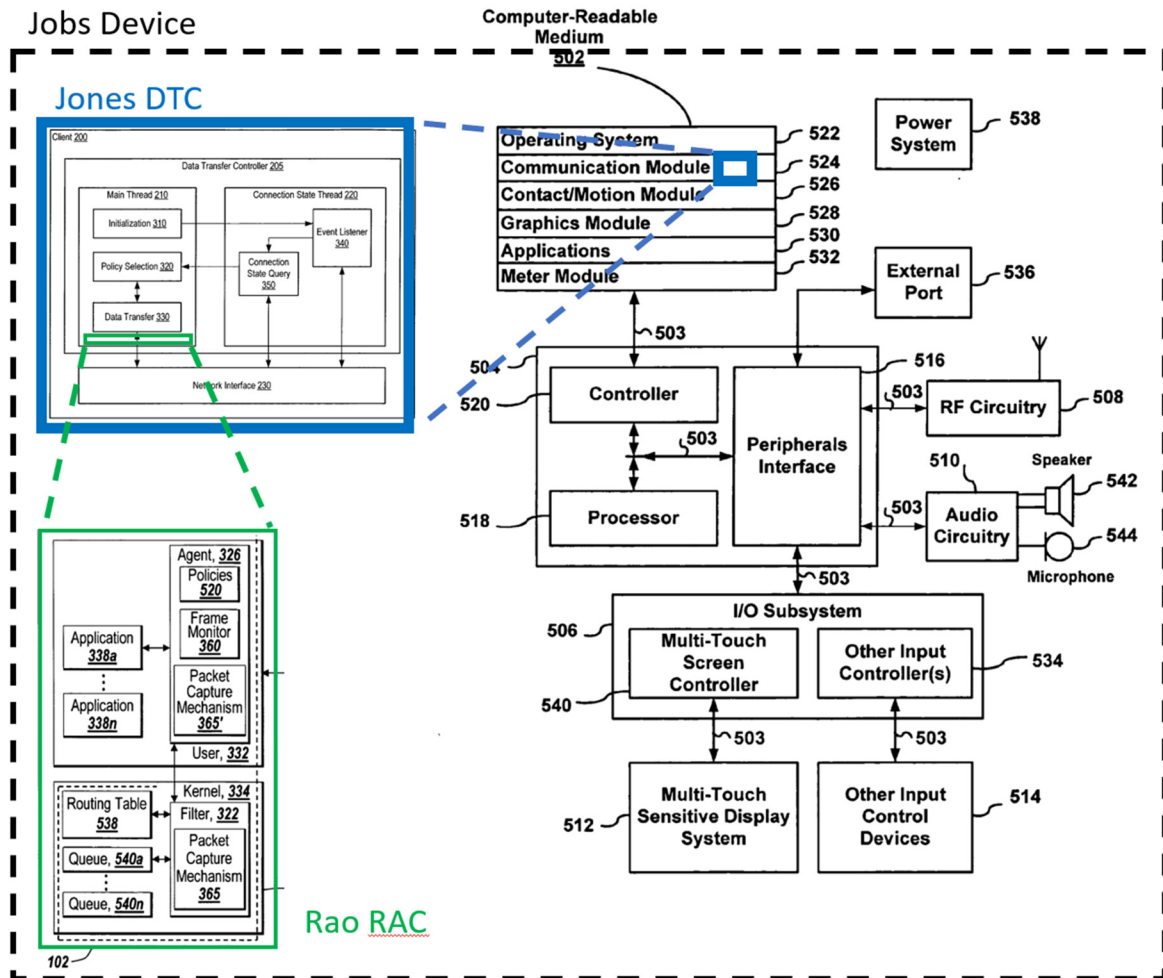
Jobs-Jones-Rao

Jones explains that, on slow connections “a user who is attempting to access e-mail or browse the internet may be frustrated as the available bandwidth is consumed by backup data transfers.” SAMSUNG-1006, 1:55-58. In response, Jones describes altering the frequency of some network operations and prohibiting others. SAMSUNG-1006, 3:60-67; 5:25-26; SAMSUNG-1003, ¶[153].

However, a POSITA would have understood that, in some cases, such responses may be undesirable and more sophisticated control is preferred. SAMSUNG-1003, ¶[154]. For example, if a user is on a voice call while streaming video, the device cannot run the video streaming application less often, and if bandwidth is sufficient for both applications, blocking the streaming is an unnecessarily harsh response. SAMSUNG-1003, ¶¶[154]-[156].

To address cases where multiple applications on JJD are competing for network bandwidth, a POSITA would have looked to references such as Rao, which teaches the benefits of sharing bandwidth by prioritizing traffic from some applications over others to improve device efficiency, e.g., avoiding “increasing the latency and reducing the quality” for voice communication. SAMSUNG-1005, [0044]; SAMSUNG-1007, [0003]; SAMSUNG-1003, ¶[157]. A POSITA would have understood that JJD would otherwise suffer such inefficiencies and would have looked to Rao to improve the user experience by prioritizing packets. SAMSUNG-1003, ¶[158].

The resulting Jobs-Jones-Rao Device (JJRD), illustrated below, is a wireless device that includes components of JJD, further including a RAC, per Rao, which provides policy-based priority queuing based on factors such as application name, application type, among other “ways to define client-side application priorities.” SAMSUNG-1007, [0182]; SAMSUNG-1003, ¶¶[159]-[160].



JJRD, SAMSUNG-1005, FIG. 5 (annotated); SAMSUNG-1006, FIG. 3 (annotated); SAMSUNG-1007, FIG. 5A (excerpt, annotated); SAMSUNG-1003,

¶[159]

In operation, JJRD “monitors the state of [the] network interface” and applies data transfer rules, e.g., permitting or prohibiting the transmission. SAMSUNG-1006, 1:60-64, 5:13-15, 5:25-32; SAMSUNG-1003, ¶[161]. When a transfer is permitted, JJRD passes packets to the RAC, which includes a policy-control

agent (RAC's agent) and a low-level policy control agent (RAC's filter). SAMSUNG-1003, ¶[161]; §III.A.1.c.

JJRD policies can be specified, e.g., based on connection type, bandwidth, user priority, name or type of application, and type of protocols used by the applications. SAMSUNG-1006, 5:13-15; SAMSUNG-1007, [0182]; §III.A.1.b-c; SAMSUNG-1003, ¶[162]. Examples of policies include, per Jones, prohibiting data transfer on a connection type (e.g., GSM), reducing the frequency of backup on a connection type (e.g., CDMA), and permitting data transfer on another connection type (e.g., wi-fi), and, per Rao, setting priority based on application name or type, based on protocols used by the application, among other "ways to define client-side application priorities." SAMSUNG-1006, 1:60-64, 5:13-15, 5:25-32; SAMSUNG-1007, [0182]; SAMSUNG-1003, ¶[163].

Based on such policies, JJRD's DTC, which includes a RAC, determines actions for network activities, which can include prohibiting a transfer, delaying a backup, and queuing packets. SAMSUNG-1006, 1:60-65, 5:25-32; SAMSUNG-1007, [0184]; SAMSUNG-1003, ¶[164]. When packets are to be queued, JJRD's agent (per Rao) determines the priority based on policies and passes the priority to a low-level agent (filter, per Rao), which assigns the packets to the appropriate priority-based queue. SAMSUNG-1007, [0184]; §III.A.1.c; SAMSUNG-1003,

¶[164]. JJRD then transmits the packets according to the assigned priority. SAMSUNG-1007, [0184]; SAMSUNG-1003, ¶[164]. Because the transmission is priority-based, lower-priority packets receive less bandwidth than higher-priority packets. SAMSUNG-1007, [0184]; SAMSUNG-1003, ¶[164].

JJRD policies are configured through a GUI, per Jones and Rao. SAMSUNG-1003, ¶[165]; SAMSUNG-1006, 6:38-41 (“user may be presented with a graphical user interface through which each policy may be selected and configured”); SAMSUNG-1007, [0183] (“may provide a configuration mechanism such as a user interface, graphical or otherwise ... for configuring or specifying the policies 520”). JJRD can download policies (e.g., from network devices such as gateways), per Rao. SAMSUNG-1007, [0183].

Thus, the components of JJRD each operate similarly to as they would in isolation. SAMSUNG-1003, ¶[166]. Per Jones, JJRD’s DTC, which applies policies to determine, e.g., whether to permit data transfer. SAMSUNG-1006, 5:13-6:23; SAMSUNG-1003, ¶[166]. Per Rao, RAC within JJRD’s DTC applies policy to assign traffic to priority queues. SAMSUNG-1007, [0184]; SAMSUNG-1003, ¶¶[166]-[171].

A POSITA would have a reasonable expectation of success in creating the combination, which would have required only routine programming knowledge well within the skill of a POSITA. SAMSUNG-1003, ¶[172]. Components of JJD

from Jobs execute applications, and the DTC (from Jones) applies policies based on network conditions. §III.A.1.a; §III.A.1.b; SAMSUNG-1003, ¶[172]. Integrating Rao’s RAC into Jones’s DTC requires only routine knowledge. *Id.* The change would have amounted to nothing more than the use of a known technique to improve similar mobile devices in a similar way and combining prior art elements according to known methods to yield the predictable results described above. *Id.*; *KSR*, 550 U.S., 417.

JJRD’s processor⁴ would be configured to perform or assist in performing the operations discussed in this Ground, per Jobs. SAMSUNG-1007 [0046]; SAMSUNG-1003, ¶[173].

2. Analysis

[1.1]

JJRD is a wireless device. SAMSUNG-1003, ¶¶[208]-[209]; §III.A.1.d. Jobs teaches a “portable communication device” that establishes “communications with other devices using one or more known RF communication protocols” and “is capable of uploading and downloading various objects from the Internet over a wireless network.” SAMSUNG-1005, [0040], [0042], [0044]. Jobs further teaches

⁴ This statement applies to each combination discussed in §III. SAMSUNG-1003, ¶[173].

that the device can couple to the Internet and wireless LAN. SAMSUNG-1005, [0048]. Similarly, Jones's client can be "a mobile client." SAMSUNG-1006, 3:58.

[1.2]

JJRD includes a modem(s) that enables JJRD to communicate over at least two wireless networks, such as a cellular network running GSM, a cellular network running CDMA, and a WLAN. SAMSUNG-1005, [0042]; SAMSUNG-1003, ¶¶[210]-[212]; §III.A.1.d. Jobs describes a device that includes "RF circuitry [that] is used to send and receive information over a wireless link or network to one or more other devices and includes ... an antenna system, an RF transceiver, ..., etc." SAMSUNG-1005, [0042]. Jobs further teaches that the device's "one or more processors" communicate with communications network "such as the Internet, intranet(s), LANs, WANs, "and the like, or any suitable combination thereof." SAMSUNG-1005, [0045]. Similarly, Rao's device includes "a network interface 118 to interface to a [LAN], [WAN], "or the Internet through a variety of connections including, but not limited to ... wireless connections, or some combination," where the network interface comprises a modem. SAMSUNG-1007, [0125].

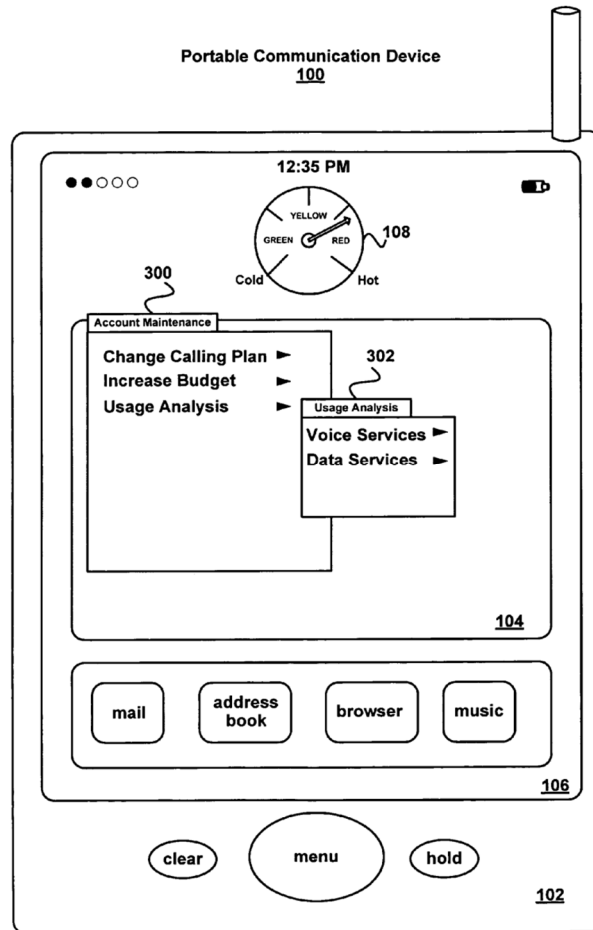
Thus, a POSITA would have understood from Jobs's disclosure of RF circuitry and its functionality, and/or Rao's discussion of its network interface, that

JJRD includes one or more modems that communicates over a first and second network, e.g., GSM, CDMA, WLAN. SAMSUNG-1003, ¶[213].

[1.3]

JJRD includes a user interface, as described in Jobs, Jones, and Rao.

§III.A.1.d; SAMSUNG-1003, ¶¶[214]-[216]. Jobs describes “user interfaces for portable communication devices.” SAMSUNG-1005, [0001]. The device “includes a display surface/graphical user interface (GUI) 102 and one or more graphical objects 108 for displaying information associated with a service account.” SAMSUNG-1005, [0016]. In FIG. 3 (reproduced below), Jobs illustrates “a user interface that includes a pull-down menu containing account-related actions.” SAMSUNG-1005, [0012].



SAMSUNG-1005, FIG. 3.

Further, Jones teaches that “a user may be presented with a graphical user interface through which each policy may be selected and configured in successive operations,” and Rao similarly teaches that the agent provides “a configuration mechanism such as a user interface, graphical or otherwise, design and constructed for configuring or specifying the policies.” SAMSUNG-1006, 6:38-41; SAMSUNG-1007, [0183].

[1.4]

Per Jobs, JJRD includes “one or more computer-readable mediums 502 (often called memory or storage devices)” that “can be any device or medium that can store code and/or data for use by the one or more processors.” SAMSUNG-1005, [0040], [0045]; SAMSUNG-1003, ¶[217]. A POSITA would have understood from Jones’s and Rao’s discussions of policies that service policies (e.g., policies taught by Jobs, Jones, and Rao) are sets of instructions stored in memory. SAMSUNG-1006, 5:13-19; SAMSUNG-1003, ¶[218]. Rao teaches that its CPU “is any logic circuitry that responds to and processes instructions fetched from the main memory unit.” SAMSUNG-1007, [0119]. A POSITA would have understood that policies are an example of such instructions. SAMSUNG-1003, ¶[218].

Per Jones, in JJRD, service policies are applied to data transfer based on the type of connection, such as GSM, CDMA, WLAN. SAMSUNG-1006, 1:17-22; 5:13-15; SAMSUNG-1003, ¶[219]. Therefore, since Jones teaches that rules can be applied based on type of connection, a POSITA would have understood or found obvious that service policies are associated with wireless networks (GSM, CDMA, WLAN, which are types of connections), including the first wireless network (GSM). SAMSUNG-1006, 5:13-15; SAMSUNG-1003, ¶[219].

JJRD’s service policies can specify a variety of action aspects. SAMSUNG-1003, ¶[220]. Per Jones, services policies can alter data transfer (e.g., backup) frequency or prohibit transfers; per Rao, service policies can determine transmission

priority, and per Jobs, service policies can set resource usage thresholds. SAMSUNG-1005, [0002], [0018]-[0019]; SAMSUNG-1006, 1:60-64, 5:25-26, claim 7; SAMSUNG-1007, [0179]-[0195]; SAMSUNG-1003, ¶[220].

[1.5]

In JJRD, a first service policy is associated with the first wireless network (GSM). *See* §III.A.2.[1.4].

JJRD policies reduce data usage associated with service activities. SAMSUNG-1003, ¶[223]. Jones teaches backup policies that adjust the frequency of, or prohibit, data backups (first service activity) according to the type of connection. SAMSUNG-1006, 1:60-67, 5:25-26; SAMSUNG-1003, ¶[223].

Therefore, a POSITA would have understood from Jones' teaching concerning backup policies that JJRD's first service policy reduces the frequency of data backup or prohibits data transfer when on a GSM cellular network, which reduces data usage over the first network. SAMSUNG-1003, ¶¶[221]-[224].

[1.6]

JJRD can perform numerous service activities including email, web browsing, downloading media, etc., per Jobs, and backup, per Jones. SAMSUNG-1005, [0044]; SAMSUNG-1006, 5:4-12. Therefore, a first service activity (e.g., media download or backup) is less than all available service activities. SAMSUNG-1003, ¶¶[225]-[226].

[1.7]

Per Jones, in JJRD, a first service policy enables a first control (reducing frequency) of a first service activity (e.g., backup) when JJRD is on a first wireless network (e.g., GSM cellular). SAMSUNG-1006, 1:60-64, claim 7; SAMSUNG-1003, ¶¶[227]-[238]. The policy can specify that, when JJRD is on a GSM network, backup frequency is adjusted according to the connection bandwidth, per Jones. SAMSUNG-1006, 1:60-64; SAMSUNG-1003, ¶[231]. However, when JJRD is on a second network (e.g., CDMA cellular),⁵ the backup frequency is also adjusted, but since the bandwidth of CDMA and GSM networks differ, the frequency of backup will also differ. SAMSUNG-1006, 1:60-64, claim 7; SAMSUNG-1003, ¶[231]. Therefore, the control (backup frequency) of the first service activity (backup) differs between the first and second network. SAMSUNG-1003, ¶[231].

In another example, a first policy (applicable to GSM networks) can specify that backup is not permitted, and a second policy (applicable to CDMA networks) can specify that backup is permitted. SAMSUNG-1006, 5:25-26; §III.A.1.d;

⁵ The second network can be other network types (e.g., WLAN); in such cases, JJRD differentiates cellular and WLAN. SAMSUNG-1003, ¶[232].

SAMSUNG-1003, ¶[237]. Thus, control of the first service activity differs between GSM (first network) and CDMA (second network). SAMSUNG-1003, ¶[237].

In a further example, a first policy (applicable to GSM networks as determined by protocol, per Rao) can specify that packets are assigned to one queue, and a second policy (applicable to CDMA networks as determined by protocol per Rao) can specify that packets are assigned to a different queue. SAMSUNG-1007, [0182], [0184]. SAMSUNG-1003, ¶[238].

[1.8]

A POSITA would have understood from the '110 patent that “agent” refers to software components, which are “stored in the medium 502 to perform various functions for the device.” SAMSUNG-1005, [0046]; SAMSUNG-1003, ¶[240]. The '110 patent describes a service processor that includes “policy control agent,” “service monitor agent,” “billing agent,” etc., and “all or substantially all of the service processor 115 functionality ... is implemented and stored in software that can be performed on (e.g., executed by) various components in device.” SAMSUNG-1001, 28:7-11, FIG. 16.

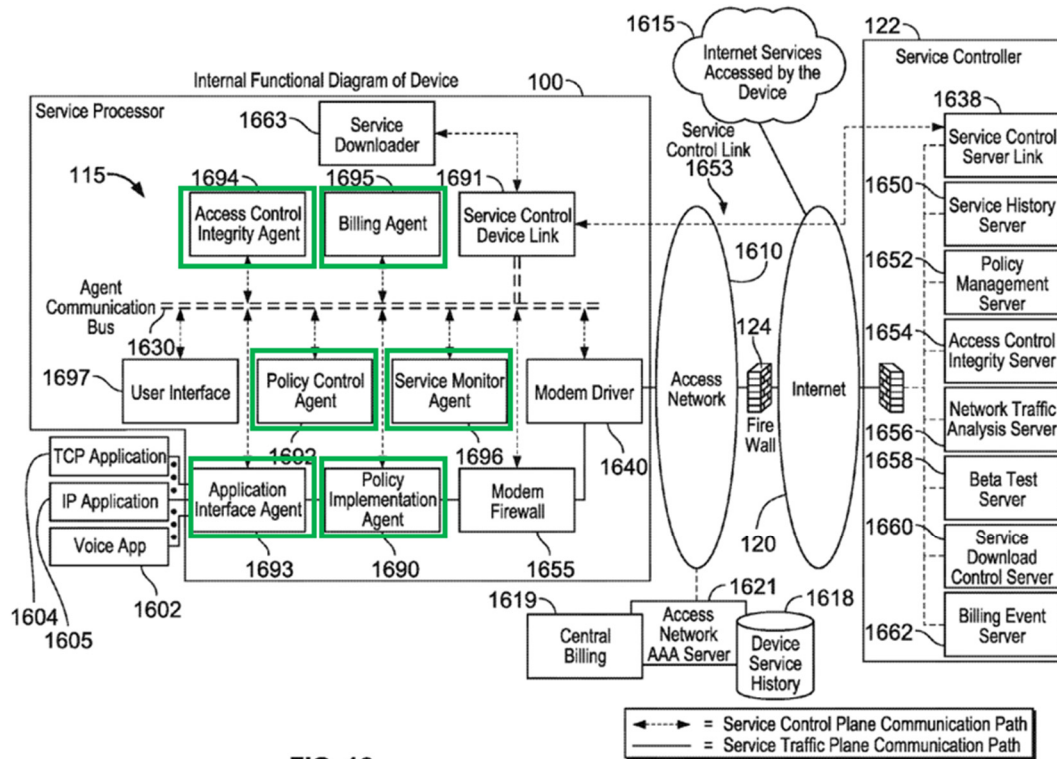


FIG. 16

SAMSUNG-1001, FIG. 16 (annotated).

Per Jobs, JJRD includes “one or more processors 518 [that] run various software components stored in the medium 502 to perform various functions for the device.” SAMSUNG-1005, [0046]. JJRD includes agents such as, e.g., policy selection and data transfer (per Jones’s DTC), and frame monitor and packet capture mechanism (per Rao’s RAC). SAMSUNG-1006, 4:27-36, FIG. 3; SAMSUNG-1007, [0179]-[0180], FIGS. 1C, 5A; SAMSUNG-1003, ¶¶[239]-[244].

characteristics of the network connection” and “a user may be presented with a graphical user interface through which each policy may be selected and *configured in successive operations.*” SAMSUNG-1006, 5:15-29. Rao similarly teaches that the agent “may provide a configuration mechanism such as a user interface, graphical or otherwise, design and constructed for configuring or specifying the policies.” SAMSUNG-1007, [0183].

In JJRD, policies, which are obtained as user input from the user interface (per Rao and Jones), consist of condition aspects (e.g., device is using GSM cellular) and action aspects (e.g., reduce backup frequency, per Jones). SAMSUNG-1006, 1:60-64, 5:15-29; SAMSUNG-1007, [0183]; SAMSUNG-1003, ¶¶[245]-[248].

[1.10]

Per Jones, JJRD identifies that it is connected to the first wireless network (GSM). SAMSUNG-1003, ¶[250]. Jones’s DTC “also detects a connection state,” which “corresponds to a connection type.” SAMSUNG-1006, Abstract, claim 7. Jones provides one example in which, “[f]or a modem policy, a system administrator may decide that modem connections have lower bandwidth than non-modem connections,” so “the system administrator may apply a rule that distinguishes between connections that use a modem and connections that do not,” e.g., “prohibit

data transfers over a modem connection.” SAMSUNG-1006, 5:20-26; SAMSUNG-1003, ¶[250]. Jones further explains that mobile clients can be connected to the enterprise network via wireless connections. SAMSUNG-1006, 3:28-32; SAMSUNG-1003, ¶[250].

Therefore, when the connection type is GSM cellular, JJRD identifies that the wireless device is connected to the GSM network, per Jones. SAMSUNG-1003, ¶¶[249]-[250s]

[1.11]

Per Jones, JJRD data transfers move data between a client and other network-connected devices, including transfers of data to a backup medium over the enterprise network, and file sharing, software updates, virus definition updates, which transfer data either from the client to the enterprise network or from the enterprise network to the client. SAMSUNG-1006, 5:4-12. Per Jones, JJRD applies policies to such data transfers. SAMSUNG-1006, 4:46-47, FIG. 3. Therefore, in view of Jones’ discussion of data policies, a POSITA would have understood that JJRD identifies an intended or attempted data transfer so that it can apply the policies. SAMSUNG-1003, ¶¶[252]-[256].

Additionally, Rao teaches that its client intercepts packets (attempted data communication) from an application (first service activity), uses policy to assign

the packet to a priority queue, and communicates the packets according to the priority. SAMSUNG-1007, [0179]-[0195]; SAMSUNG-1003, ¶[255].

Per Jobs and Jones, JJRD can communicate data over a first network (e.g., GSM cellular) associated with a first activity (e.g., backup), among other network types (e.g., CDMA cellular). SAMSUNG-1005, [0042] SAMSUNG-1006, 5:25-26.

[1.12]

Per Jones, JJRD “associates each of at least two connection states with one of the data transfer rules,” “detects a connection state of a client device,” and “applies a first data transfer rule to the client device in response to detecting a first connection state.” SAMSUNG-1006, 2:8-13. Jones further explains that data backup frequency can be adjusted based on network type, which can be GSM (per Jobs). SAMSUNG-1005, [0042]; SAMSUNG-1006, 1:61-64; SAMSUNG-1003, ¶[258]. Since Jones explains that backup frequency can depend on enterprise policies, a POSITA would have understood that reducing backup frequency (e.g., on the first network, GSM) is applying the first service policy. SAMSUNG-1005, [0042]; SAMSUNG-1006, 3:48-51; SAMSUNG-1003, ¶¶[257]-[258].

Additionally, Rao teaches that its client intercepts packets (attempted data communication) from an application (first service activity), assigns the packet to a priority queue (applying the policy), and communicates the packets according to

their priority. SAMSUNG-1007, [0184]; SAMSUNG-1003, ¶[259].

[2]

JJRD associates the first service activity with a **content type** (e.g., backup data or virus definition), a download, and/or an upload. SAMSUNG-1006, 5:7-12; SAMSUNG-1003, ¶¶[260]-[262]. Jones teaches that a rule can apply to data backup (upload), file sharing (upload and/or download), and virus definition updates (download). SAMSUNG-1006, 5:7-12; 26-29; SAMSUNG-1003, ¶[261]. Files can be shared from JJRD to other devices (upload) and/or files from other devices can be shared with JJRD (download). SAMSUNG-1003, ¶[261]. Additionally, virus definition update requires at least a download of the new virus definitions and can include an upload of the definitions previously installed on JJRD. SAMSUNG-1003, ¶[261].

Rao explains that policies can be based on **application name or type** and destination network address (**communication end point**). SAMSUNG-1007, [0182]; SAMSUNG-1003, ¶[261].

[3.1]

For the reasons discussed in [1.10], JJRD renders [3.1] obvious.⁶ SAMSUNG-1003, ¶¶[263]-[264].

Additionally, JJRD identifies that it is connected to a second wireless network (CDMA cellular). SAMSUNG-1005, [0042]; SAMSUNG-1003, ¶[264]. Jones's DTC "also detects a connection state," which "corresponds to a connection type." SAMSUNG-1006, Abstract, claim 7. Therefore, when the connection type is CDMA cellular, JJRD identifies that the wireless device is connected to CDMA cellular. SAMSUNG-1005, [0042]; SAMSUNG-1003, ¶[264].

[3.2]

For the reasons discussed in [1.11], JJRD renders [3.2] obvious.⁷ SAMSUNG-1003, ¶¶[265]-[267].

Additionally, per Jones, JJRD applies policies to data transfers. SAMSUNG-1006, 4:46-47, FIG. 3; §III.A.2.[1.11]. Therefore, a POSITA would have understood that JJRD identifies an intended or attempted data transfer so it can ap-

⁶ [3.1]-[3.3] include a duplication of elements recited in [1.10]-[1.12] and thus do not carry independent patentable significance. *In re Harza*, 274 F.2d 669, 671 (CCPA 1960) (mere duplication of parts absent unexpected result carries no patentable significance).

⁷ *Supra* n.6.

ply the policies, per Jones. SAMSUNG-1003, ¶[266]. Per Jobs, JJRD can communicate data associated with a first activity (backup) over a second network (e.g., CDMA cellular). SAMSUNG-1005, [0042].

Further, Rao teaches that its client intercepts packets (attempted data communication) from an application (first service activity), assigns the packet to a priority queue (applying the policy), and communicates the packets according to the priority. SAMSUNG-1007, [0184]; SAMSUNG-1003, ¶[267].

[3.3]

For the reasons discussed in [1.12]. JJRD renders [3.3] obvious.⁸ SAMSUNG-1003, ¶¶[268]-[269].

Additionally, per Jones, in JJRD, a first service policy enables a first control of a first service activity (e.g., reducing backup frequency). SAMSUNG-1006, 1:60-64; SAMSUNG-1003, ¶[269]; §III.A.2.[1.7]. The policy can specify that backup frequency is adjusted according to the connection bandwidth, so when JJRD is on a second network (e.g., CDMA cellular), the policy is applied, adjusting the backup frequency according to the second network's bandwidth. SAMSUNG-1006, 1:60-64; SAMSUNG-1003, ¶[269].

[4.1]

⁸ *Supra* n.6.

For the reasons discussed in [1.4]-[1.5], JJRD renders [4.1] obvious.⁹ SAMSUNG-1003, ¶¶[270]-[273]; §III.A.2.[1.4]-[1.5].

Additionally, in JJRD, the memory stores a second policy associated with the second wireless network. SAMSUNG-1003, ¶[271]. Per Jones, JJRD's service policies are applied to data transfer based on the type of connection (e.g., Jobs's GSM and CDMA). SAMSUNG-1005, [0042]; SAMSUNG-1006, 1:17-22; 5:13-15; SAMSUNG-1003, ¶[271]. Therefore, a POSITA would have understood that service policies are associated with wireless networks including the second wireless network (CDMA cellular). SAMSUNG-1003, ¶[271]; §III.A.2.[1.4].

The second policy can be further specified based on user priority, per Jones. SAMSUNG-1006, 5:13-15. In one example, the second policy specifies that, if connected to a second network (CDMA) and the user priority is low, backup is prohibited, reducing data usage. SAMSUNG-1003, ¶[272]. SAMSUNG-1006, 5:13-15, 25-26. A POSITA would have understood that the second policy has a higher priority than the first policy, and therefore, only the second policy would be applied. SAMSUNG-1003, ¶[272] (citing SAMSUNG-1023, SAMSUNG-1029).

⁹ [4.1]-[4.4] include a duplication of elements recited in [1.4]-[1.5] and [1.10]-[1.12] and thus do not carry independent patentable significance. *Harza*, 274 F.2d, 671.

[4.2]

For the reasons discussed in [1.10], JJRD renders [4.2] obvious.¹⁰ SAMSUNG-1003, ¶¶[274]-[275].

Additionally, per Jones, JJRD identifies that it is connected to the second wireless network (CDMA). SAMSUNG-1003, ¶[275]; §III.A.2.[1.10]. Jones’s DTC “also detects a connection state,” which “corresponds to a connection type.” SAMSUNG-1006, Abstract, claim 7. Therefore, when the connection type is CDMA cellular, JJRD identifies that the wireless device is connected to the second wireless network (CDMA cellular). SAMSUNG-1003, ¶[275]; §III.A.2.[1.10].

[4.3]

For the reasons discussed in [1.11], JJRD renders [4.3] obvious.¹¹ SAMSUNG-1003, ¶¶[276]-[277]; §III.A.2.[1.11].

Per Jones, JJRD applies policies to data transfers. SAMSUNG-1006, 4:46-47, FIG. 3; §III.A.2.[1.11]. Therefore, a POSITA would have understood that JJRD identifies an intended or attempted data transfer so that it can apply the policies, per Jones. SAMSUNG-1003, ¶[277]. Per Jobs, JJRD communicates data associated with a first activity over a second network (e.g., CDMA). SAMSUNG-

¹⁰ *Supra* n.9.

¹¹ *Supra* n.9.

1005, [0042].

[4.4]

For the reasons discussed in [1.12], JJRD renders [4.4] obvious.¹² SAMSUNG-1003, ¶¶[278]-[279]; §III.A.2.[1.12].

Per Jones, JJRD “associates each of at least two connection states with one of the data transfer rules,” “detects a connection state of a client device,” and “applies a first data transfer rule to the client device in response to detecting a first connection state.” SAMSUNG-1006, 2:8-13. Per Jones, when the second policy is applied, backup can be prohibited. SAMSUNG-1006, 5:25-26; SAMSUNG-1003, ¶[279]; §III.A.2.[1.12]. Per Rao, backup can also be delayed, e.g., by assigning packets to a lower-priority queue. SAMSUNG-1007, [0179]-[0195]; SAMSUNG-1003, ¶[279].

[5]

Per Jones, JJRD blocks service activities to reduce data usage. SAMSUNG-1003, ¶¶[280]-[281]; SAMSUNG-1006, 5:25-27 (explaining that “a first rule may prohibit data transfers” when on a particular network type, such as “in the case of data backup”).

[6]

¹² *Supra* n.9.

Per Jones, JJRD blocks service activities when connected to the first wireless network (GSM). SAMSUNG-1003, ¶¶[282]-[285]. Jones explains, “a first rule may prohibit data transfers” when on a particular network type, such as “in the case of data backup.” SAMSUNG-1006, 5:25-27; SAMSUNG-1003, ¶[283]. Jones explains that service activities can continue when connected to a second network (CDMA), e.g., explaining that, if the client connection changes to a different connection, the “policy rule prohibiting data transfers may no longer apply and remote copying may resume.” SAMSUNG-1006, 5:29-32. Jones further teaches that data backup frequency can be adjusted based on network type (e.g., CDMA cellular), so a POSITA would have understood that data backup is allowed to occur at a frequency that depends on network bandwidth. SAMSUNG-1006, 1:61-64; SAMSUNG-1003, ¶[283].

[7]

Per Rao, JJRD assigns packets to priority queues based on policy and transmits the packets from the queues according to the priority. SAMSUNG-1007, [0184]; §III.A.1.d; SAMSUNG-1003, ¶¶[286]-[288]. JJRD policies determine priority using, e.g., the application name or type, or other suitable means. SAMSUNG-1007, [0182]; §III.A.1.d; SAMSUNG-1003, ¶[287]. JJRD assigns packets from a backup application (an application type) to a lower priority queue, thereby reducing data usage by *throttling* and *shaping* backup *traffic*. SAMSUNG-1007,

[0182], [0184]; §III.A.1d.; SAMSUNG-1003, ¶[287].

Per Jones, JJRD *throttles* backup traffic by reducing backup frequency.

SAMSUNG-1006, 1:58-64; SAMSUNG-1003, ¶[288].

[8]

Per Jones, JJRD *delays* a first service activity (backup) by adjusting backup frequency. SAMSUNG-1006, 1:61-64; SAMSUNG-1003, ¶¶[289]-[292]. A POSITA would have understood that when backups are made less frequently, backups are delayed. SAMSUNG-1003, ¶[290].

Per Rao, JJRD assigns packets to queues based on policy and transmits the packets from the *queues according to the priority*. SAMSUNG-1007, [0184]; §III.A.1.d; SAMSUNG-1003, ¶[291]. JJRD policies determine priority using, e.g., the application name and/or other suitable means. SAMSUNG-1007, [0182]; §III.A.1.d; SAMSUNG-1003, ¶[291]. JJRD assigns packets from a backup application (an application type) to a lower priority queue than they would be assigned if a different policy applied (e.g., for higher-priority traffic), thereby reducing data usage by throttling backup traffic. SAMSUNG-1007, [0182], [0184]; §III.A.1.d; SAMSUNG-1003, ¶[291].

[9]

In JJRD, the policy is dependent on *network type, background download condition*, and/or a *designation that the activity is non-critical*. SAMSUNG-

1003, ¶¶[293]-[294]; §III.A.1.d. Jones explains that policies can be applied based on “type of connection, connection bandwidth, user priorities, etc.” SAMSUNG-1006, 5:13-15. A POSITA would have understood or found obvious that “a type of connection” is a “network type.” SAMSUNG-1003, ¶[294]. Additionally, Jones teaches that data protection (backup) software on client devices can “execute in the background.” SAMSUNG-1006, 3:45-47. Jones further teaches that policies can depend on user priorities. SAMSUNG-1006, 5:13-15. A POSITA would have understood or found obvious that “non-critical” is a user priority. SAMSUNG-1003, ¶[294], citing SAMSUNG-1050. Finally, Rao teaches that policy can be “based on whether an application is running in the ... background.” SAMSUNG-1007, [0182].

[10]

In JJRD, backup (first service activity) can run as a ***background activity*** and can involve a software update, per Jones, which explains that data protection software on client devices can “execute in the background to perform data backups.” SAMSUNG-1006, 3:45-47; 5:4-12; SAMSUNG-1003, ¶¶[295]-[299].

JJRD’s reducing data usage can comprise ***delaying*** backup. SAMSUNG-1003, ¶[298]. Jones explains that data backup frequency can be adjusted. SAMSUNG-1006, 1:61-64. A POSITA would have understood that, when backups are

made less frequently, backups are *delayed*, *deferred*, and/or *throttled*. SAMSUNG-1003, ¶[298]. Further, in JJRD, reducing data usage can comprise *blocking* a service activity (backup). SAMSUNG-1006, 5:25-26; SAMSUNG-1003, ¶[298].

Additionally, Rao teaches that policies determine priority and can be applied “based on whether an application is running in the foreground or the background,” and “packets are communicated according to the determined priority.” SAMSUNG-1007, [0179], [0182], [0184]; SAMSUNG-1003, ¶[299]. A POSITA would have understood from Rao’s discussion of priority queuing that lower-priority traffic (e.g., from background applications) are delayed in favor of higher-priority traffic. SAMSUNG-1007, [0003], [0179]-[0195]; SAMSUNG-1003, ¶[299].

[11]

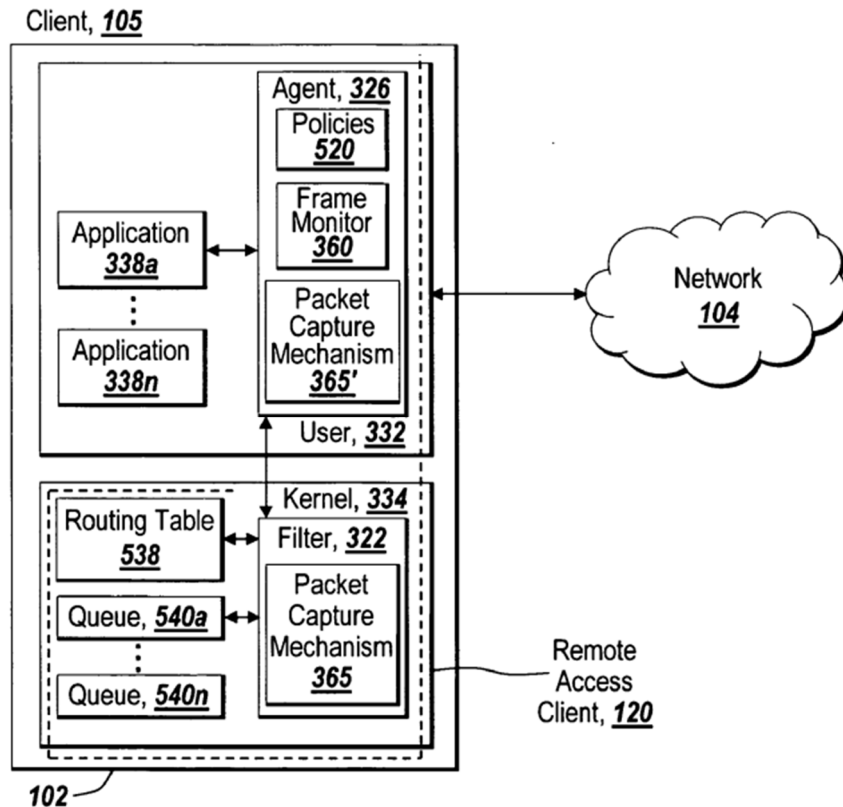
JJRD’s policy can specify that only local backup can occur, which a POSITA would have understood as directing communication to a particular network endpoint, JJRD itself. SAMSUNG-1003, ¶¶[300]-[304]. Jones explains that a mobile client “may take advantage of local backups when it is not connected to enterprise network” and that when a policy prohibits data transfer over a network, the policy can allow local backup to continue. SAMSUNG-1006, 3:51-55; 5:26-32; SAMSUNG-1003, ¶[302].

[12.1]

In JJRD, per Rao, agents comprise a policy control agent (e.g., Rao’s agent)

and a low-level policy agent (e.g., Rao's filter), e.g., as illustrated in Rao's FIG.

5A, reproduced below. SAMSUNG-1003, ¶¶[305]-[307].



SAMSUNG-1007, FIG. 5A.

Rao explains that the agent indicates the priority to the filter for management of network packet queues to apply the indicated priorities. SAMSUNG-1007, [0190].

[12.2]

JJRD's agent obtains the first service policy, per Rao. SAMSUNG-1003, ¶¶[308]-[309]. Rao teaches that policies can be "configured into the agent 326," or "loaded by the agent," e.g., the policies "may be provided by or downloaded via

the gateway.” SAMSUNG-1007, [0183].

[12.3]

In JJRD, the agent obtains information about the service activity. SAMSUNG-1003, ¶¶[310]-[311]. Rao teaches that policy can be specified based on the name or type of application, protocols used by the application, whether the service is in the foreground or background, etc. SAMSUNG-1007, [0182]. Per Rao, when JJRD intercepts a packet, it determines the application associated with the packet and uses the policies “to apply a priority to network packets of applications 338a-338n in accordance with the prioritization rules specified or indicated by the policies.” SAMSUNG-1007, [0187], [0189]. A POSITA would have understood that the application determined to be associated with the packet is information associated with the service activity. SAMSUNG-1003, ¶[311].

[12.4]

Per Rao, based on the information about the service activity, JJRD determines a priority (setting that assists achieving the first service policy). SAMSUNG-1003, ¶¶[312]-[313]. Per Rao, JJRD intercepts a packet, determines the application associated with the packet and uses the policies “to apply a priority to network packets of applications 338a-338n in accordance with the prioritization rules specified or indicated by the policies.” SAMSUNG-1007, [0187], [0189].

[12.5]

JJRD’s agent communicates the policy setting (packet priority) to the low-

level agent (filter). SAMSUNG-1003, ¶¶[314]-[315]. Rao teaches that the agent “communicate[s] the priority of network packets to the filter 322 by any suitable means and/or mechanism,” such as via an API or “any other type and/or form of interface known” to a POSITA. SAMSUNG-1007, [0190].

[13]

Per Rao, JJRD’s filter is a policy implementation agent since it implements the policy by queuing packets according to priority. SAMSUNG-1003, ¶¶[316]-[317]. Rao teaches that the filter “may place, arrange, or coordinate network packets into queues” in support of the priorities. SAMSUNG-1007, [0191].

[14.1]

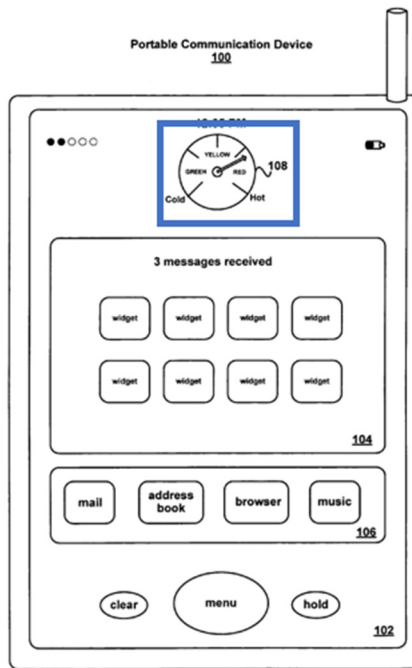
Per Jobs, JJRD’s service policy assists one or more JJRD agents in determining a usage measure associated with the first service activity. SAMSUNG-1003, ¶¶[318]-[321]. Jobs explains that a service plan can include resource limits (e.g., voice and/or data), and once those limits are exceeded, additional charges can occur. SAMSUNG-1005, [0002]. Jobs further explains that, in multi-service accounts, the user’s resource budget is defined by a linear combination of resource usage amounts, e.g., “a particular account may provide a user with a combined monthly budget for voice and data transmission services.” SAMSUNG-1005, [0019]. In such cases, the “device may compute a ‘combined usage metric’ indicative of the total resources used during an accounting period.” SAMSUNG-1005,

[0019].

Therefore, a POSITA would have understood that the policy specifying a “combined usage metric” is assisting in determining a usage metric (aggregate data use) associated first service activity (backup). SAMSUNG-1003, ¶[321].

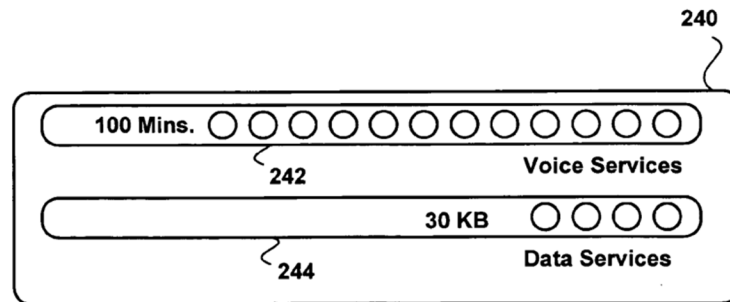
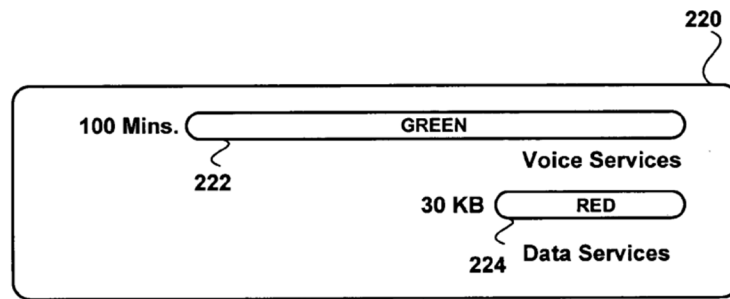
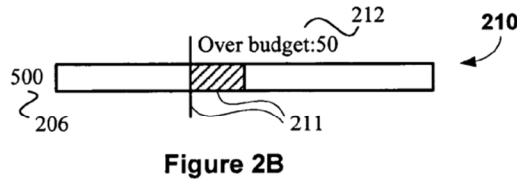
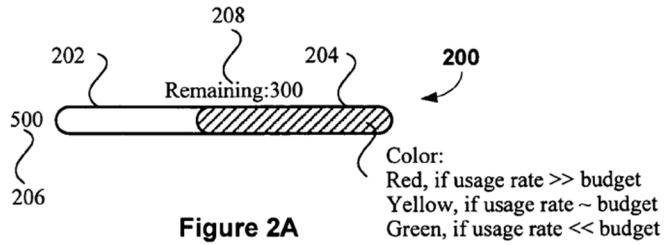
[14.2]

JJRD presents information about the usage measure associated with the first service activity in the user interface, per Jobs. SAMSUNG-1005, [0004], [0018]; SAMSUNG-1003, ¶¶[322]-[324]. Per Jobs, JJRD “automatically and repeatedly present[s] an updated account usage metric for an account associated with usage” of the device in a usage meter that indicates (A) a remaining balance on an account, and/or (B) whether the user’s resource usage rate is less than, approximately equal to, or greater than an average resource usage rate associated with a predefined or user-selected budget for the account. *Id.* Then, as the user uses account resources (minutes, bandwidth, etc.), “the meter is automatically, without user action, updated to reflect the corresponding change in account status.” *Id.* A POSITA would have understood from Jobs’s description of the account usage metric that “resource usage rate” is associated with the first service activity since the first service activity consumes resources and thus contributes to the usage rate. SAMSUNG-1003, ¶[323].



SAMSUNG-1005, FIG. 1 (annotated)

Jobs further explains the graphical object “can be any type of object, such as a gauge, meter, dial, bar, graph, chart, animation, button, etc.,” and the user can select “among a list of predefined meter types” (illustrated in FIGS. 2A-2D, below). SAMSUNG-1005, [0029].



SAMSUNG-1005, FIGS. 2A-2D

[15.1]

Per Jobs, JJRD detects that a service usage amount (overall data use) associated with the service activity (backup) has been consumed. SAMSUNG-1003, ¶¶[325]-[328]. Jobs includes a meter “that indicates ... a remaining balance on an

account.” SAMSUNG-1005, [0018]. A POSITA would have understood from Jobs’s discussion of account usage metrics that JJRD is detecting that a usage amount associated with the first service activity has been consumed when JJRD’s meter indicates a remaining balance (since the remaining balance is simply the plan amount minus service usage, including usage by the first service activity). SAMSUNG-1003, ¶[326].

[15.2]

Per Jobs, when JJRD detects that a service usage amount (which is associated with the first service activity) has been consumed, JJRD presents a notification through the user interface. SAMSUNG-1003, ¶¶[329]-[330]. Per Jobs, JJRD “automatically initiate[s] certain actions when an account balance or resource usage rate reaches a threshold level,” including generating a notification, e.g., “an audio or visual message to indicate that a condition has been triggered.” SAMSUNG-1005, [0034]; SAMSUNG-1003, ¶[330].

[16]

Per Jobs, “certain trigger conditions can result in an action being performed by the device,” including a “visual message to indicate that a condition has been triggered.” SAMSUNG-1005, [0034]. The “trigger condition can occur whenever a predefined amount of resource usage (e.g., one minute of voice transmission, 20 MB of data have been transmitted” has occurred and/or “when an account balance

reaches or falls below a threshold.” *Id.*, [0036]. A POSITA would have understood that the resource usage threshold (e.g., 20 MB) can be reached when a particular service activity (e.g., backup) is transmitting data. SAMSUNG-1003, ¶[332]. Therefore, a POSITA would have understood that the first service policy (access privileges specifying a data use threshold) assists device agents in presenting a notification through the user interface (visual message) and the notification (e.g., use threshold satisfied) is associated at least with a service activity (e.g., backup). SAMSUNG-1003, ¶¶[331]-[333].

[19]

For the same reasons discussed for [16], JJRD renders [19] obvious. SAMSUNG-1003, ¶¶[334]-[338]; §III.B.2.[16]; SAMSUNG-1005, [0036] (“20 MB of data have been transmitted”).

[21]

Rao teaches that policies “may be provided by or downloaded via the gateway,” which a POSITA would have understood from Rao to be a network element. SAMSUNG-1007, [0183], FIG. 2A (340); SAMSUNG-1003, ¶¶[339]-[342].

[23.1]

Per Jobs, JJRD’s UI includes a pull-down menu “containing account-related options ... including ... changing a billing plan [and] increasing budget for a service account,” through which JJRD obtains user input specifying (e.g.) access privileges. SAMSUNG-1005, [0029]; SAMSUNG-1003, ¶[344].

Also, per Jobs, JJRD creates a trigger event, which occurs when “the user manually selects a menu option (e.g., ... change calling plans)” (obtaining the user input). SAMSUNG-1005, [0036]. In response, JJRD “establishes a secure network connection (e.g., SSL connectivity) with a service provider computer,” and sends a “message requesting the user’s account information,” where the message includes “identifying information (e.g., MSID) that can be used by the service provider to verify the device and the user.” SAMSUNG-1005, [0037]. A POSITA would have understood from Jobs that the MSID (Mobile Station Identifier) provides information about the user input (e.g., the device from which the user input originated). SAMSUNG-1003, ¶¶[343]-[345].

[23.2]

Per Jobs, when a “trigger condition is detected[,] the device downloads (404) account information from the service provider for the account.” SAMSUNG-1005, [0038]. In response, the device updates “account metrics,” e.g., the data budget. SAMSUNG-1005, [0002], [0038]; SAMSUNG-1003, ¶[347]. Therefore, the device obtains from the server provider’s server (network element) at least a portion of the service policy (the data budget). SAMSUNG-1003, ¶¶[346]-[347].

[24]

Per Jobs, the network can be GSM (cellular). SAMSUNG-1005, [0042]; §III.A.2.[1.4]; SAMSUNG-1003, ¶¶[348]-[349].

[27.1]

Jobs teaches that the processors “communicate with the one or more computer-readable mediums,” which “can be any device or medium that can store code and/or data for use by the one or more processors. SAMSUNG-1005, [0045]. Jobs further teaches that the processors “run various software components stored in the medium 502 to perform various functions for the device.” SAMSUNG-1005, [0046]; SAMSUNG-1003, ¶¶[350]-[351].

[27.2]

See [1.9].

[27.3]-[27.5]

See [1.5]-[1.7].

[27.6]-[27.8]

See [1.10]-[1.12].

[28]

See [1.4], [5].

[29]

See [10].

[30.1]-[30.2]

See [14.1]-[14.2].

B. Ground 1B: Jobs-Jones-Rao-Bocking renders claims 17, 18, and 24 obvious

1. Jobs-Jones-Rao-Bocking

(a) **Bocking**

Bocking explains, “[m]any handheld electronic devices include wireless telephone and data (e.g., email, SMS, Internet) functionality.” “[T]o use wireless communications functionality, a user must subscribe with a wireless service provider or operator” so the user can use “PLMN [public land mobile networks] operated by the service provider or operator (referred to as the ‘home PLMN’).” SAMSUNG-1009, [0007]. Roaming allows a subscriber to use wireless-enabled equipment “while in the service area of another operator (and outside of the user’s home PLMN),” which “requires an agreement between operators of technologically compatible systems to permit customers of either operator to access the other’s PLMN.” SAMSUNG-1009, [0007].

Bocking describes a “handheld electronic device adapted to display a listing of known networks, scan for available networks, display a listing of the available networks and enable the entry of information relating to manually entered networks.” SAMSUNG-1009, Abstract, [0028]. The device stores a list of preferred networks and enables “the assignment of a priority value to each of the preferred networks,” using “the preferred networks for performing wireless communications when the device is in a roaming situation,” where the preferred network is determined from the priority ordering. SAMSUNG-1009, Abstract; SAMSUNG-1003, ¶¶[174]-[176].

(b) **Combination**

JJRD is a wireless device where network access is governed by service policies comprising access privileges. §III.A.1.d. Such privileges are granted by a particular service provider, per Jobs. SAMSUNG-1005, [0002]; SAMSUNG-1003, ¶[177]. A POSITA would have understood that, when a device moves to a location lacking service from that provider, network connectivity is lost unless the device obtains service from an alternate service provider. SAMSUNG-1003, ¶[177]. To avoid connectivity loss, a POSITA would have looked to references such as Bocking, which teaches techniques for connecting a device to roaming networks. SAMSUNG-1009, Abstract, [0024], [0028]; SAMSUNG-1003, ¶[177].

The resulting Jobs-Jones-Rao-Bocking Device (JJRBD) is a wireless device that supports the service plans of Jobs. §III.A.1.d. When JJRBD moves outside the service provider's coverage, it uses techniques (per Bocking) to connect to a roaming network, enhancing the connectivity range of the device. SAMSUNG-1009, Abstract, [0024], [0028]; SAMSUNG-1003, ¶[178].

The components of JJRBD each operate as they would in isolation. SAMSUNG-1003, ¶¶[179]-[180]. The components of JJRBD provide wireless device functions, including accessing cellular networks, and use the techniques of Bocking (e.g., network scanning and prioritization) when accessing a roaming cellular

network. §III.A.1.a,d; SAMSUNG-1003, ¶[179]. A POSITA would have a reasonable expectation of success in creating a combination, which would have required only routine programming knowledge well within the skill of a POSITA.

Id. Indeed, the change would have amounted to nothing more than the use of a known technique to improve similar mobile devices in a similar way and combining prior art elements according to known methods to yield the predictable results described above. *Id.*; *KSR*, 550 U.S., 417.

2. Analysis

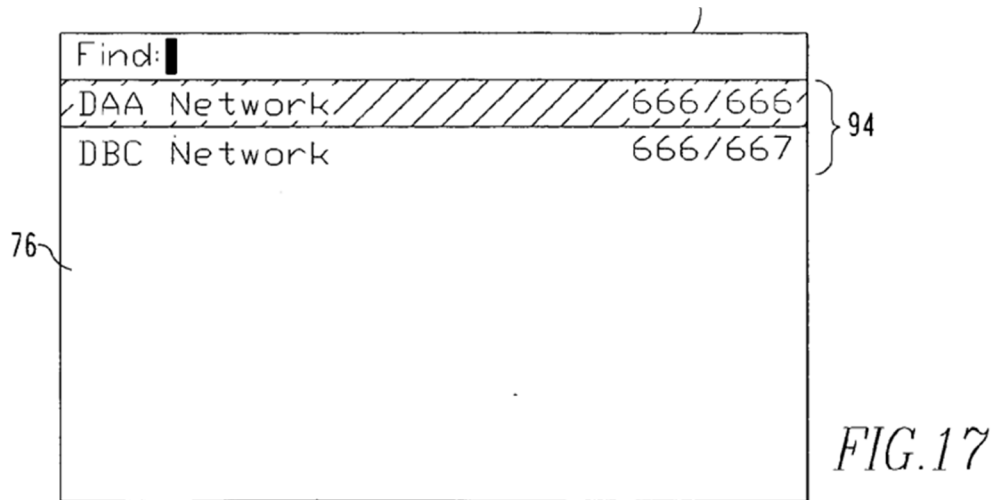
[17]

Per Jones, JIRBD's policies determine backup frequency based on network type, bandwidth, etc. SAMSUNG-1006, 1:60-64; SAMSUNG-1003, ¶[364].

Jones further explains that "the structure of each policy and the mapping of the policy structure to a set of data transfer rules may be configured by a user" who can "be presented with a graphical user interface through which each policy may be selected and configured in successive operations." SAMSUNG-1006, 6:36-42.

Per Bocking, JIRBD "establish[es] a prioritized list of preferred PLMNs to be used in roaming situations." SAMSUNG-1009, [0024]. When roaming, in response to a user selecting "Select From Available Networks," JIRBD performs a scan to locate available networks and displays a listing of "all of the 'available networks' located during the scanning procedure." SAMSUNG-1009, [0028], FIG.

17; SAMSUNG-1003, ¶[365].



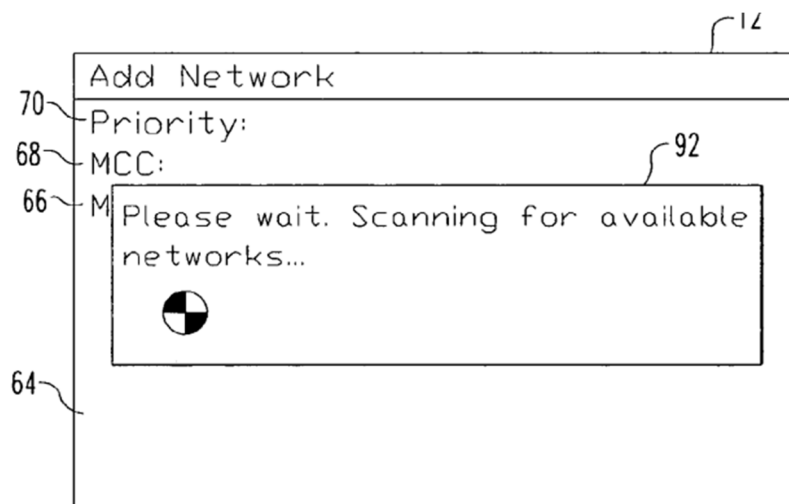
SAMSUNG-1009, FIG. 17.

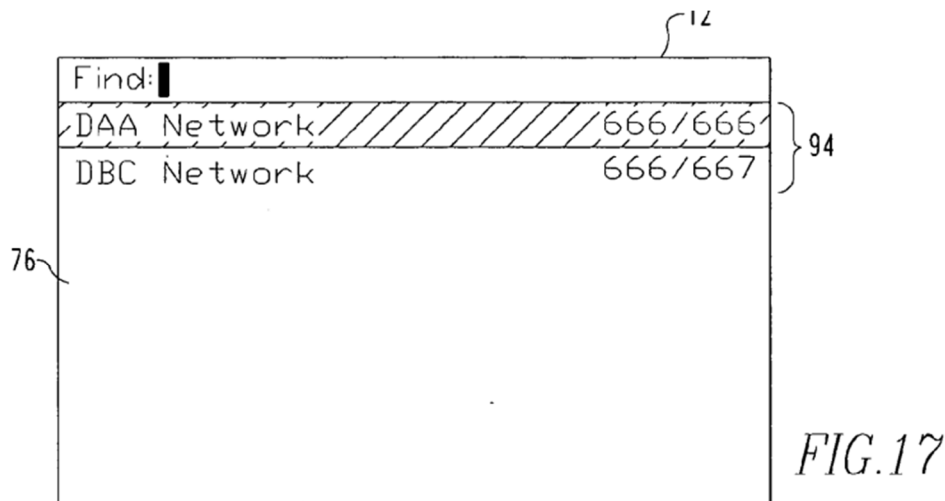
A POSITA would have understood that, to appropriately protect enterprise data, backup policies must be configured for each network type, including JJRBD's preferred roaming networks. SAMSUNG-1006, 1:46-50; SAMSUNG-1003, ¶[366]. When (per Bocking) JJRBD scans for roaming networks and the user can add an available network to the preferred roaming list for which JJRBD does not have a configured backup policy. SAMSUNG-1009, [0028], FIG. 17; SAMSUNG-1003, ¶[366]. In such cases, to protect the data, JJRBD might perform a backup, incurring large roaming fees, or JJRBD might not perform a backup when such fees do not exist, putting data at risk. SAMSUNG-1006, 1:46-50; SAMSUNG-1003, ¶[366].

Therefore, to ensure all networks are configured, the first service policy (backup frequency) assists in presenting a notification through the user interface (policy configuration GUI), that provides information about a roaming network (preferred roaming networks, per Bocking). SAMSUNG-1003, ¶¶[363]-[367].

[18.1]

Bocking teaches that a user can add a PLMN to the listing “by selecting the PLMN from a group of ‘available networks,’” which JJRBD “is able to locate from its current location using communications subsystem 45 and a known network scanning procedure.” SAMSUNG-1009, [0028]; SAMSUNG-1003, ¶¶[368]-[369].





SAMSUNG-1009, FIGS. 16-17

[18.2]

Per Bocking, when JIRBD displays the list of available networks, the “user may then select a particular PLMN for inclusion” in the list “used to determine which and in what order PLMNs are to be used ... in roaming situations.” SAMSUNG-1009, [0028]; SAMSUNG-1003, ¶¶[370]-[372].

Further, “the user may easily reorder, and thus change the priority of, the PLMNs ... by selectively moving their location in listing 58.” SAMSUNG-1009, [0029]. A POSITA would have understood from Bocking that when a user reorders the list to place the selected “particular PLMN” first in the list (giving it highest priority), the user is indicating a selection of that network. SAMSUNG-1003, ¶[372].

[24]

Per Bocking, JIRBD “establish[es] a prioritized list of preferred PLMNs to

be used in roaming situations,” and the “respective priorities assigned to the PLMNs ... determines the order in which the PLMNs are to be used ... if available, in roaming situations.” SAMSUNG-1009, [0024], [0026]; SAMSUNG-1003, ¶¶[373]-[375]. Therefore, a POSITA would have understood that, when the JIRBD is roaming, per Bocking, the network is a roaming network. SAMSUNG-1003, ¶[374].

Bocking further teaches that a device can be connected to a cellular network. SAMSUNG-1009, [0004], [0007]. Bocking explains that “[n]umerous types of handheld electronic devices are known, including “cellular telephones.” SAMSUNG-1009, [0004]. A POSITA would have understood that cellular telephones (e.g., JIRBD) use cellular wireless communication. SAMSUNG-1003, ¶[375].

C. Ground 1C: Jobs-Jones-Rao-Cunningham renders claim 20 obvious

1. Jobs-Jones-Rao-Cunningham

(a) Cunningham

Cunningham explains, “mobile users to desire access to mail and communicate in a data-centric manner while mobile,” and describes a business model “dedicated to supporting a wireless messaging device.” SAMSUNG-1010, Abstract, [0006]. “[L]imitations or restrictions that can be placed on the account based on ... current user behavior, subscribed services, services that can or cannot be employed according to the particular user device,” so “when the usage exceeds the expected

payment, the service can be limited or disabled until the next payment cycle.”

SAMSUNG-1010, [0050]; SAMSUNG-1003, ¶[181].

(b) Combination

JJRD is a network device where network access is enabled by a service provider through a service plan that includes data and/or voice services and resource limits. SAMSUNG-1005, [0002]; §III.A.1.d; SAMSUNG-1003, ¶[182]. Jobs’s examples include fees for excess usage. SAMSUNG-1005, [0002]. However, since such plans impose no cap on use, the network is exposed to overloading, which diminishes user experience for the connected devices. SAMSUNG-1003, ¶[183] (citing SAMSUNG-1043, 1). Additionally, Jobs’s single plan does not enable “differentiating access between unlimited included access and other billing models,” as described in Cunningham. SAMSUNG-1010, [0050]; SAMSUNG-1003, ¶[184]. As a result, a POSITA would have looked to references such as Cunningham, which provides alternate service plan structures, such as placing a hard cap on resource consumption. SAMSUNG-1010, [0050]; SAMSUNG-1003, ¶[184].

The resulting Jobs-Jones-Rao-Cunningham device (JJRCD) includes the components of JJRD and is governed by service plans such as hard usage limits after which access is denied. §III.A.1.d; SAMSUNG-1010, [0050]; SAMSUNG-1003, ¶[185]. In operation, when JJRCD hits a resource limit set by the service

plan, further usage is denied, per Cunningham. Additionally, per Jobs, JJRCD presents a UI allowing the user to change plans and resume usage. SAMSUNG-1005, [0029]; SAMSUNG-1003, ¶[185].

Thus, the components of JJRCD each operate as they would in isolation. SAMSUNG-1003, ¶[186]. Components of JJRD continue to provide a functional wireless device, which in JJRCD cellular network access is governed by the service plans of Jobs and Cunningham. §III.A.1.d; §III.C.1.a; SAMSUNG-1003, ¶¶[186]-[187]. A POSITA would have a reasonable expectation of success in creating a combination, which would have required only routine programming knowledge well within the skill of a POSITA. *Id.* Indeed, the change would have amounted to nothing more than the use of a known technique (e.g., enforcing additional service plans) to improve similar mobile devices in a similar way and combining prior art elements according to known methods to yield the predictable results described above. *Id.*; *KSR*, 550 U.S., 417.

2. Analysis

[20.1]

Jobs teaches that, “when an account balance drops below a respective threshold value” (a condition associated with the first service activity, e.g., the threshold being reached during a backup), the menu is “automatically displayed

and the user is prompted to make a selection.” SAMSUNG-1005, [0034]. In addition, the device generates a “message to indicate that a condition has been triggered.” *Id.* A POSITA would have understood that displaying a menu and/or message is presenting a notification. SAMSUNG-1003, ¶[378]. Further, since the resource use threshold value is set by the policy, a POSITA would have understood that the policy assists in presenting the notification. SAMSUNG-1003, ¶¶[376]-[378].

[20.2]

Jobs teaches that, “when an account balance drops below a respective threshold value,” the menu is “automatically displayed and the user is prompted to make a selection.” SAMSUNG-1005, [0034]. In addition, the device generates a “message to indicate that a condition has been triggered.” *Id.* A POSITA would have understood that displaying a menu and/or message is presenting a notification. SAMSUNG-1003, ¶¶[379]-[380].

[20.3]

Jobs teaches that “when an account balance drops below a respective threshold value,” the menu “automatically displayed and the user is prompted to make a selection.” SAMSUNG-1005, [0034]. A POSITA would have understood that the user’s selection is a user response to the notification (displayed menu and/or visual message). SAMSUNG-1003, ¶¶[381]-[382].

[20.4]

Per Cunningham, when JJRCD reaches the usage limit, service is disabled (restricted). SAMSUNG-1010, [0050]. Additionally, per Jobs, when JJRCD's account balances reaches a threshold (e.g., the usage limit), a menu "is automatically displayed and the user is prompted to make a selection," which can include "changing a billing plan, increasing budget for a service account." SAMSUNG-1005, [0029], [0034]; SAMSUNG-1003, ¶[384]. A POSITA would have understood that, by increasing budget or by selecting a new plan, the user is acknowledging the condition (insufficient data remaining). SAMSUNG-1001, 59:23-32; SAMSUNG-1003, ¶[384]. Further, if the user does not acknowledge the condition, access remains disabled, per Cunningham, which explains that "when the usage exceeds the expected payment, the service can be limited or **disabled** until the next payment cycle." SAMSUNG-1010, [0050]; SAMSUNG-1003, ¶¶[383]-[387].

D. Ground 1D: Jobs-Jones-Rao-Padmanabhan renders claim 22 obvious

1. Jobs-Jones-Rao-Padmanabhan

(a) Padmanabhan

Padmanabhan describes a peer-to-peer system for monitoring and diagnosing of network problems. SAMSUNG-1011, Abstract. Information related to performance and reliability are gathered from vantage points, correlated, and analyzed

to diagnose problems. SAMSUNG-1011, [0009]. The information is collected using “[p]assive observations ... made at end hosts of end-to-end transactions and shared with other end hosts in the network, either via an infrastructural service or via peer-to-peer communications techniques.” SAMSUNG-1011, [0011]; SAMSUNG-1003, ¶¶[188]-[189].

(b) Combination

Per Rao, JJRD’s RAC considers “network factors in determining what network packets to communicate from what queue,” e.g., RAC can “receive an indication of network congestion” and/or “recognize a high number of retransmits to a particular destination.” SAMSUNG-1007, [0195]. In response, RAC “may throttle back or not communicate network packets related to other networks factors, such as congestion, even though the network packets may have a higher priority than other network packets.” *Id.*

A POSITA would have understood that, while RAC reacts to network degradations, it is preferable to proactively identify and address errors, allowing higher-priority packets to be transmitted before lower-priority packets, thus improving performance of applications such as VoIP. SAMSUNG-1007, [0003]; SAMSUNG-1003, ¶[191]. Consequently, a POSITA would have been motivated to look to references such as Padmanabhan, which teaches techniques for identifying causes of error and other issues to improve performance. SAMSUNG-1003,

¶[191].

The resulting Jobs-Jones-Rao-Padmanabhan Device (JJRPD) is a wireless device that reports performance metrics to network elements, allowing diagnosis of network issues, per Padmanabhan. SAMSUNG-1003, ¶[192]; §III.A.1.d, §III.D.1.a. Thus, when issues occur, JJRPD adjusts packet transmission order to best use the impaired network (per Rao) and provides reports to other network elements (per Padmanabhan), enabling error remediation. SAMSUNG-1007, [0003], [0195]; §III.D.1.a; SAMSUNG-1003, ¶[193].

The components of JJRPD each operate as they would in isolation. SAMSUNG-1003, ¶[193]. The components of JJRPD from JJRD each operate as they would in isolation, as do the information reporting techniques as taught in Padmanabhan. §III.A.1.d; SAMSUNG-1003, ¶¶[193]-[195].

A POSITA would have a reasonable expectation of success in creating a combination, including the information reporting techniques per Padmanabhan, which would have required only routine programming knowledge well within the skill of a POSITA. *Id.* Indeed, the change would have amounted to nothing more than the use of a known technique to improve similar devices in a similar way and combining prior art elements according to known methods to yield the predictable results described above. *Id.*; *KSR*, 550 U.S., 417.

2. Analysis

[22.1]

Per Padmanabhan JJRPD determines usage measures (e.g., round-trip time) associated with applications, e.g., the backup application. SAMSUNG-1011, [0052]; SAMSUNG-1003, ¶[389]. Per Padmanabhan, JJRPD “collects data derived from monitoring the activity of [] application programs” using sensors that “passively observe existing network traffic.” SAMSUNG-1011, [0035], [0047]; SAMSUNG-1003, ¶[389]. A POSITA would have understood that the “passively observe[d] existing network traffic” from the backup application includes network service activities of the backup application, such as backup data transmitted from JJRPD to the backup device. SAMSUNG-1011, [0051]-[0053]; SAMSUNG-1003, ¶¶[389]-[390] (citing SAMSUNG-1046, 7). Thus, JJRPD determines usage measures (e.g., round-trip time) associated with the first service activity (e.g., transmitted backup data). SAMSUNG-1003, ¶¶[388]-[392].

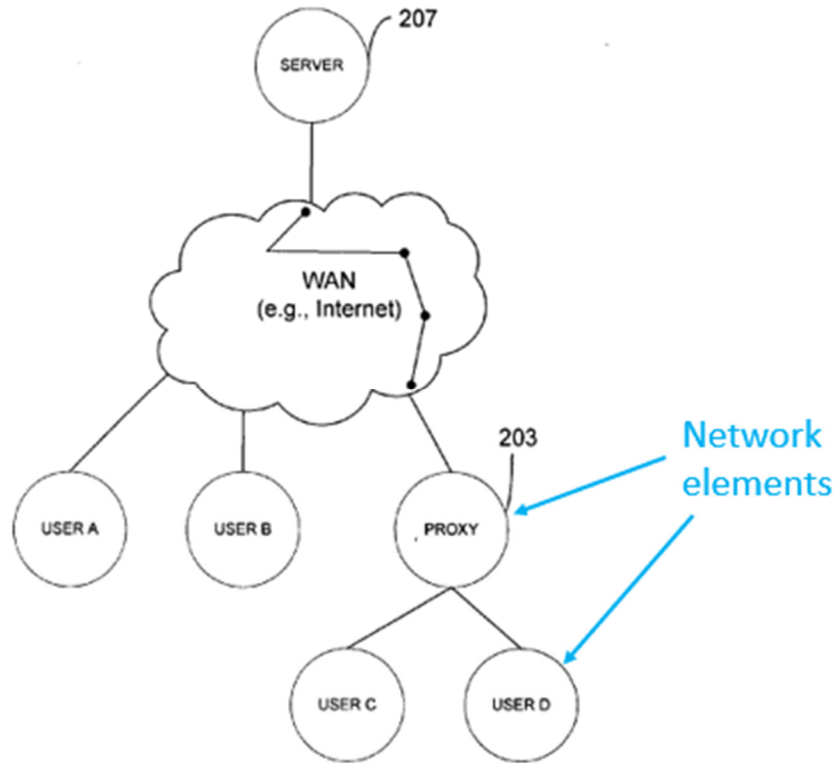
Additionally, per Jones, JJRPD’s backup frequency is set by policy. SAMSUNG-1006, 1:60-64; SAMSUNG-1003, ¶[392]. Therefore, JJRPD’s first service policy (backup frequency) assists in determining a usage measure (e.g., round-trip time) associated with the first service activity (e.g., transmitted backup data) since the policy determines when the data are sent. SAMSUNG-1006, 1:60-64; SAMSUNG-1003, ¶[392].

[22.2]

Per Padmanabhan, JJPRD “passively collects data derived from monitoring the activity of other application programs” and correlates the data with attributes of the client machine “to provide contextual information describing the performance of the machine during network communications.” SAMSUNG-1011, [0035]; SAMSUNG-1003, ¶[394]. The collected data are normalized before sharing with other nodes. SAMSUNG-1011, [0060]. A POSITA would have understood from Padmanabhan’s discussion of data collection and processing that collected and normalized data comprise a report based on usage measures, or would have otherwise found generating a report from the collected/processed data to at least be obvious. SAMSUNG-1003, ¶¶[393]-[394].

[22.3]

Per Padmanabhan, JJRPD’s “performance information is shared with other end hosts in the network” and can use infrastructural service or peer-to-peer communications techniques. SAMSUNG-1011, [0011], [0035], [0083]; SAMSUNG-1003, ¶[396].



SAMSUNG-1011, FIG. 2b(annotated)

A POSITA would have understood that at least proxies, other networked devices (end hosts), server-based infrastructure and infrastructural services are network elements. SAMSUNG-1003, ¶¶[395]-[398].

E. Ground 1E: Jobs-Jones-Rao-Ibrahim renders claim 25 obvious

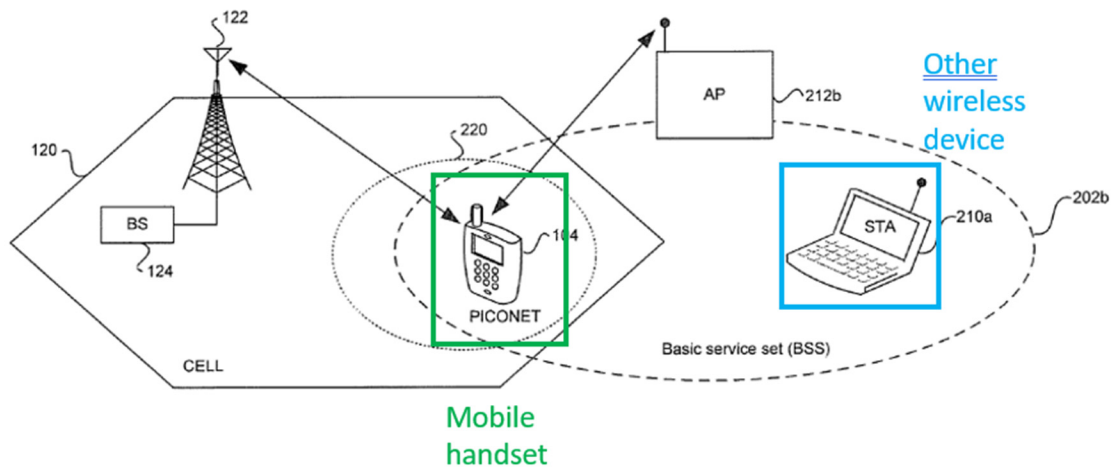
1. Jobs-Jones-Rao-Ibrahim

(a) Ibrahim

Ibrahim teaches a mobile handset operating as a base station that enables “wireless devices to communicate with each other and/or with a wireless network via the mobile handset,” such that the “mobile handset operates as a base station

for wireless devices within a personal area or piconet,” enabling access to the cellular network for “devices that do not have direct access to the cellular network.”

SAMSUNG-1012, Abstract, [0029], [0040], FIGS. 2A, 4A; SAMSUNG-1003, ¶¶[196]-[197]. The handset enables “switching and/or routing operations to enable communication” between the cellular network and “closely located wireless devices.” SAMSUNG-1012, [0027].



SAMSUNG-1012, FIG. 2A(annotated).

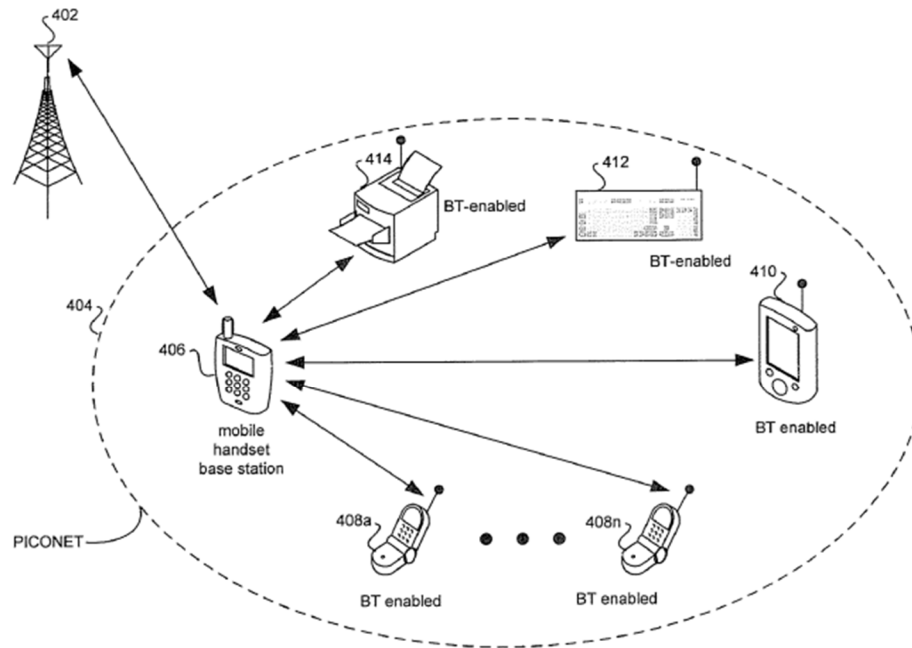
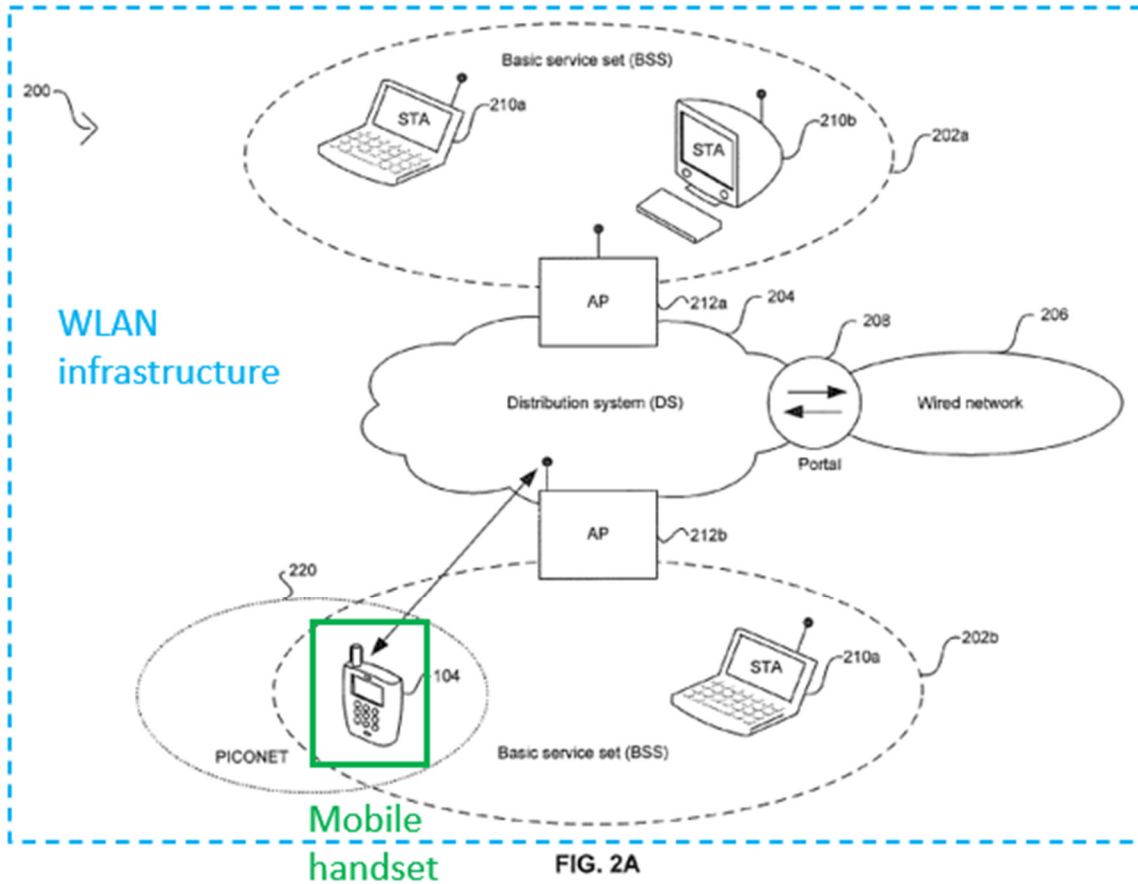


FIG. 4A

SAMSUNG-1012, FIG. 4A.

Wireless devices and mobile handset can use Bluetooth or “another type of wireless technology” for communication. SAMSUNG-1012, Abstract. The mobile handset communicates with the cellular network “over a plurality of radio access technologies, such as GSM.” SAMSUNG-1012, [0026]. The “wireless connection between the mobile handset base station” and a WLAN infrastructure network can “be utilized for voice and/or data communication.” SAMSUNG-1012, [0038].



SAMSUNG-1012, FIG. 2A(annotated).

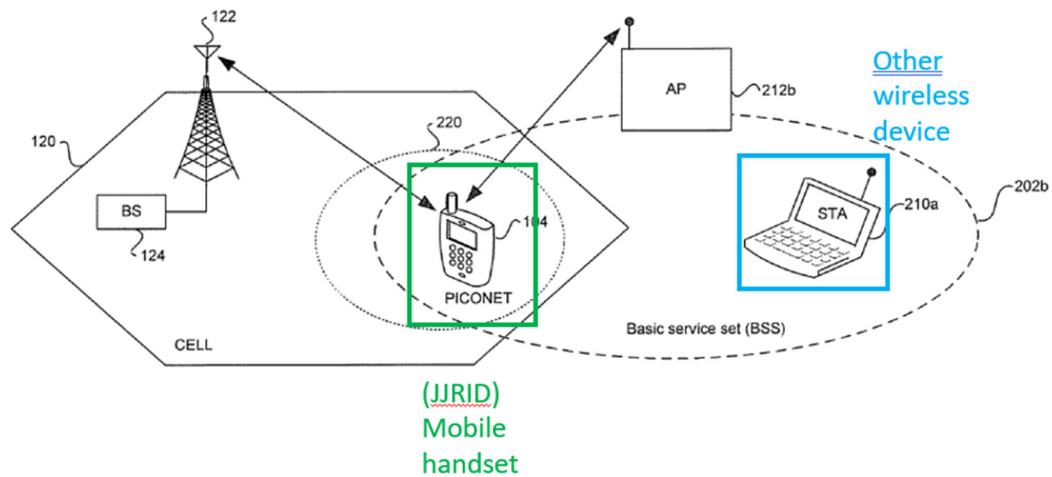
(b) **Combination**

JJRD is a computing device with applications including telephony, messaging, etc. §III.A.1.d. To enable JJRD to extend the communication range of other devices, a POSITA would have been motivated to include the base station function disclosed in Ibrahim with the device function of JJRD. SAMSUNG-1003, ¶[198].

The resulting Jobs-Jones-Rao-Ibrahim Device (JJRID) is a wireless device that serves as a base station relaying traffic between other wireless devices and a cellular network or WLAN (per Ibrahim), increasing the network coverage area for

nearby devices. §III.A.1.d; SAMSUNG-1012, Abstract, [0029], [0040]; SAMSUNG-1003, ¶[199]. While including base station functionality does not benefit a particular JJRID instance acting as a base station, JJRID does benefit when other devices, including devices owned by the same enterprise, are able to connect to the network through JJRID. SAMSUNG-1003, ¶[199]. Therefore, a POSITA would have understood that including the base station functionality (per Ibrahim) benefits the enterprise computing environment by enabling devices lacking cellular capability to connect to a cellular network. SAMSUNG-1006, 1:11-17, 1:47-50, FIG. 1; SAMSUNG-1012, [0022], [0033]; §III.E.1.a; SAMSUNG-1003, ¶[199].

Per Ibrahim, JJRID communicates with other wireless devices over “Bluetooth, WLAN,” etc. SAMSUNG-1012, [0056]; SAMSUNG-1003, ¶[200]. JJRID communicates with a downstream network using “cellular radio or a WLAN radio,” e.g., using GSM, CDMA, etc., per Ibrahim. SAMSUNG-1012, [0045]; SAMSUNG-1003, ¶[200].



SAMSUNG-1012, FIG. 2B(modified).

Thus, the components of JJRID each operate as they would in isolation. SAMSUNG-1003, ¶[201]. The components of JJRD provide network access for applications on the device, as do the relay techniques as taught in Ibrahim, providing a forwarding service for other wireless devices, including other instances of JJRID. §III.A.1.d; §III.E.1.a; SAMSUNG-1003, ¶[201].

A POSITA would have a reasonable expectation of success in creating a combination, which would have required only routine programming knowledge well within the skill of a POSITA. SAMSUNG-1003, ¶¶[201]-[203]. Indeed, the change would have amounted to nothing more than the use of a known technique to improve similar mobile devices in a similar way and combining prior art elements according to known methods to yield the predictable results described above. *Id.*; *KSR*, 550 U.S., 417.

2. Analysis

[25.1]

Per Ibrahim, Jobs, and Rao, JJRID includes a modem, e.g., a WAN “cellular radio” (per Ibrahim), enabling JJRID to communicate over the first wireless network (GSM). SAMSUNG-1012, [0045]; §III.A.2.[1.2]; §III.E.1.b; SAMSUNG-1003, ¶¶[399]-[400].

JJRID also includes a WLAN modem enabling JJRID to communicate with devices over the WLAN. SAMSUNG-1003, ¶[401]. Per Ibrahim, JJRID communicates with other wireless devices over “Bluetooth, WLAN,” etc. SAMSUNG-1012, [0056]; SAMSUNG-1003, ¶[401]. A POSITA would have understood JJRID includes a WLAN modem since it communicates with other wireless devices over a WLAN. SAMSUNG-1012, [0056]; SAMSUNG-1003, ¶[401]

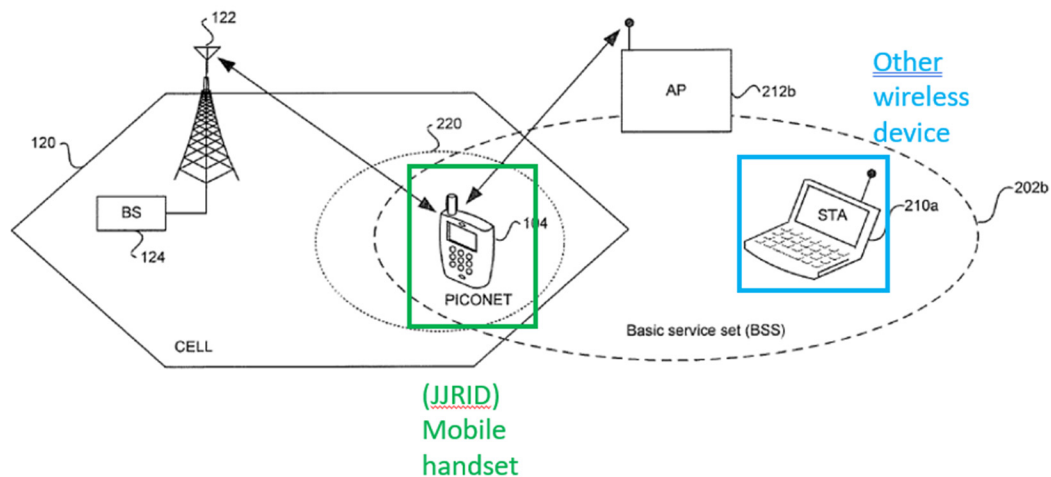
[25.2]

Per Ibrahim, JJRID serves as an intermediate networking device providing forwarding service by enabling access to the cellular network for “wireless devices that do not have direct access” by providing “switching and/or routing operations to enable communication between” a cellular network and the wireless devices. SAMSUNG-1012, [0027], [0029], [0040]; SAMSUNG-1003, ¶[403]. A POSITA would have understood that providing switching and/or routing operations is providing a forwarding service. SAMSUNG-1001, 29:59-67, 33:47-53, 152:37-50; SAMSUNG-1003, ¶¶[402]-[403].

[25.3]

JJRID both forwards traffic from other devices and transmits data generated on JJRID, including backup data (first service activity). §III.A.1.d; §III.E.1.b; SAMSUNG-1003, ¶¶[404]-[405].

A POSITA would have understood that the destination of backup from JJRID can be any suitable computing device, including “[an]other wireless device.” SAMSUNG-1003, ¶[406].



SAMSUNG-1012, FIG. 2B(modified).

JJRID backs up personal data (contacts, favorites, etc.) to the “other wireless device,” such as a laptop assigned to the same employee. SAMSUNG-1003, ¶[407].

A POSITA would have understood that, to protect data, backing up data re-

quires a reliable protocol, such as TCP/IP. SAMSUNG-1006, 1:47-49; SAMSUNG-1003, ¶[408]. A POSITA would have further understood that TCP includes bidirectional traffic, e.g., the payload (backup data) flowing from JJRID to the backup server and acknowledgements flowing from the backup server to JJRID. SAMSUNG-1003, ¶[408], citing SAMSUNG-1046.

Therefore, the first service activity (backup from JJRID to the “other wireless device”) includes traffic associated with (directed to) the other wireless device (e.g., TCP “ACK” packets). SAMSUNG-1046, 7; SAMSUNG-1003, ¶[409].

F. Ground 2: Jobs-Jones-Rao-Bocking-Cunningham renders claim 26 obvious

1. Jobs-Jones-Rao-Bocking-Cunningham

(a) Combination

As discussed in §III.B.1.b, JJRBD is a mobile device. While Jobs provides a single example service plan, it is silent regarding other service plan options. SAMSUNG-1005, [0002]; SAMSUNG-1003, ¶[204]. As discussed in §III.C.1.b, a POSITA would have looked to references such as Cunningham, which describes calling plans used by mobile devices to allow the mobile devices to use different types of calling plans. SAMSUNG-1010, [0012]; §III.C.1.b; SAMSUNG-1003, ¶[204]. Jobs explains that users of portable communication devices “typically enter into service contracts with service providers for voice and/or data services.” SAMSUNG-1005, [0002]. For details regarding service plans, a POSITA would

have looked to references such as Cunningham, which discloses service plan business models and addresses service suspension. SAMSUNG-1010, Abstract; SAMSUNG-1003, ¶[204].

The components of JJRBCD each operate as they would in isolation. SAMSUNG-1003, ¶[205]. JJRBCD includes the components of JJRBD that are governed by the service plans of Cunningham. §III.B.1.b; §III.C.1.a; SAMSUNG-1003, ¶[205].

A POSITA would have a reasonable expectation of success in creating the combination, which would have required only routine programming knowledge well within the skill of a POSITA. SAMSUNG-1003, ¶¶[206]-[207]. Indeed, the change would have amounted to nothing more than the use of a known technique to improve similar mobile devices in a similar way and combining prior art elements according to known methods to yield the predictable results described above. *Id.*; *KSR*, 550 U.S., 417.

2. Analysis

[26.1]

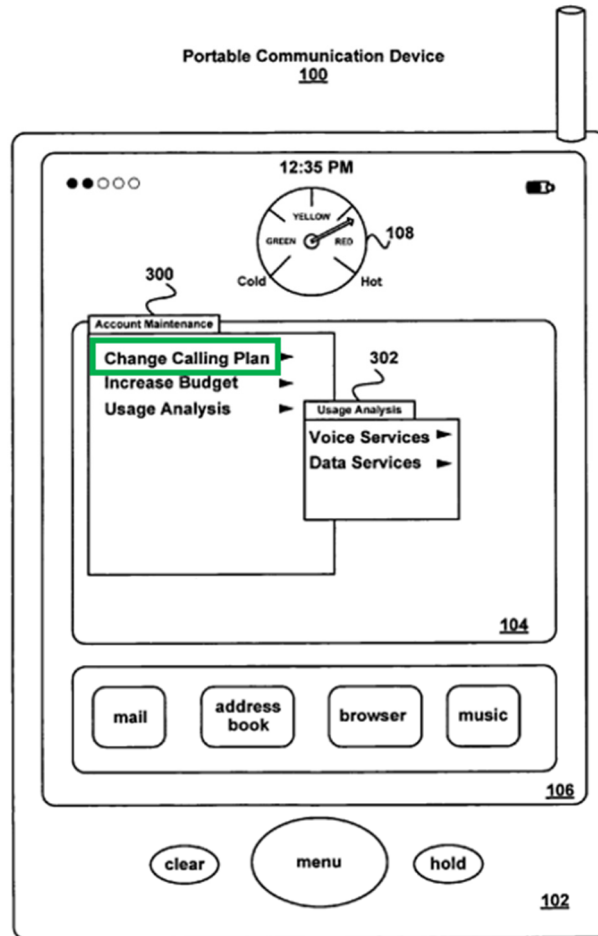
For the reasons described in §III.A.2.[1.1], JJRBCD is a wireless device that renders [26.1] obvious. SAMSUNG-1005, [0016]; §III.F.1.a; §III.A.2.[1.1]; SAMSUNG-1003, ¶[410].

[26.2]

The structure for “means for obtaining” includes a user interface and a processor configured to provide the user with information and accept user choices or preferences on, e.g., service plan selection or change, and/or other service-related information, settings, and/or options. SAMSUNG-1001, 27:15-29; 28:41-48, 65:41-51; §I.C.2.[26.2]; SAMSUNG-1003, ¶[411]. The JJBBCD renders obvious this element. §I.C.2.[26.2]; SAMSUNG-1003, ¶[411].

Per Jobs, JJBBCD includes “*processors* 518 [that] run various software components stored in the medium” to perform various functions for the device including “a graphics module 528” that includes software components for “*displaying graphical objects in a GUI/display surface.*” SAMSUNG-1005, [0046], [0049]. The display communicates with the processing system via a multi-touch sensitive screen controller “which includes various components for *processing user input.*” SAMSUNG-1005, [0053]; SAMSUNG-1003, ¶[412].

JJBBCD includes a user interface for obtaining user input specifying a policy, per Jobs. SAMSUNG-1003, ¶[413]. Per Jobs, JJBBCD’s UI includes a pull-down menu “containing account-related options ... including ... changing a billing plan [and] increasing budget for a service account.” SAMSUNG-1005, [0029]. A POSITA would have found obvious that JJBBCD’s pull-down menu (per Jobs) causes JJBBCD to obtain user input from the pull-down menu. SAMSUNG-1005, [0029]; SAMSUNG-1003, ¶¶[413]-[414], citing SAMSUNG-1044, 5:12-25.



SAMSUNG-1005, FIG. 3 (annotated).

Thus, JJRBCD's user interface and processor obtain, through a user interface, user input specifying an aspect of the service policy (access privileges, e.g., "volume limitations"). SAMSUNG-1005, [0029]; SAMSUNG-1003, ¶[415].

[26.3]

For the reasons discussed in §III.A.2.[1.5], JJRBCD renders [26.3] obvious. SAMSUNG-1003, ¶[416]. Additionally, per Cunningham ("when the usage exceeds the expected payment, the service can be limited or disabled until the next

payment cycle”), when JJBDC exhausts its data allocation (set by policy), JJBDC blocks further transmission, reducing data usage. SAMSUNG-1010, [0050]; SAMSUNG-1003, ¶[416].

[26.4]

For the reasons discussed in §III.A.2.[1.6], JJBDC renders [26.4] obvious. SAMSUNG-1003, ¶[417].

Additionally, per Jobs, JJBDC includes service activities such as data access (e.g., backup, per Jones), SMS, and telephony. SAMSUNG-1005, [0019]; SAMSUNG-1006, 5:4-19; §III.A.1.a; §III.A.1.b; §III.A.1.d. Therefore, a POSITA would have understood that the first service activity (backup), is less than all service activities. SAMSUNG-1003, ¶[418].

[26.5]

For the reasons discussed in §III.A.2.[1.7], JJBDC renders [26.5] obvious. SAMSUNG-1003, ¶[419].

Additionally, Jobs explains that users of mobile devices “typically enter into service contracts with service providers for voice and/or data services,” and Cunningham describes a business model of a wireless provider. SAMSUNG-1005, [0002]; SAMSUNG-1010, [0039]. A POSITA would have understood that, since the service contract applies to a particular service provider (per Jobs), the service

contract does not apply to a different provider. SAMSUNG-1005, [0002]; SAMSUNG-1010, [0043]; SAMSUNG-1003, ¶[420]. Therefore, the first service activity (e.g., backup) is controlled differently on the first network (to which the contract applies) than on a second network (to which the contract does not apply). SAMSUNG-1003, ¶[420].

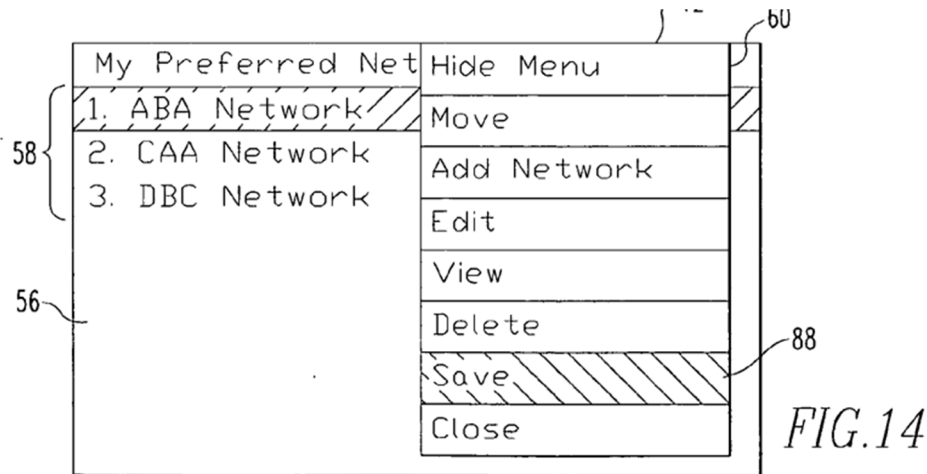
[26.6]

For the reasons discussed in §III.A.2.[1.10], JJRBCD renders [26.6] obvious. SAMSUNG-1003, ¶[421].

Additionally, the structure for the “means for identifying” of [26.6] includes a processor configured to recognize the type of network to which the device is currently connecting, e.g., using a local or network table. SAMSUNG-1001, 51:4-13; §I.C.2.[26.6]; SAMSUNG-1003, ¶[422]. JJRBCD renders obvious this element. SAMSUNG-1003, ¶[422].

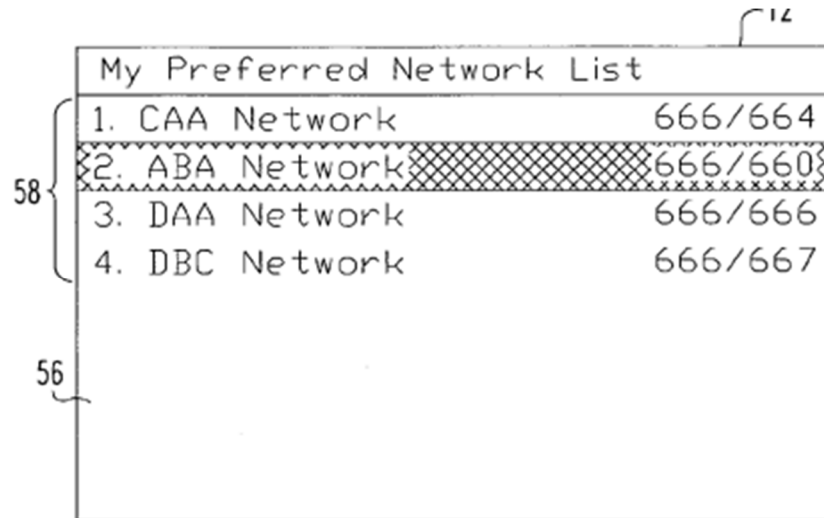
Per Jobs, JJRBCD includes “*processors* 518 [that] run various software components stored in the medium 502 to perform various functions for the device,” including “a communication module 524” that facilitates communication with other devices, and includes various “software components for handling the transmission and receipt of data via the RF circuitry.” SAMSUNG-1005, [0046], [0048]. A POSITA would have understood that identifying a wireless network is an example of facilitating communication. SAMSUNG-1003, ¶[423].

Per Bocking, JJRBCD maintains a table of preferred networks. SAM-
SUNG-1009, [0024]-[0029], FIGS. 14, 18-20; SAMSUNG-1003, ¶[424].



SAMSUNG-1009, FIG. 14.

Bocking explains a user can manually add a PLMN, select a PLMN from a group of known networks, and/or “add a PLMN to the listing by selecting the PLMN from a group of available networks, which the device is “able to locate from its current location using communications subsystem 45 and a known network scanning procedure.” SAMSUNG-1009, [0026]-[0028]. An example list is illustrated in FIG. 19. SAMSUNG-1009, [0029], FIG. 19; SAMSUNG-1003, ¶[425]-[426].



SAMSUNG-1009, FIG. 19.

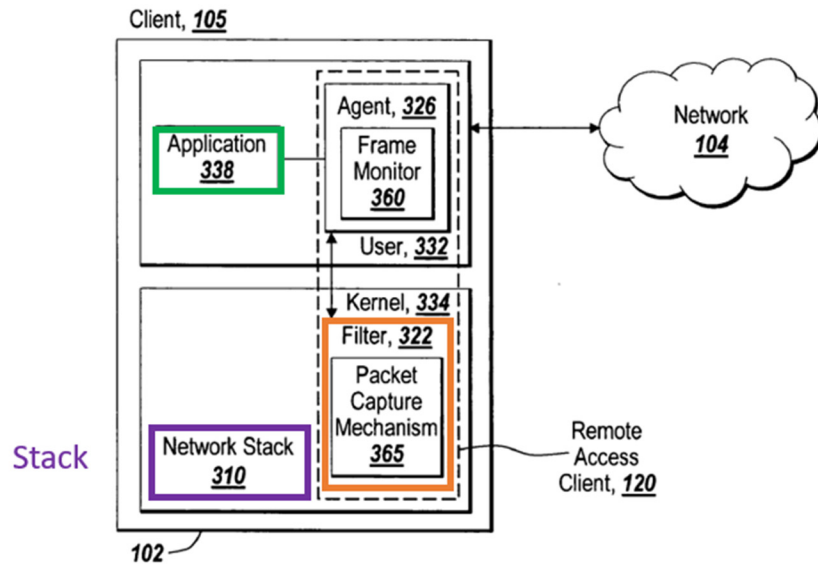
Per Bocking, JJRBCD “utilize[s] the preferred networks for performing wireless communications when the device is in a roaming situation, wherein the preferred networks are utilized in a priority order that is based on the priority value assigned to each of the preferred networks.” SAMSUNG-1009, Abstract, [0010], [0013]. A POSITA would have understood that, when the device is connecting to a network, the device does so based on the list of preferred networks that are “utilized in priority order,” per Bocking. SAMSUNG-1009, Abstract, [0010], [0013], [0026]-[0028]; SAMSUNG-1003, ¶[427]. Therefore, a POSITA would have understood that JJRBCD recognizes, or identifies, the network it is currently connecting to by looking up the network in the list of preferred networks. SAMSUNG-1003, ¶[428].

[26.7]

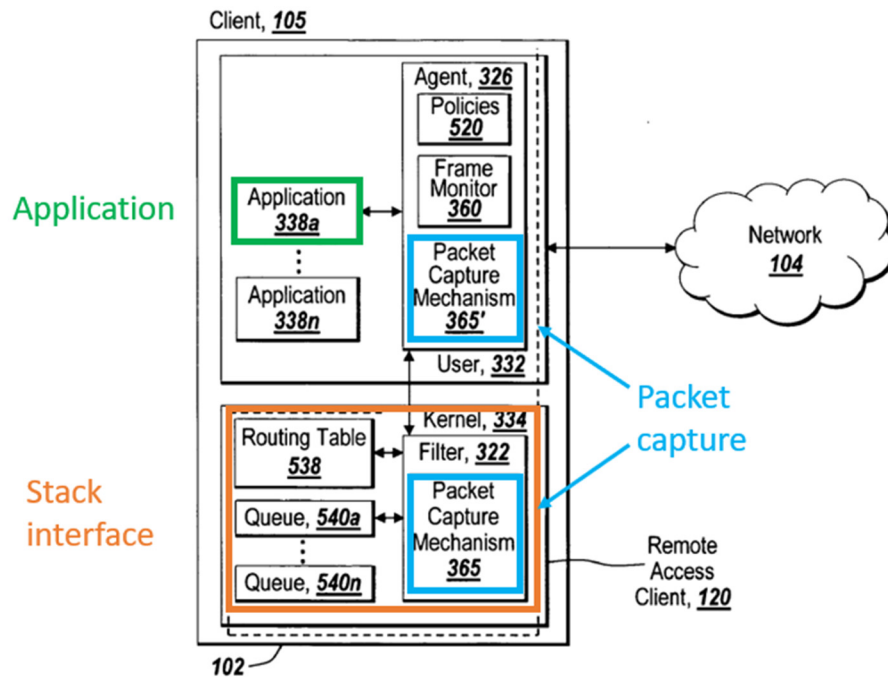
The structure for [26.7]’s “means for identifying” of [26.7] includes a processor configured implement traffic inspection points between the applications and the networking stack application interface using a T-buffer at socket connections and feed the side traffic into a traffic flow analyzer. SAMSUNG-1001, 29:10-32, 53:51-55, 53:58-63, FIG. 16; §I.C.2.[26.7]; SAMSUNG-1003, ¶[429]. JJRBCD renders obvious this element. SAMSUNG-1003, ¶[429].

Per Jobs, JJRBCD includes processors that “run various software components stored in the medium 502 to perform various functions for the device.” SAMSUNG-1005, [0046]. A POSITA would have understood that identifying attempted data communication is a device function. SAMSUNG-1003, ¶[430].

Per Rao, JJRBCD implements traffic inspection points between the applications and the networking stack application interface. SAMSUNG-1003, ¶¶[431]-[432]. Rao explains that “filter 322 intercepts all outbound packets of the client 105 for inspection” and the “filtering table is used to determine what action to take against packets, such as packets intercepted by the packet capture mechanism.” SAMSUNG-1007, [0102], [0105]. Per Rao, JJRBC’s RAC “store[s] a captured IP packet in a buffer.” SAMSUNG-1007, [0111]; SAMSUNG-1003, ¶[431]. Rao illustrates the packet capture mechanism and filter (together serving as traffic inspection points), in FIGS. 1C and 5A, reproduced below. SAMSUNG-1007, FIGS. 1C, 5A; SAMSUNG-1003, ¶¶[431]-[432].



SAMSUNG-1007, FIG. 1C(annotated).



SAMSUNG-1007, FIG. 5A(annotated)

A POSITA would have understood that packets sent by an application and

captured before reaching the network stack are attempted and/or successful data communication from the application. SAMSUNG-1003, ¶[433].

[26.8]

The structure for “means for applying” includes a processor configured perform a service control that reduces traffic speed for all applications and traffic types successively until the service usage projections are within service usage limits for the present service billing period. SAMSUNG-1001, 48:38-49:1; §I.C.2.[26.8]; SAMSUNG-1003, ¶[434]. JIRBCD renders obvious this element. SAMSUNG-1003, ¶[434].

Per Jobs, JIRBCD includes processors that “run various software components stored in the medium 502 to perform various functions for the device 500.” SAMSUNG-1005, [0046]. A POSITA would have understood that applying policy is a device function. SAMSUNG-1003, ¶[435].

Per Cunningham, JIRBCD evaluates the data access threshold (first service policy), and in response to determining that usage exceeds the threshold, applies the policy by reducing traffic speed to zero (blocking access). SAMSUNG-1010, [0050]; SAMSUNG-1003, ¶[436]. Thus, by disabling access for the remainder of the month, JIRBCD is reducing traffic speed for all applications and service types. SAMSUNG-1010, [0050]; SAMSUNG-1003, ¶[436].

IV. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

A. §325(d)

Discretionary denial under the Board's §325(d) *Advanced Bionics* analysis is not warranted. *See Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6, 8-9 (2/13/2020) (precedential).

Prior art references Jones, Bocking, Padmanabhan, and Ibrahim were not previously before the Office; therefore, the combinations presented in this Petition were never previously considered. While Jobs and a relative of Rao (WO2006/012610A2) were cited on the face of the '110 Patent, no evidence exists that the Office substantively considered these references among the nine columns of references listed in the '110 Patent. SAMSUNG-1001, 2-6; *generally*, SAMSUNG-1002. Moreover, the same or substantially the same arguments were not previously presented to the Office. *Id.* Indeed, no overlap between arguments made before the Office could exist because the Examiner issued no prior art rejections.

Moreover, the second prong is not met. *Advanced Bionics*, 8-10. The Examiner offered no prior art rejections or substantive discussion of any prior art reference. *See, generally*, SAMSUNG-1002. While Jobs and Rao's family were cited on the face of the '110 Patent, none of Jones, Bocking, Padmanabhan or Ibrahim, or the obviousness of the Challenged Claims in view of those references was ever previously addressed. As highlighted herein, the Examiner did not appreciate Rao and

Jobs and how they, in combination with other prior art not previously before the Office, render the Challenged Claims obvious. Moreover, Petitioner has shown a reasonable likelihood that it would prevail that at least one of the Challenged Claims is unpatentable based on the current record. §III.A-F; *Tokyo Ohka Kogyo Co., Ltd. v. Fujifilm Elec. Materials U.S.A., Inc.*, PGR2022-00010, Paper 9, 8-9 (6/6/2022). Thus, Petitioner has demonstrated material error by the Office, and discretionary denial is not warranted.

B. §314(a)

Petitioner's arguments are compelling with substantial supporting evidence, which "alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*." SAMSUNG-1019, 4-5. Moreover, the *Fintiv* factors do not favor denial.

Factor 1 is neutral; neither party has requested a stay in co-pending litigation.

Factor 2 is neutral; the Court's trial date is speculative and subject to change. The Board will likely issue its Final Written Decision around March 2026, approximately 5 months after the scheduled trial (10/6/2025). SAMSUNG-1017, 1. However, as the Board and Director have previously understood, "scheduled trial dates are unreliable and often change." SAMSUNG-1019, 8.

Factor 3 favors institution; Petitioner filed this Petition months ahead of the

one-year time bar, while litigation is in its early stages. Beyond exchanging preliminary infringement/invalidity contentions, the parties and the District Court have yet to expend significant resources on invalidity.

Factor 4 favors institution because Petitioner has provided a stipulation that it will not pursue the IPR grounds in the EDTX Litigation. SAMSUNG-1018. Thus, “[i]nstituting trial here serves overall system efficiency and integrity goals by not duplicating efforts and by resolving materially different patentability issues.” *Apple, Inc. v. SEVEN Networks, LLC*, IPR2020-00156, Paper 10, 19 (6/15/2020); see *Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24, 12 (6/16/2020).

Factor 5: The parties in the parallel litigation are the same.

Factor 6 favors institution; the Petition’s merits are compelling.

V. CONCLUSION AND FEES

The Challenged Claims are unpatentable. Petitioner authorizes charge of fees to Deposit Account 06-1050.

VI. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(a)(1)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Samsung”) are the real parties-in-interest.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

The '110 Patent is the subject of civil action Headwater Research LLC v. Samsung Electronics Co., Ltd. et al., 2-23-cv-00641 (EDTX), filed December 29, 2023 (SAMSUNG-1004). Petitioner is not aware of any other disclaimers, reexamination certificates, or IPR petitions addressing the '110 Patent.

C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

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D. Service Information

Please address all correspondence and service to the address listed above. Petitioner consents to electronic service by email at IPR39843-0179IP1@fr.com (referencing No. 39843-0179IP1 and cc'ing PTABInbound@fr.com, axf-ptab@fr.com, jjm@fr.com and jjh@fr.com).

Attorney Docket No. 39843-0179IP1

IPR of U.S. Patent No. 8,588,110

Respectfully submitted,

Dated August 28, 2024

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,982 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated August 28, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on August 28, 2024, a complete and entire copy of this Petition for *In-ter Partes* Review and all supporting exhibits were provided by Federal Express, to the Patent Owner, by serving the correspondence address of record as follows:

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