

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Graham Merrett
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Title: WIRELESS MESSAGING METHOD AND SERVER

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**PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT
NO. 11,991,601 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42**

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LIST OF EXHIBITS

APPLE-1001	U.S. Patent No. 11,991,601 (“the ’601 Patent”)
APPLE-1002	File History of U.S. Patent No. 11,991,601
APPLE-1003	Expert Declaration of Dr. Patrick Traynor, Ph.D.
APPLE-1004	U.S. Pub. No. 2007/0254681 (“Horvath”)
APPLE-1005	U.S. Pub. No. 2004/0203956 (“Tsampalis”)
APPLE-1006	U.S. Pub. No. 2002/0173308 (“Dorenbosch”)
APPLE-1007	Chatterjee et al., “Instant Messaging and Presence Technologies for College Campuses.” IEEE Network, May/June 2005. (“Chatterjee”)
APPLE-1008	U.S. Pub. No. 2005/0243978 (“Son”)
APPLE-1009	UK Pub. No. 2432482 (“Beaumont”)
APPLE-1010	RESERVED
APPLE-1011	U.S. Patent No. 6,940,844 (“Purkayastha”)
APPLE-1012	U.S. Patent No. 7,702,342 (“Duan”)
APPLE-1013	RESERVED
APPLE-1014	U.S. Pub. No. 2006/0286984 (“Bonner”)
APPLE-1015	RESERVED
APPLE-1016	U.S. Pub. No. 2005/0037762 (“Gurbani”)
APPLE-1017 – APPLE-1023	RESERVED
APPLE-1024	U.S. Patent No. 7,171,190 (“Ye”)
APPLE-1025	Qi et al., 2004, July. “Multimedia Messaging Service.” Available at

https://www.zte.com.cn/global/about/magazine/zte-communications/2004/1/en_68/162264.html (“Qi”)

APPLE-1026 – APPLE-1028 RESERVED

APPLE-1029 U.S. Pub. No. 2008/0292080 (“Quon”)

APPLE-1030 U.S. Provisional Application No. 60/814,150 (“Quon-Prov”)

APPLE-1031 RESERVED

APPLE-1032 U.S. Pub. No. 2008/0261577 (claiming priority to Provisional App. No. 60/913,187) (“Celik”)

APPLE-1033 U.S. Provisional App. No. 60/913,187

APPLE-1034 – APPLE-1036 RESERVED

APPLE-1037 T-Mobile webpage <https://www.t-mobile.com/home-internet/the-signal/internet-help/the-complete-wifi-history>

APPLE-1038 – APPLE-1041 RESERVED

APPLE-1042 U.S. Pub. No. US 2008/0153459 (“Kansal”)

APPLE-1043 – APPLE-1044 RESERVED

APPLE-1045 Trillian Pro v1.0 webpage (“Trillian”)

APPLE-1046 U.S. Pub. No. 2007/0054627 (“Wormald”)

APPLE-1047 – APPLE-1049 RESERVED

APPLE-1050 U.S. Pub. No. 2005/0233737 (“Lin”)

APPLE-1051 RESERVED

APPLE-1052 U.S. Patent No. 9,036,620 (“Procopio”)

APPLE-1053 U.S. Patent. No. 9,467,530 (“Belimpasakis”)

APPLE-1054 U.S. Patent No. 7,069,008 (“Hill”)

APPLE-1055 U.S. Pub. No. 2005/0125547 (“Ahonen”)

APPLE-1056 – APPLE-1058 RESERVED

APPLE-1059 U.S. Pub. No. 2006/0129643 (“Nielson”)

APPLE-1060 RESERVED

APPLE-1061 U.S. Pub. No. 2007/0290787 (“Fiatal”)

APPLE-1062 U.S. Pub. No. 2005/0149620 (“Kirkland”)

APPLE-1063 U.S. Pub. No. 2009/0325609 (“Rosen”)

APPLE-1064 U.S. Patent No. 7,117,445 (“Berger”)

APPLE-1065 – APPLE-1067 RESERVED

APPLE-1068 U.S. Pub. No. 2002/0006793 (“Kun-Szabo”)

APPLE-1069 U.S. Patent No. 6,678,524 (“Hansson”)

APPLE-1070 – APPLE-1071 RESERVED

APPLE-1072 U.S. Pub. No. 2008/0310425 (“Nath”)

APPLE-1073 RESERVED

APPLE-1074 U.S. Pub. No. 2008/0263137 (“Pattison”)

APPLE-1075 U.S. Pub. No. 2014/0258423 (“Schaedler”)

APPLE-1076 U.S. Pub. No. 2008/0311888 (“Ku”)

APPLE-1077 – APPLE-1078 RESERVED

APPLE-1079 U.S. Pub. No. 2005/0102328 (“Ring”)

APPLE-1080 U.S. Pub. No. 2007/0061405 (“Keohane”)

APPLE-1081 U.S. Pub. No. 2005/0037762 (“Gurbani”)

APPLE-1082 European Application Publication EP 1744527 (“Satzke”)

APPLE-1083 U.S. Patent No. 7,254,614 (“Mulligan”)

APPLE-1084 – APPLE-1086 RESERVED

APPLE-1087 U.S. Pub. No. 2008/0045214 (“Wen”)

APPLE-1088 U.S. Pub. No. 2006/0185003 (“Laitinen”)

APPLE-1089 – APPLE-1099 RESERVED

APPLE-1100 Complaint, *HBCU Messaging US LP v. Apple, Inc. et al.*, 1-24-cv-01199 (WDTX) (Oct. 7, 2024)

APPLE-1101 Infringement Charts of the ’601 Patent

LISTING OF CLAIMS

Claim 1	
1pre	A method performed by a mobile wireless device, the method comprising:
1a	receiving a short message service (SMS) message indicating a client program or an enhanced message service (EMS) message indicating the client program, when a phone number associated with the mobile wireless device is not associated with a subscriber of a service associated with the client program at the time of receiving the SMS message or the EMS message;
1b	downloading the client program on the mobile wireless device;
1c	authenticating, via the client program, the phone number associated with the mobile wireless device to the service via SMS protocol;
1d	after the authenticating: transmitting, via the client program, first information comprising a first phone number;
1e1	receiving, via the client program, a first response to the transmitting of the first information,
1e2	wherein the first response indicates that the first phone number is associated with a subscriber of the service;
1f	transmitting, via the client program and a wireless local area network (WLAN), based on the first response, first message content, to a mobile wireless device associated with the first phone number;
1g	transmitting, via the client program, second information comprising a second phone number,
1h	wherein the second phone number is not associated with a subscriber of the service; and

1i	inserting, via the client program, second message content into a message for delivery to a mobile wireless device associated with the second phone number, wherein the second message content is received by the mobile wireless device associated with the second phone number via SMS or EMS protocol;
1j	wherein the service is a service for exchanging message content between subscribers;
1k	wherein the service restricts third parties from receiving certain subscriber information absent subscriber consent.
Claim 2	
2	The method of claim 1, further comprising: receiving an SMS message, including content originated by a subscriber of the service, subsequent to the phone number associated with the mobile wireless device being authenticated to the service.
Claim 3	
3	The method of claim 1, wherein the first message content includes one or more images.
Claim 4	
4	The method of claim 1, wherein the service is adapted to identify a subscriber based on a phone number absent user input of a username and absent user input of an email address.
Claim 5	
5	The method of claim 1, wherein the client program is adapted to send a message to a subscriber based on each one of a user name, phone number and email address.
Claim 6	
6	The method of claim 1, wherein a server of the service which maintains a subscriber list is located outside of a cellular network.
Claim 7	

7pre	The method of claim 1, further comprising:
7a	transmitting, via the client program, third information comprising a third phone number; and
7b	receiving, via the client program, an indication that a user name associated with the third phone number is associated with a subscriber of the service.
Claim 8	
8	The method of claim 1, wherein the client program automatically determines whether a phone number is associated with a subscriber and when a phone number is not associated with a subscriber, the client program is adapted to provide an invitation, via SMS, for a non-subscriber to subscribe to the service.
Claim 9	
9	The method of claim 1, wherein the service distinguishes between active and inactive subscribers.
Claim 10	
10	The method of claim 1, wherein the second message content includes an invitation to subscribe to the service.
Claim 11	
11	The method of claim 1, wherein the second message content includes a universal resource locator (URL) indicative of the service.
Claim 12	
12pre	The method of claim 1, wherein the client program is adapted to:
12a	receive as input, address information consisting of a third phone number;
12b	receive as input, address information consisting of a fourth phone number;

12c	send a group message, via a packet switched bearer, to a plurality of mobile wireless devices, based on the third phone number and the fourth phone number.
Claim 13	
13	The method of claim 1, further comprising: receiving, via the client program, at least one message from at least one subscriber, via a push model.
Claim 14	
14	The method of claim 1, wherein the certain subscriber information is comprised of contact information, wherein the contact information is information used to send messages to the client program.
Claim 15	
15	The method of claim 1, wherein, based on a second response, the mobile wireless device associated with the second phone number receives an SMS message having content originated via the client program.
Claim 16	
16	The method of claim 1, wherein the first message content includes at least one of an image, video or animation.
Claim 17	
17	The method of claim 1, wherein the first phone number is retrieved, by the client program, from a message being composed.
Claim 18	
18pre	A server system for supporting a plurality of client programs, the server system comprising:
18a	a storage device;
18b	and a network interface that supports Internet Protocol (IP): wherein the server system:

18c	authenticates a phone number associated with a first mobile wireless device, upon which a client program operates, to a service for sending and receiving packet switched messages, via short message service (SMS) protocol;
18d	adds the phone number to a subscriber list, stored on the storage device, based on the authentication;
18e	receives information, from the client program, comprising a numeric identifier;
18f	determines that a user name is associated with the numeric identifier;
18g	sends a response, to the client program, the response indicating that the user name associated with the numeric identifier is associated with a subscriber of the service;
18h	receives content originated from the client program, via the network interface, and provides the content to another client program operable on a second mobile wireless device associated with the user name;
18i	receives a first phone number, from the client program;
18j1	provides a first response to the receipt of the first phone number
18j2	indicating that the first phone number corresponds to a subscriber of the service;
18k1	receives a second phone number, from the client program and
18k2	determines that the second phone number does not correspond to a subscriber of the service;
18l	wherein the client program is adapted to insert message content into a message to be sent to a third mobile wireless device which is not associated with a subscriber of the service, wherein the message to be sent is addressed to a phone number.
Claim 19	
19	The server system of claim 18, wherein the server system routes graphical content between subscribers.

Claim 20	
20	The server system of claim 18, wherein the client program is adapted to send messages based on voice input.
Claim 21	
21	The server system of claim 18, wherein the user name comprises an @ symbol.
Claim 22	
22	The server system of claim 18, wherein the server system receives another request, from the first mobile wireless device, the another request comprising an email address; wherein the server system determines whether the email address of the another request is on the subscriber list and provides a response to the another request.
Claim 23	
23	The server system of claim 18, wherein the server system does not disclose certain information to third parties absent user consent.
Claim 24	
24	The server system of claim 18, wherein the numeric identifier is in a format of a phone number.
Claim 25	
25pre	A system comprising:
25a	a base station; and
25b	a server system that:
25c	receives a subscription message, from a first mobile wireless device having a message client, the subscription message indicating that the first mobile wireless device is subscribing to a service for sending and receiving messages other than Short Message Service (SMS) messages, Enhanced Messaging Service (EMS) messages and Multimedia Messaging Service (MMS) messages;

25d	receives a first request, from the first mobile wireless device via the base station, the first request comprising a numeric identifier in the format of a phone number, wherein the numeric identifier is retrieved, by the first mobile wireless device, from a message being composed;
25e	determines that an email address is associated with the numeric identifier and that the email address is associated with a second mobile wireless device;
25f1	sends, based on the determination that the email address is associated with the second mobile wireless device, a first response to the first request, to the first mobile wireless device,
25f2	the first response indicating that a message to the second mobile wireless device is to be sent via the service;
25g	receives a second request, from the first mobile wireless device, the second request comprising another phone number which is different than the numeric identifier; and
25h	sends a second response to the second request, to the first mobile wireless device, the second response indicating that a message to a third mobile wireless device is not to be sent via the service.
Claim 26	
26	The system of claim 25, wherein the server system determines that the second mobile wireless device is inactive, subsequent to the second response being sent; wherein the server system provides information indicating that messages to the second mobile wireless device should not be sent via the service, to a plurality of mobile wireless devices.
Claim 27	

27	The system of claim 25, wherein the server system performs a short message service (SMS) based authentication procedure on a phone number associated to the first mobile wireless device and adds the phone number associated to the first mobile wireless device to a subscriber address list subsequent to the SMS based authentication procedure; wherein at least one message to the second mobile wireless device is routed via the email address and via the service.
Claim 28	
28	The system of claim 25, wherein a plurality of mobile wireless devices are associated with the numeric identifier.
Claim 29	
29	The system of claim 28, wherein the server system receives message content from the first mobile wireless device and provides the message content to each one of the plurality of mobile wireless devices associated with the numeric identifier.
Claim 30	
30	The system of claim 25, wherein the second response to the second request indicates that a message being composed on the first mobile wireless device should be sent via SMS; wherein at least one message to the second mobile wireless device is routed via the email address and via the service.

I. INTRODUCTION

Apple Inc. (“Apple” or “Petitioner”) petitions for IPR of claims 1-30 (“Challenged Claims”) of U.S. Patent No. 11,991,601 (“the ’601 Patent”).

II. REQUIREMENTS FOR IPR

A. Grounds for Standing

Apple Inc. certifies that the ’601 Patent is available for IPR. Petitioner is not barred or estopped from requesting this review challenging the Challenged Claims on the below-identified grounds.

B. Challenge and Relief Requested

Apple requests institution of IPR and cancellation of the Challenged Claims based on the following ground:

Ground	’601 Patent Claims	§ 103 Basis
1	1-30	Horvath-Tsampalis-Kansal-Quon

Ground 1 is further supported by the expert testimony of Dr. Patrick Traynor (APPLE-1003) and corroborating evidence.

The ’601 Patent’s earliest claimed priority date is July 24, 2007, which Petitioner treats as the Critical Date without conceding the propriety of the claim. APPLE-1003, ¶¶17-18.

Reference	Filing Date	Publication Date
Horvath (APPLE-1004)	05/01/2006	11/01/2007
Tsampalis	12/31/2002	10/14/2004

(APPLE-1005)		
Kansal (APPLE-1042)	12/19/2006	6/26/2008
Quon (APPLE-1029)	05/22/2007	11/27/2008

C. Level of Ordinary Skill in the Art

A person of ordinary skill in the art relating to the subject matter of the '601 Patent as of the Critical Date ("POSITA") would have had at least a bachelor's degree in computer science, electrical engineering, computer engineering, or a related field, with 2-3 years of industry experience in computer networking and wireless telecommunications. APPLE-1003, ¶21. Additional graduate education could substitute for professional experience, and *vice versa*. *Id.*

III. SUMMARY OF THE '601 PATENT

A. Brief Description

The '601 Patent describes wireless messaging techniques that allow a sending wireless device to selectively transmit an outgoing message via either a packet switched bearer or a circuit switched bearer based on whether the recipient is determined to be a subscriber of a service for receiving messages via the packet switched bearer. APPLE-1001, 3:8-48, Abstract; APPLE-1003, ¶¶24-25.

FIG. 1 is a diagram of the messaging system:

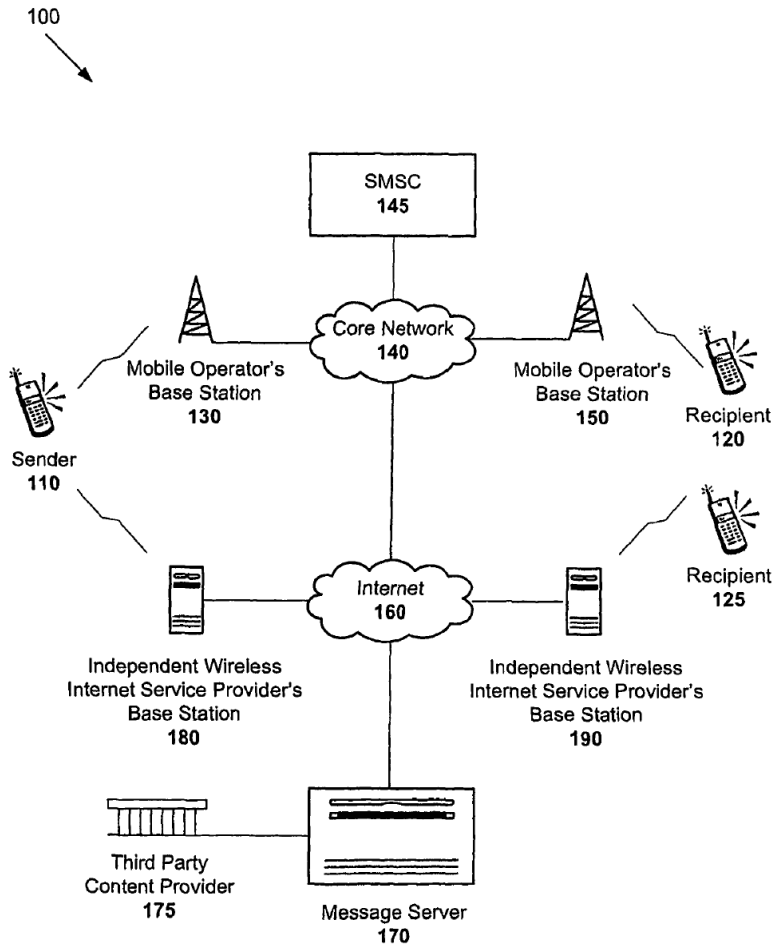


FIG. 1

APPLE-1001, FIG. 1

B. Claim Construction

Petitioner submits that no formal constructions are presently necessary for purposes of demonstrating obviousness of the Challenged Claims based on Ground

1. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011).

This Petition demonstrates that the prior art renders obvious the claims when

applied in a manner consistent with disclosures of the '601 Patent and Patent Owner's allegations of infringement before the district court. *See generally* APPLE-1101.

IV. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. GROUND 1 – Horvath-Tsampalis-Kansal-Quon Renders Obvious Claims 1-30

1. Analogous Art

Horvath, Tsampalis, Kansal, and Quon are all analogous art, each being in the field of endeavor (mobile messaging over wireless networks) and reasonably pertinent to the problems said to be addressed by the '601 Patent. APPLE-1003, ¶27; APPLE-1001, Title, Abstract; APPLE-1004, Title, Abstract; APPLE-1005, Title, Abstract; APPLE-1042, Abstract; APPLE-1029, [0006]; *infra*, §IV.A.3; *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). Like the '601 Patent, Horvath, Tsampalis, Kansal, and Quon each seek to provide users with a wider range of messaging options. APPLE-1001, 3:21-28; *See* APPLE-1004, [0009]; APPLE-1005, [0065]; APPLE-1042, [0009]; APPLE-1029, [0006], [0027]; APPLE-1003, ¶27.

2. Proposed Combination

(a) Horvath¹ (APPLE-1004)

¹ Emphasis and annotations are each added unless otherwise indicated.

Horvath discloses “transmitting short message service messages” with “a wireless device” over “a packet-data network 102 and a circuit-services network 104.” *See e.g.*, APPLE-1004, Title, [0001]-[0002], [0007], [0024]-[0026], [0033], FIGS. 1, 2. Horvath’s wireless device (*e.g.*, “wireless device 106”) is “a dual mode device capable of communicating on either the packet-data network 102 or the circuit-services network 104,” “based on [a] registration status of the wireless device.” APPLE-1004, [0007]-[0008], [0024], [0061], FIGS. 1 (below), 2, 6, 7. That is, if a wireless device is registered on a packet-data network, it will send and receive messages via an information processing system over the packet-data network, and otherwise will send and receive messages via the information processing system over the circuit-services network. *Id.*; APPLE-1003, ¶¶28-31.

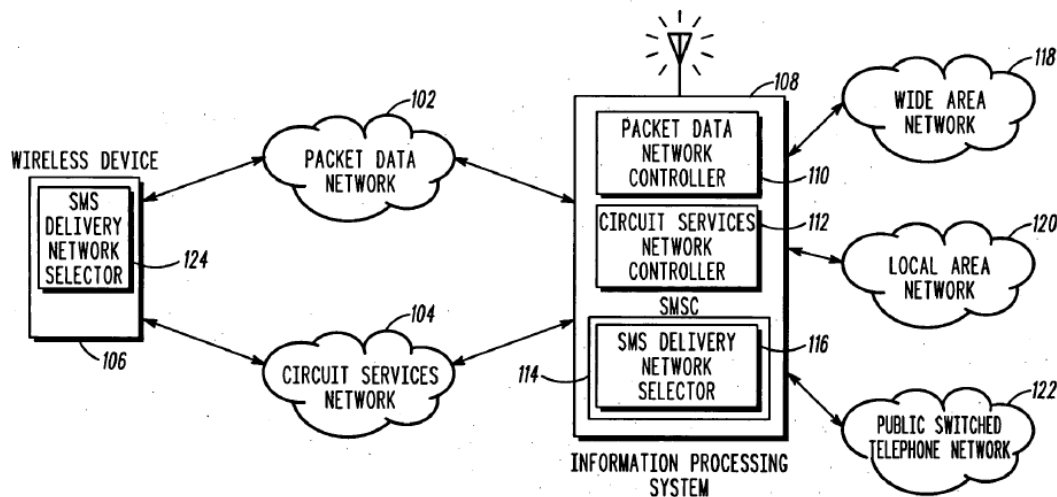
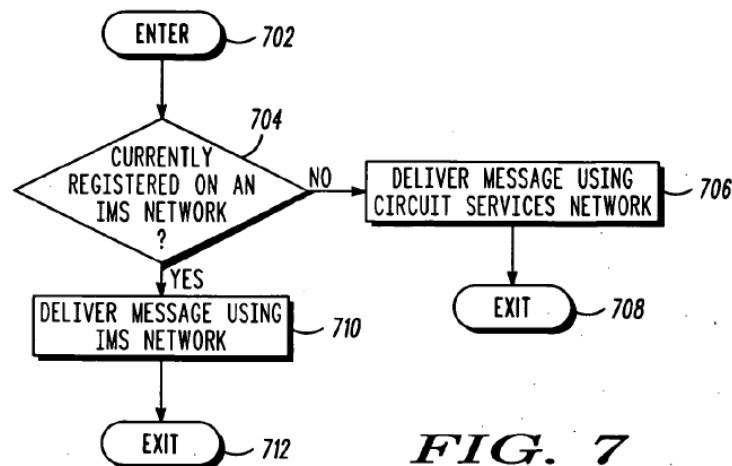


FIG. 1

APPLE-1004, FIG. 1

As shown in FIG. 1, wireless device 106 exchanges messages with remote recipient devices, as sender or receiver, via information processing system 108. See APPLE-1004, [0024], [0028]-[0029], [0074]-[0078], FIGS. 1, 6-7. When instructed to send an SMS message (*i.e.*, operating as a sender device), “the wireless device 106 first determines if it [*i.e.*, the sending wireless device] is registered on the packet-data network 102,” and based on this determination, an “SMS delivery network selector 124” residing on the wireless device 106 “selects a network 102, 104 for the wireless device 106 to transmit [the] SMS message on.” APPLE-1004, [0050], [0062], [0078], FIGS. 1, 4, 7.



APPLE-1004, FIG. 7 (sender device perspective)

Although Horvath focuses on the selective use of packet-data or circuit-services bearers for delivery of SMS messages, Horvath notes that wireless device 106 can transmit other types of messages as well, including instant messages (“IM”). APPLE-1004, [0025], [0033] (“The SIP network is used for establishing

instant messaging, ... and other real-time communications over the Internet”),
[0038]-[0039]. With this, Horvath encourages operation of a session initiation
protocol (“SIP”) network atop the packet-data network 102 to establish
communication sessions and carry messages between wireless devices and a server
when the circuit-services network 104 is not used. *Id.*, [0041], [0050], FIG. 5.

Per Horvath, message requests are first routed to a server system (*e.g.*,
information processing system 108) including a “Short Message Service Center
(‘SMSC’ [114]).” APPLE-1004, [0045]-[0047], FIGS. 1-2. SMSC 114, utilizing
its “SMS delivery network selector 116,” “selects either the packet-data network
102 or the circuit-services network 104 for delivery of a SMS message” based on
whether the intended recipient of the message is currently registered with the
packet-data network 102.² *Id.*, Abstract, [0002], [0006], [0008], [0028], [0033]-
[0038], [0045]-[0047], [0053], [0075]-[0076], FIGS. 1, 2, 3, 6. When available,
Horvath delivers messages to wireless devices over a packet-data network rather
than a circuit-services network to reduce the amount of traffic transmitted over the

² The SIP network is supported by an “Internet Protocol multimedia subsystem”
(IMS) core and is capable of transmitting rich **multimedia** data. APPLE-1004,
[0034]; *see also* APPLE-1012 (describing IMS networks in further detail);
APPLE-1003, ¶31.

circuit-services network, thereby freeing bandwidth for voice calls or other services on the circuit-services network. APPLE-1004, [0009], [0021], [0039], [0050]. An example of this network selection process is further described at [0016] and illustrated by the following FIG. 6 flowchart.

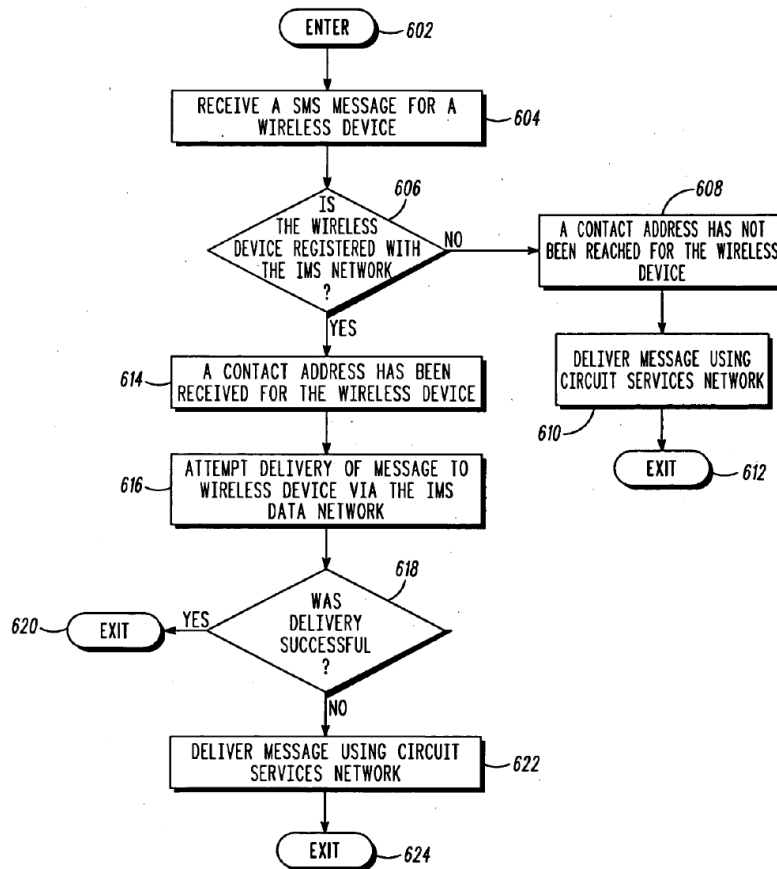


FIG. 6

APPLE-1004, FIG. 6 (server perspective)

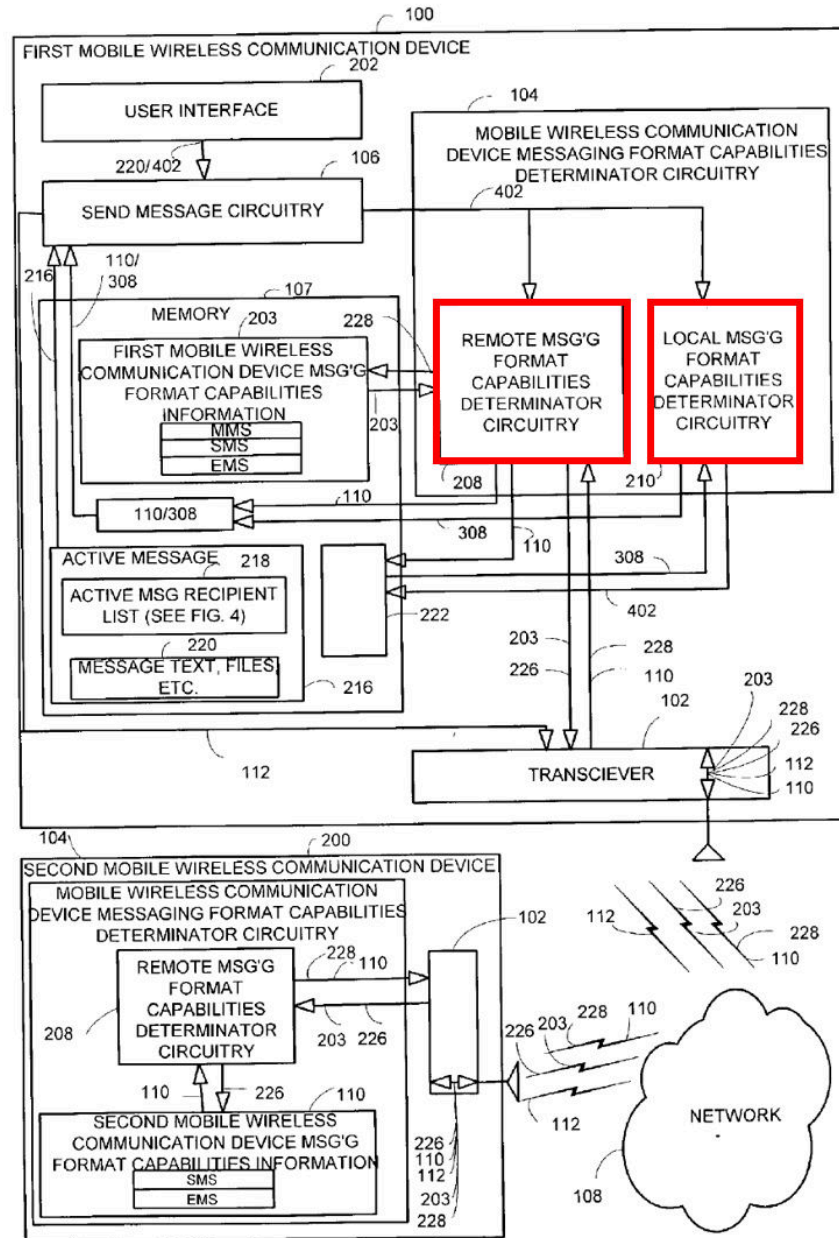
(b) Tsampalis (APPLE-1005)

Without regard for wireless network registration (*e.g.*, among packet-data network or circuit-services network) of either the sending or receiving wireless

device, Tsampalis teaches the sending wireless device querying the receiving wireless device's messaging format capabilities to inform the type of messages (SMS, MMS, etc.) it is able to be effectively process and display. APPLE-1005, Abstract, [0002]-[0004], [0022], [0025]. In this way, Tsampalis complements Horvath. APPLE-1003, ¶¶32-34.

Specifically, Tsampalis describes a sender (*e.g.*, first mobile wireless communication device 100) obtaining, either locally or via “a web server” or other “network element,” the “messaging format capabilities information [MFCI] 110” of a recipient (*e.g.*, a second mobile wireless communication device 200), to inform delivery of messages from the sender to the recipient. *See e.g.*, APPLE-1005, Title, Abstract, [0029]-[0039], FIG. 1, FIG. 2 (below), FIGS. 5-7. The MFCI 110 includes the types of messages (*e.g.*, SMS, MMS, EMS) that the intended recipient device is capable of processing. APPLE-1005, [0022]-[0024].

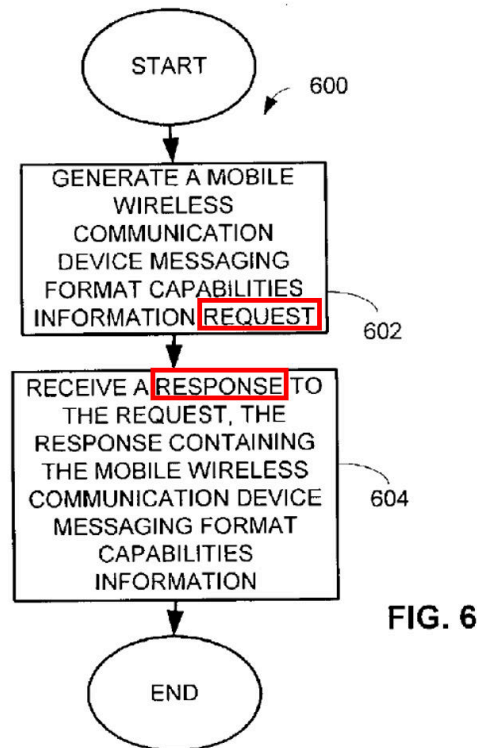
FIG. 2



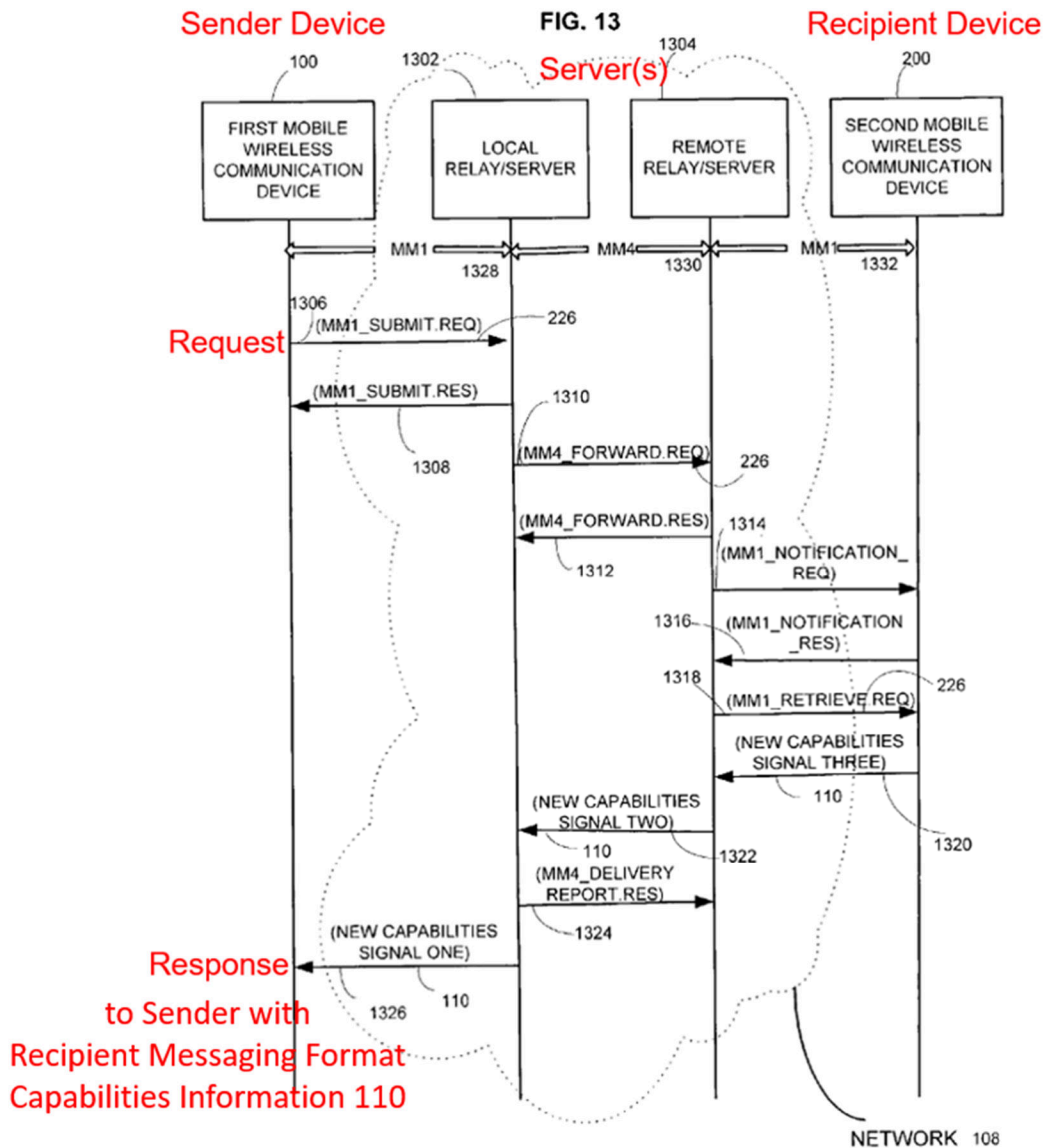
APPLE-1005, FIG. 2 (annotated)

The sender device 100 generates and sends a “mobile wireless communication device [MFCI] **request**” to a remote web server when recipient device 200’s MFCI 110 “must be retrieved remotely,” and the sender device

“receiv[es] a **response** [e.g., from the web server] to the request where the response contains the second mobile wireless communication device [MFCI] 110.” APPLE-1005, [0024], [0027], [0042], [0034], [0056]-[0057], FIGS. 6, 13 (below). Exchanged MFCI 110 can be stored, according to Tsampalis, in “a network element within the network 108” (e.g., “a web server,”) or elsewhere (e.g., at the remote relay/server 1304). *Id.*, [0039], [0057]. When stored within network 108, the sender device can retrieve the recipient device’s MFCI 110 from a remote server using the process described by Tsampalis’ FIG. 13 (below). *Id.*; *see also id.*, [0056]-[0060], FIGS. 13-15.



APPLE-1005, FIG. 6 (annotated)

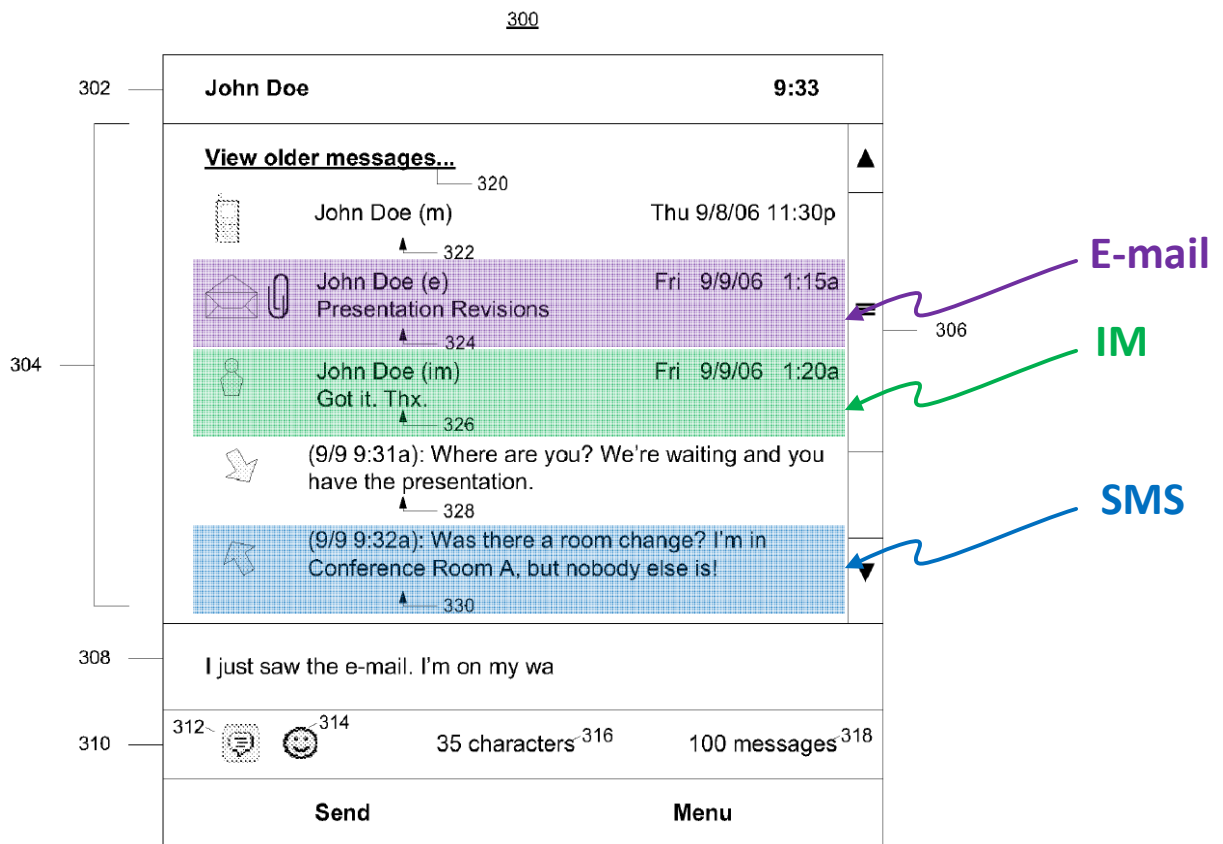


APPLE-1005, FIG. 13 (annotated)

(c) Kansal (APPLE-1042)

Like Horvath and Tsampalis, Kansal describes mobile messaging services for sending and receiving messages of different formats. APPLE-1042, Abstract, [0009], [0035] (“an IM application,” “an SMS application,” and “an MMS application”). Kansal presents a tool for correlating, aggregating, and displaying

all messages received by a “particular recipient,” including each of several message types/formats (*e.g.*, SMS, IM, MMS), without regard for the network over which the messages are received. APPLE-1042, [0009]; [0040]-[0043]; [0066]-[0069]. APPLE-1003, ¶¶35-36.



APPLE-1042, FIG. 3 (annotated)

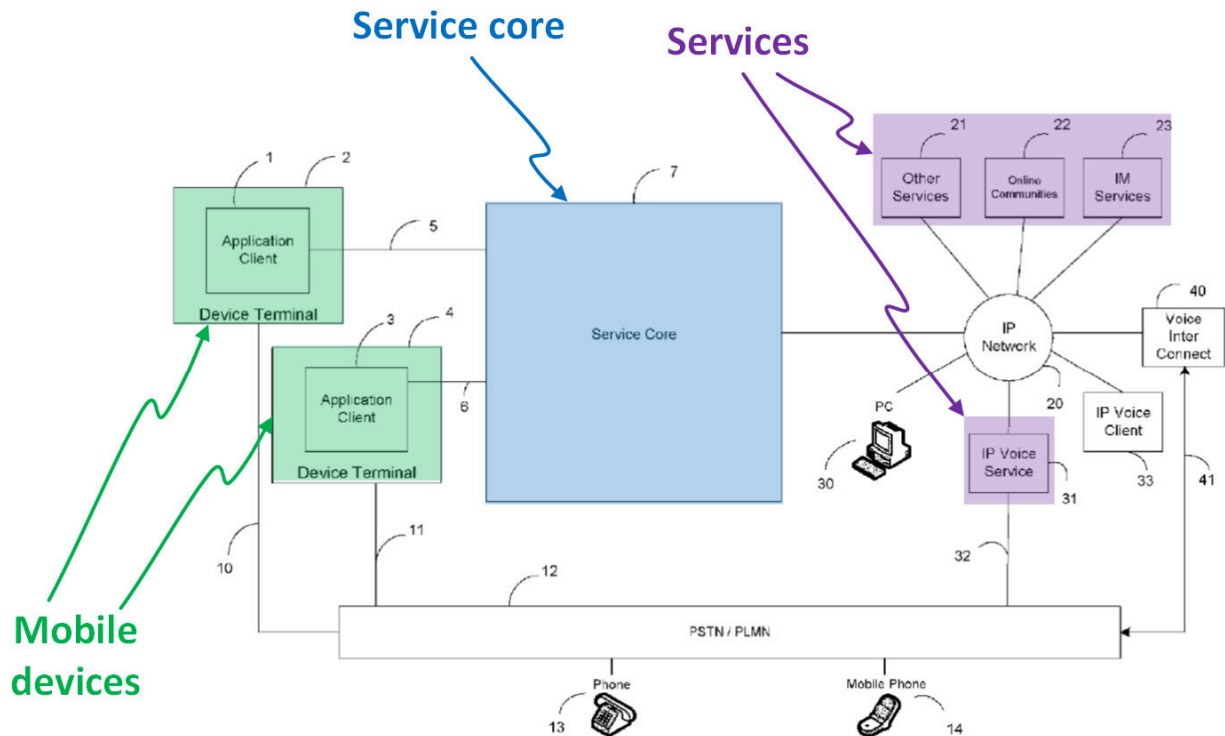
As shown above, Kansal describes a “unified messaging UI” from which a user may view received messages of various messaging types and may select from a variety of types when composing and sending a response, demonstrating the

utility and viability of integration. APPLE-1042, [0062], [0077]-[0078]. In particular, the unified messaging UI “display[s] a messaging thread comprising correlated messages of different message types,” including “SMS messages, MMS messages, as well as, telephone messages, voicemail messages, fax messages, video conferencing messages, IM messages, and e-mail messages.” APPLE-1042, [0009], [0045]-[0046], [0054]-[0056], [0062]-[0064], [0070], [0077]-[0078], FIGs. 2-3 (shown below).

(d) Quon (APPLE-1029)

Quon relates to “a mobile phone service...that enables users to make global calls..., send global text messages, and chat using all the major Instant Messaging clients such as MSN Messenger, GoogleTalk, Yahoo, AIM, and ICQ.” APPLE-1029, [0002]. As shown in FIG. 1 (below), Quon’s system “comprises multiple application clients 1, 3 hosted on any of a variety of respective device terminals 2, 4,” which, like the mobile devices of Horvath, are configured to communicate over “converged voice and data service networks including GSM/GPRS/EDGE, UMTS, CDMA, WiFi, and WiMAX.” APPLE-1029, [0025]. The application clients interface over the networks with a service core 7 that “includes service gateway functionality for bridging core services extended to the application clients 1, 3.” APPLE-1029, [0027]. These services include access to IM (*e.g.*, connection to MSN, Yahoo, and/or AIM), online social network communities (*e.g.*, Myspace or

Facebook), SMS service, and/or voice services (e.g., connection to PSTN or VoIP services). *See* APPLE-1029, [0027]-[0028]; APPLE-1003, ¶¶37-39.



APPLE-1029, FIG. 1 (annotated)

“The application clients 1, 3 preferably provide user interfaces to content such as a contact list, message list, instant messaging, and/or events such as call requests, presence status indicators, messaging, and contact synchronization based on digital signals received over the respective interfaces 5, 6.” APPLE-1029, [0026]. In other words, like Kansal, Quon provides a unified message client that allows a user to communicate with other mobile devices via various communication methods (*e.g.*, SMS, IM, VoIP) over various different wireless

networks. *See* APPLE-1029, [0025]-[0029]; *supra* §IV.A.3(c). Indeed, Quon incorporates U.S. Provisional Application No. 60/814,150 (Quon-Prov) by reference in its entirety, and Quon-Prov confirms that users can “communicate through a number modes comprising message, SMS, IM chat, and voice.”

APPLE-1030, 5; APPLE-1029, [0024], [0052].

Importantly, Quon provides a method for users to obtain the application client of the unified communication system. *See* APPLE-1029, [0031]-[0034]. Specifically, Quon allows existing users who already have the application client and are registered with the unified messaging service to invite other users through a common messaging service (*e.g.*, SMS or email). *See* APPLE-1029, [0031]-[0034], [0036]. For example, Quon describes, “where the service user may decide to invite non-user contacts manually[,]...[a] service invitation message may preferably be delivered to the invitee as an SMS message.” APPLE-1029, [0031]. “This invitation message may contain a link to a web page where an invitee can sign up and download an application client 1, 3 to his or her own phone.” APPLE-1029, [0032].

**(e) The Horvath-Tsampalis-Kansal-Quon
Combination**

Like the '601 Patent, Horvath describes techniques for selective transmission of wireless messages via different transmission bearers, including

techniques for transmitting messages over either a packet-data network or a circuit-services network. APPLE-1001, 3:8-39; APPLE-1004, [0001], [0007], [0024]-[0026], [0050], [0061]-[0062], FIGS. 1, 4, 7; *supra*, §IV.A.1(a) (Horvath). In seeking to keep the circuit-services network from being “unnecessarily burdened with SMS traffic,” Horvath proposes to default to a packet-data network for transmitting messages whenever the sending and receiving devices are registered with the packet-data network. *See e.g.*, APPLE-1004, [0004], [0006]-[0009], [0021], [0039], [0081]. Still, a POSITA would have recognized that Horvath’s system was ripe for improvement. For example, although Horvath describes messaging services apart from SMS (*e.g.*, MMS, EMS, IM), Horvath leaves implementation details relating to these services to the discretion of a POSITA. APPLE-1004, [0025], [0039]. Additionally, a POSITA would have appreciated from Horvath that different users did not all subscribe to the same messaging services, leaving some users with relatively limited messaging capabilities that precluded them from receiving or processing richer media formats beyond SMS (*e.g.*, MMS, EMS, IM), despite other users sending messages in those richer media formats. APPLE-1003, ¶40. Without more, this leaves a Horvath sender device vulnerable to sending a message in a format that a Horvath recipient device would be incapable of processing or presenting to a user. *Id.*

(i) Tsampalis’s Message-Format Determination

In a multi-modal messaging environment like Horvath's, in which different mobile-device users subscribed to different messaging services (*e.g.*, SMS, MMS, EMS, IM), a POSITA would have been led by Tsampalis to improve the user experience and better manage and coordinate messaging formats. *Supra*, §IV.A.1(a)-(b). In particular, Tsampalis describes an effective solution for improving messaging in such an environment by sharing the recipient's MFCI with the sender. *Supra*, §IV.A.1(b). For various reasons, a POSITA reviewing Horvath and Tsampalis would have found it obvious to implement Horvath's system in accordance with Tsampalis's suggestions for a sender device to obtain and use MFCI of a recipient device to determine how to format and transmit an outgoing message to the recipient. APPLE-1003, ¶41.

First, a POSITA would have combined Horvath and Tsampalis such that the sender would obtain and use a recipient's MFCI to enhance users' messaging experiences and ensure that the format of outgoing messages is compatible with the messaging format capability of the recipients' device before the message is sent. APPLE-1003, ¶42. Tsampalis expressly acknowledges the benefits flowing from these techniques, noting that "the determining of the message capabilities of a target mobile wireless communication device before sending a message to such target device[] ... can enhance a user's experience by allowing a user to determine whether to attempt to send or modify a message based on the messaging

capabilities of the intended recipient(s) of the message” and “by providing the user the ability to select a format in which to send a message based upon the messaging capabilities of the intended recipient(s) of the message.” APPLE-1005, [0065].

Horvath also already considers the challenge of encoding in different network standards, which would further prompt a POSITA to combine with Tsampalis for teachings on formatting compatibility. *See e.g.*, APPLE-1004, [0050] (describing message encoding using “IS-637” versus very different “ANSI-41” standard).

Second, a POSITA would have sought to leverage Tsampalis-like MFCI in Horvath’s system to permit the sender to make more frequent and reliable use of enhanced messaging formats such as MMS and IM. Enhanced messaging formats such as MMS and IM generally offer richer messaging capabilities than SMS, such as the ability to support extended character counts for longer messages and the ability to attach/include multimedia files with the message. APPLE-1003, ¶43 (citing APPLE-1007, Page 8; APPLE-1025, Introduction). Tsampalis’s proposal to share the recipients’ MFCI with the sender would allow a sender to use these rich messaging features more frequently and reliably with confidence that the recipient can successfully receive them. *Id.*

Third, a POSITA would have been motivated to apply Tsampalis-like MFCI to Horvath’s system to advance Horvath’s express objectives of reducing

“unnecessary overhead for the system” and “dynamic optimization of [] resources.” APPLE-1004, [0004], [0081]; APPLE-1003, ¶44.

Fourth, a POSITA would have found it obvious to combine the teachings of Horvath with Tsampalis because the combination merely involves the application of a known technique to a known system to achieve predictable results. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007); *see also Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380-81, (Fed. Cir. 2023). Here, Tsampalis recognized a known problem with dynamic messaging environments like Horvath’s, and Tsampalis’s teachings would help address this problem in a predictable manner. APPLE-1003, ¶45.

Likewise, a POSITA would have reasonably expected success implementing the combination, since it would be implemented with conventional software and hardware techniques (*e.g.*, general-purpose processors on mobile devices) with messaging formats (*e.g.*, SMS, MMS, IM) that were well known by the Critical Date. *KSR* at 401. Further, the techniques integrated from Tsampalis in the combination are compatible with Horvath’s and would not disturb the ability of Horvath’s system to transmit or deliver SMS messages over either a packet-data or circuit-services network. APPLE-1003, ¶46.

(ii) Kansal’s Unified Interface for Selection of
Appropriate Messaging Format

The combination provides a wireless mobile device capable of messaging using different messaging services including, SMS, MMS, and IM. *Supra* IV.A.1(e)(i). There are multiple reasons a POSITA would implement Kansal's unified messaging UI for precisely this kind of environment, with variously formatted messages unified within a single application interface. APPLE-1042, [0077]-[0078], [0086]; APPLE-1003, ¶47.

First, a POSITA would have been motivated to apply Kansal's suggested unified-messaging user interface to the wireless device in the combination to improve the user's experience with mobile messaging services involving messages of different types (*e.g.*, SMS, MMS, IM). For example, correlating messages in a manner that allows a user to view all messages of various types involving a particular user at a glance in a single thread would advantageously allow a user to see all messages received from particular senders within a single interface without needing to navigate to different messaging applications or interfaces for each different message type. APPLE-1003, ¶48 (APPLE-1045, 1-2 (a multi-protocol messaging application providing "a powerful and efficient user experience.")). APPLE-1042, [0009], [0045]-[0046], [0054]-[0056], [0062]-[0064], [0070], [0077]-[0078], FIGs. 2-3.

Second, providing a single thread of messages would have predictably improved the user interface by providing additional contextual information for a

user of the wireless device. For example, Kansal explains that the thread can be “sorted in various ways such as by time of receipt.” APPLE-1042, [0049]; *see* FIGs. 2-3. In addition to improving the user experience (as described in the first reason), Kansal’s unified UI would provide additional contextual information that would otherwise not be readily conveyed. *See, e.g.*, APPLE-1042, FIG. 3; APPLE-1003, ¶49.

Third, Kansal’s techniques are fully compatible with the types of messaging formats disclosed in each of Horvath and Tsampalis (*e.g.*, SMS, MMS, IM), and these formats are expressly identified in Kansal as services that can be integrated within its messaging interface. *See supra* §§IV.A.1(a)-(b), (d), (f); APPLE-1003, ¶50. Applying Kansal’s suggestion for a unified messaging interface for each of Horvath and Tsampalis’s services to obtain a substantially similar result would have been obvious as a matter of law. *KSR*, 550 U.S. at 417 (2007); *Intel*, 61 F.4th 1373, 1380-81 (Fed. Cir. 2023).

A POSITA would have reasonably expected success implementing the combination as the messaging and communication protocols involved were all well known before the Critical Date. Further, the techniques integrated from Kansal in the Horvath-Tsampalis-Kansal combination are fully compatible with Horvath’s and Tsampalis’s teachings and would not disturb Horvath’s transmission or delivery of messages over either a packet-based or circuit-switched network or the

use of Tsampalis's MFCI-based messaging . APPLE-1003, ¶51.

(iii) Quon's Application Distribution

Tsampalis explains that the send message circuitry 106 is preferably a software module “stored as computer code on a variety of computer readable mediums.” APPLE-1005, [0027]; *see also id.*, [0024]. However, Tsampalis does not describe how the send message circuitry software module is received by the wireless communication device in the first place. *See* APPLE-1005, [0024], [0025], [0027]; APPLE-1003, ¶52.

Similarly, Kansal describes “application programs” that “allow a user to accomplish one or more specific tasks,” and “that are executed by the host processor of the mobile computing device 100.” APPLE-1042, [0034], [0032]. However, Kansal does not describe how the application programs are received by and/or stored in the mobile computing device 100. *See* APPLE-1042, [0032]-[0034], [0082]-[0090]; APPLE-1003, ¶53.

A POSITA would have found that Quon provides at least one method for providing the software described by Tsampalis and Kansal to at least some of the combination's mobile devices. Specifically, a POSITA would have found it obvious to use Quon's SMS invitation messages to sign-up and distribute to new users, for example, a combination of Tsampalis's mobile wireless communication device messaging format capabilities determinator circuitry 104 and send message

circuitry 106 and Kansal's associated unified messaging UI, similar to the application client taught by Quon. *See* APPLE-1029, [0026], [0031]-[0032]. Multiple reasons would have prompted a POSITA to implement this combination. APPLE-1003, ¶54.

First, Quon recognized that previous communication systems only allowed current users to invite new users to a given communication service through the use of "online identities, such as email addresses" to "invite and associate users." APPLE-1029, [0004]-[0005]. Quon's "inventive design allows the user to add and invite contacts from multiple interface points in the service such as during ad-hoc calling to any mobile telephone number." APPLE-1029, [0007]. This "allows a service's user to import contacts from the user's pre-existing mobile phone book and send invitations to the contacts based on the contact telephone numbers to join." *Id.* In the context of the combination, this would have permitted an existing user that utilizes Tsampalis's determinator and send message circuitry and Kansal's associated unified UI to invite friends to download the same software (implemented, *e.g.*, as a messaging client like the one described by Quon). *See id.* Advantageously, this ameliorates the need for existing users of the combination from having to cumbersome ask their friends to join (*e.g.*, through an in-person conversation). APPLE-1003, ¶55.

Second, a POSITA would have recognized that providing Quon's easy and

intuitive mechanism by which existing users may invite their friends and other contacts to participate in and utilize the combination's software would have advantageously increased adoption and use of the system of the combination by more users. *See* APPLE-1029, [0006]; APPLE-1030, 6; APPLE-1003, ¶56.

Third, Quon's techniques are fully compatible with the mobile devices, networks, and types of messaging formats disclosed in each of Horvath, Tsampalis, and Kansal, and these networks and formats are expressly identified in Quon as being utilized by its system to distribute the application client to new mobile devices. *See supra* §§IV.A.2(a)-(d); APPLE-1003, ¶57. Applying Quon's sign-up and software distribution system and methods in the similar communication context of Horvath, Tsampalis, and Kansal with the same services to obtain a substantially similar result would have been obvious as a matter of law. *KSR*, 550 U.S. at 417 (2007); *Intel*, 61 F.4th 1373, 1380-81 (Fed. Cir. 2023).

A POSITA would have reasonably expected success implementing the combination as the messaging and communication protocols and techniques involved were all well-known before the Critical Date. Further, the techniques integrated from Quon in the Horvath-Tsampalis-Kansal-Quon combination are fully compatible with Horvath's, Tsampalis's, and Kansal's teachings and would not disturb their ability to operate as described. APPLE-1003, ¶58.

3. Claim 1

[1pre]

For example, Horvath discloses methods and systems for wireless communication, such as wireless messaging, by mobile wireless devices. *See e.g.*, APPLE-1004, Title (“Method And System For Delivery Of Short Message Service Messages”), [0011]; *see also* APPLE-1005, [0001], [0006]; APPLE-1003, ¶59.

[1a]

As discussed in §IV.A.2(d)-(e), *supra*, it would have been obvious to use Quon’s SMS invitation messages to sign-up and distribute to new users, for example, software implementing Tsampalis’s determinator circuitry 104 and send message circuitry 106 and Kansal’s associated unified UI (implemented together, *e.g.*, as a messaging client like the one described by Quon). *See* APPLE-1029, [0026], [0031]-[0032]; APPLE-1003, ¶60.

Quon describes an application client that “provide[s] user interfaces to content such as a contact list, message list, instant messaging, and/or events such as call requests, presence status indicators, messaging, and contact synchronization” and “transmit[s] client and user event information over” an interface to a “converged voice and data service networks including GSM/GPRS/EDGE, UMTS, CDMA, WiFi, and WiMAX.” APPLE-1029, [0026]. This is similar to the “software modules” that implement Tsampalis’s messaging format capabilities determinator circuitry 104, and send messaging circuitry 106,

and “application programs” that implement Kansal’s unified messaging UI. *See* APPLE-1005, [0024], [0025], [0033]; APPLE-1042, [0032]-[0034], [0077]-[0078]. This would have made software distribution easier for both the provider and the user. *See* APPLE-1029, [0004]-[0007]; *supra* §IV.A.2(e); APPLE-1003, ¶61.

Quon describes that this application client would have been distributed to new users through SMS invites. *See* APPLE-1029, [0031]-[0034]. Specifically, Quon describes, “where the service user may decide to invite non-user contacts manually[,]...[a] service invitation message may preferably be delivered to the invitee as an SMS message.” APPLE-1029, [0031]. “This invitation message may contain a link to a web page where an invitee can sign up and download an application client 1, 3 to his or her own phone.” APPLE-1029, [0032]. Accordingly, in Horvath-Tsampalis-Kansal-Quon, an invited user’s mobile device would *receiv[e] a short message service (SMS) message indicating a client program or an enhanced message service (EMS) message indicating the client program*. APPLE-1003, ¶62.

Quon teaches that new and existing users may or may not be subscribers of various messaging services with which the application client interfaces. *See* APPLE-1029, [0029], [0049]-[0051]; APPLE-1003, ¶63. In other words, different contacts—both those utilizing the application client and those who are not—may be subscribed to different messaging services (*e.g.*, IM, email, VoIP, cellular

telephony, and/or PSTN telephony). *See* APPLE-1029, [0029]; *see also id.*, [0024]; APPLE-1030, 17. Further, each of Tsampalis, Kansal, and Quon confirm that information regarding the services to which a user of a given mobile device is subscribed may be determined based on a telephone number of the user's mobile device. *See* APPLE-1005, [0033], [0035], [0061]; APPLE-1042, [0037]-[0038], [0041]-[0042], [0066]; APPLE-1029, [0007], [0030], [0037]; APPLE-1003, ¶63.

Accordingly, in at least some cases, an SMS invitation message would have been received *when a phone number associated with the mobile wireless device is not associated with a subscriber of a service associated with the client program at the time of receiving the SMS message or the EMS message* (e.g., a mobile device that receives an SMS to sign up and download the combination's application client is not associated with a subscriber of a service, such as an IM service, at the time of receiving the SMS). APPLE-1003, ¶64.

[1b]

As discussed for [1b] and in §§IV.A.2(d)-(e), *supra*, a user who has already downloaded the combination's application client to their mobile device is able to invite another user who has not signed up and downloaded the combination's application client through an SMS message. *See* APPLE-1029, [0007], [0031]-[0034]. "This invitation message may contain a link to a web page where an invitee can sign up and download an application client 1, 3 to his or her own

phone.” APPLE-1029, [0032]. “From the mobile browser, the invitee can signup for the service...and then download the appropriate application client 1, 3 to the invitee terminal device 2, 4, such as their phone.” *Id.*; APPLE-1003, ¶65.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, an invited user’s mobile device would *download[] the client program on the mobile wireless device.*

APPLE-1003, ¶66.

[1c]

For example, Horvath describes that wireless device 106 sends messages, *e.g.*, SMS, “through a circuit services network” if wireless device 106 “is unregistered with” “a registrar associated with a session initiation protocol [SIP] network for communicating over a packet data network.” APPLE-1004, [0002], [0006]-[0007]. On the other hand, when device 106 “[is] registered with the [SIP] registrar,” device 106 sends “SIP message[s]” in “SIP packets” “through the [SIP] network communicating over the packet data network.” APPLE-1004, [0002], [0006]-[0007], [0017], [0024], [0034], [0037], [0038], [0039], [0041], [0078], FIG. 7. One type of message service provided over the SIP network is an “instant messaging” service. APPLE-1004, [0033]; APPLE-1003, ¶67.

Horvath further describes authenticating its sending wireless device (wireless devices 106) both during registration with the SIP/IMS network and for transmitting subsequent messages, through an S-CSCF and HSS of the SIP/IMS

network. APPLE-1004, FIG. 5, [0035], [0036], [0040]. Horvath describes the SIP registration process for the wireless device 106 with the S-CSCF component of the SIP/IMS network, during which “authentication and authorization” of the wireless device 106 is performed using “profiles associated with each wireless device 106” stored on the HSS 210. APPLE-1004, [0035]-[0036], [0038], [0040], [0041], [0072]-[0073], [0076], FIGS. 2, 5. The profiles stored on the HSS 210 are accessed based on the mobile devices tel-URI, which “for example is the telephone number...” APPLE-1004, [0035]; *see also id.*, [0043], [0073]. APPLE-1003, ¶68.

Through authentication with the S-CSCF and HSS, wireless device 106 is also authenticated to the IM service (*authenticating...to the service*). APPLE-1004, [0033], [0038]-[0039] (“[a]n application server [providing, e.g., messaging service(s) such as instant messaging] interfaces with the S-CSCF component of the I, S-CSCF 20S using SIP”), [0041] (“[a] subscriber profile sent to the S-CSCF includes the filter criteria which are used by the S-CSCF to determine the application servers that are to be notified that they are to provide services for the wireless device 106.”), [0073]; APPLE-1003, ¶69.

Horvath describes that, “after successful registration of a wireless device 106 with the S-CSCF component of the I,S-CSCF 208, security keys are sent to the P-CSCF 206, which allows it to setup a security association with the wireless device 106.” APPLE-1004, [0036]. “The P-CSCF 206 can authenticate subsequent

messages allowing the other network entities such as the I,S-CSCF 208 to trust the messages.” *Id.* That is, after registration, the mobile phone utilizes the security keys (*e.g.*, session keys CK and IK) to encrypt and/or integrity protect all subsequent messages, including SMS messages. *Id.*; *see also* APPLE-1087, [0007]-[0014]; APPLE-1088, [0019], [0035]; APPLE-1072, [0055]; APPLE-1003, ¶69. An element of the IMS network (*e.g.*, P-CSCF) will utilize the security key(s) provided during registration to verify the authenticity of, *e.g.*, the SMS message (*authenticating...the mobile wireless device to the service via SMS protocol*). *Id.* Where authentication is successful, the message is sent further into the IMS network implemented by Horvath’s IMS network, which provides the IM service (*the service*), and the identity of the source of the message is believed due to this authentication process. APPLE-1003, ¶69.

In Horvath-Tsampalis-Kansal-Quon, the above-described authentication would have happened *via the client program*. APPLE-1003, ¶70. For example, Quon-Prov describes that its application client (referred to here as the “Personal Network Service Convergence Application (PNSCA)”) “uses industry open standards such as Session Initiation Protocol (SIP) for signaling,” like the mobile device described in Horvath. APPLE-1030, 30, 38. A “user agent” portion of the application client “provides an integrated user agent and back-to-back user agent allowing the PNSCA software (100) to register into the core network such as IMS

or a centralized SIP server.” APPLE-1030, 40. And, “[a]t the network service access layer, the PNSCA software (100) implements the transport broker (240) for...client authentication (244) for access control to the services network.” APPLE-1030, 39.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, the mobile devices would *authenticate[e], via the client program, the phone number associated with the mobile wireless device to the service via SMS protocol* (e.g., using the telephone number and session keys to authenticate all messages sent with the client program of the sending mobile device via the IMS network, including SMS messages). APPLE-1003, ¶72.

[1d]

Horvath explains that the sending mobile device sends messages to recipient wireless devices over one or more packet-data networks 102 and/or circuit-services networks 104. APPLE-1004, [0050], [0078], FIG. 7. Horvath discloses “information to identify” each wireless device registered to the remote server system, e.g., a “destination address” (also referred to as “contact address” or “IMS contact address”), “such as a telephone uniform resource identifier (‘tel-URI’),” e.g., “the telephone number assigned to the wireless device 106.” APPLE-1004, [0035], [0045], [0050], [0073], [0076]; APPLE-1003, ¶73.

Tsampalis similarly describes conventional addressing techniques where the sending device receives phone numbers of intended messaging recipients while composing an active message. APPLE-1005, [0033]-[0034], [0061]. Tsampalis teaches that an “active message” being composed by a user of the sending mobile device contains a “recipient ID” received from the user, *e.g.*, a phone number in the form of a MSISDN. *See* APPLE-1005, FIG. 4, [0032]-[0033], [0046], [0061], [0064], FIGS. 3-4, 7, 10; APPLE-1052, 12:53-60; *see also* APPLE-1042, [0037]-[0038], [0066], [0072]; APPLE-1003, ¶74.

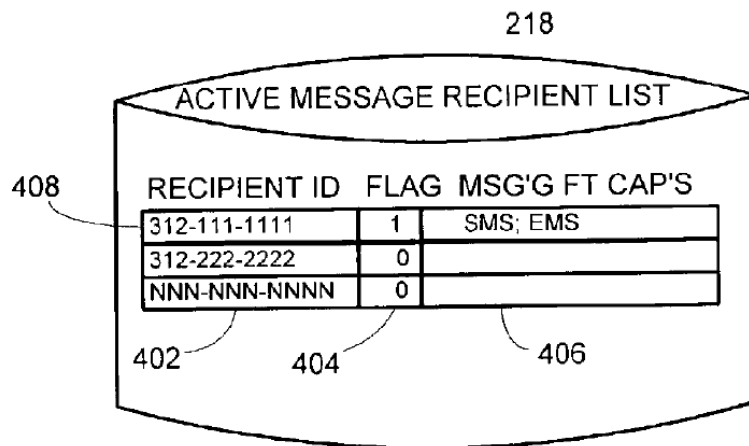


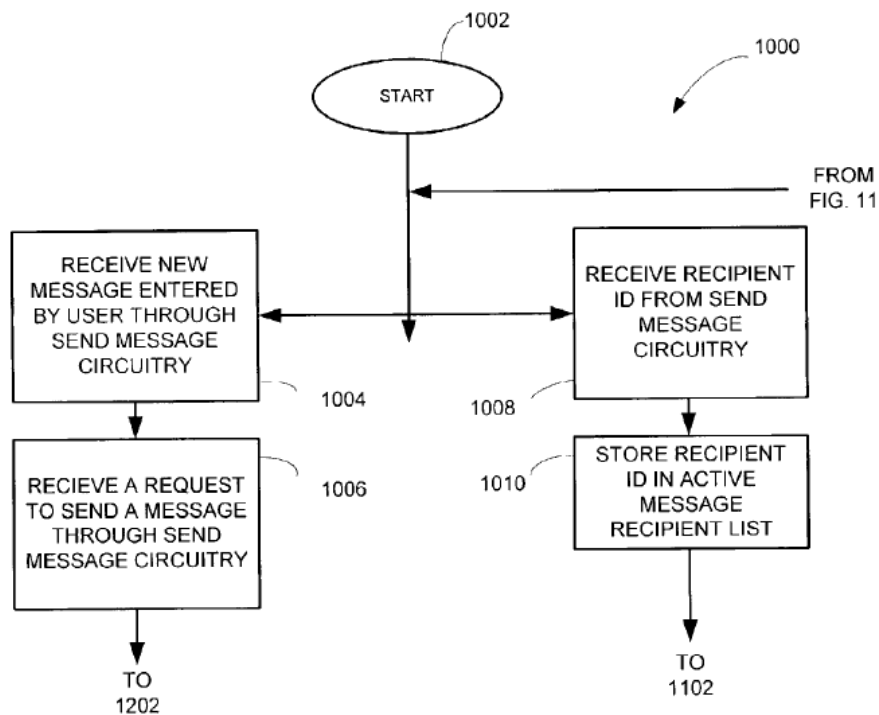
FIG. 4

APPLE-1005, FIG. 4

Referring to FIG. 10 (below), Tsampalis explains, “[a]s shown in Block 1004, the method includes [] receiving a new unformatted message 110 entered by

a user” and “[b]lock 1008 demonstrates the method including the receiving of a next recipient ID 402 as the recipient ID is entered in the send message circuitry 106.” APPLE-1005, [0046], FIG. 10; APPLE-1003, ¶75. Tsampalis describes that as a user enters message text and an active message recipient list into the sending mobile device’s user interface, the determinator circuitry 104 “retrieve[s] the [receiving] mobile wireless communication device [MFCI] 110 associated with the” recipient ID of a receiving mobile device entered into the active message recipient list. APPLE-1005, [0033]; *see also id.*, [0046].

FIG. 10



APPLE-1005, FIG. 10

If the MFCI is not available in the sending mobile device's local phonebook, "the remote message format capabilities determinator circuitry 208 [of the sending mobile device] is then invoked and generates a second mobile wireless communication device messaging format capabilities information request 226." APPLE-1005, [0033]-[0034]; APPLE-1003, ¶76.

The requested MFCI 110 for the receiving mobile device may be "stored in a location...such as a network element within the network 108" (*e.g.*, a "web server"), and the sending mobile device directs the request to the network element. APPLE-1005, [0039], [0056]-[0057]. For example, Tsampalis teaches that, "while inputting the active message 216, the first mobile wireless communication device 100 will transparently contact the network talking to the address(es), (*e.g.*, the MSISDN(s)), of the recipients(s), and try to talk with their home location register (HLR) to find out if they are capable of receiving" certain types of messages. APPLE-1005, [0061]; APPLE-1003, ¶77.

As noted above, Horvath and Tsampalis teach that the HLR and HSS "include[] information to identify each registered wireless device 106 such as...the telephone number assigned to the wireless device." *See* APPLE-1004, [0031], [0035], [0047]; APPLE-1005, [0061]. Thus, to obtain the MFCI, the

combination's sending mobile device would send a request that included the telephone number of the receiving mobile device to the "network element within the network" (e.g., HLR 202 and/or HSS 210), which would look up the profile of the receiving device. See APPLE-1004, [0035], [0044]; APPLE-1005, [0033], [0039], [0046], [0056]-[0057], [0061]; *see also* APPLE-1042, [0068]; APPLE-1003, ¶78.

Thus, in Horvath-Tsampalis-Kansal-Quon, a sending mobile device would *transmit[], via the client program* (e.g., the combination's application client, which implements Tsampalis's MFCI functionality), *first information comprising a first phone number* (e.g., sending a request to the HLR and/or HSS including the receiving mobile device's telephone number to determine a first receiving mobile device's MFCI). APPLE-1003, ¶79.

[1e1]

As explained for [1d], *supra*, to obtain the MFCI, the combination's sending mobile device would send a request to a network element within the network (e.g., HLR 202 and/or HSS 210) to look up the profile of the receiving mobile device based on the telephone number of the receiving phone. APPLE-1003, ¶80.

Tsampalis goes on to teach that "the method includes receiving a response to the request where the response contains the second mobile wireless communication

device [MFCI] 110, as shown in step 604.” APPLE-1005, [0042]; *see also id.*, [0057].

Thus, in Horvath-Tsampalis-Kansal-Quon, a sending mobile device would *receiv[e], via the client program* (e.g., the combination’s application client, which implements Tsampalis’s MFCI functionality), *a first response to the transmitting of the first information* (e.g., the response with the MFCI). APPLE-1003, ¶81. [1e2]

In Horvath-Tsampalis-Kansal-Quon, the MFCI response from the network element (e.g., HLR and/or HSS) would also include information about the services to which the wireless device 106 is subscribed (e.g., an IM service). Horvath describes that “HSS 210 comprises a database including profiles associated with each wireless device 106 registered with the IMS,” and each profile “includes subscription related information.” APPLE-1004, [0035]. And Tsampalis describes that one problem its system seeks to overcome is “[b]eing unable to process the message due to the incompatibility of its messaging service capabilities with that of the format of the received message.” APPLE-1005, [0003]. In other words, Tsampalis recognizes that MFCI is related to the messaging services to which a mobile phone is subscribed, and therefore at least suggests that the MFCI indicates subscription information. *Id.*; APPLE-1003, ¶82.

Providing such subscription information along with format information to a sending mobile device was well known. *See, e.g.*, APPLE-1053, 1:24-50, 5:29-33, 7:28-8:45, 12:25-36; APPLE-1063, [0103], [0107], [0115], [0122], [0127]. Thus, for similar reasons to those described in §IV.A.2(e)(i), *supra*, providing a sending mobile device with more detailed information about the recipient, including their subscriber information, would help the sending user determine how and where to send a message and what content should be included. APPLE-1003, ¶83.

Thus, in Horvath-Tsampalis-Kansal-Quon, *the first response indicates that the first phone number is associated with a subscriber of the service* (*e.g.*, the response from the HLR/HSS includes both MFCI and subscription information). APPLE-1003, ¶84.

[1f]

Horvath explains that the “packet data network 102, in one embodiment, comprises...an 802.11 network,” which is a WLAN standard. *See e.g.*, APPLE-1004, [0024]; APPLE-1003, ¶85 (citing APPLE-1011, 5:1-33, 6:27-32, FIG. 5B; APPLE-1009, 1, 3, 4; APPLE-1037).

As discussed in §IV.A.2(a), *supra*, Horvath describes that the sending mobile device will send its message over the packet-switched network whenever it is registered on the packet-switched network. *See* APPLE-1004, [0021], [0039]-[0042], [0078]; APPLE-1003, ¶86. Only when “delivery of the SMS message is

not possible on the packet-data network” (*e.g.*, the sending mobile device is not registered) will the sending mobile device “select the circuit-services network for SMS delivery.” *Id.*

Tsampalis describes that, after the network element (*e.g.*, HLR and/or HSS) sends the receiving mobile device’s MFCI to the sending mobile device, the sending mobile device utilizes the information to determine how to send the message to the receiving mobile device. APPLE-1005, [0041]; APPLE-1003, ¶87.

Taken together and as described in IV.A.2(e), *supra*, Horvath-Tsampalis-Kansal-Quon’s sending mobile device utilizes both sets of information when determining how to format and deliver a message to a receiving mobile device. First, the sending mobile device checks if it is registered on the packet-switched network. *See* APPLE-1004, [0021], [0039]-[0042], [0078]. If it is, it will utilize the packet-switched network, and otherwise it will utilize the circuit-switched network. *Id.* Second, the sending mobile device will check the receiving mobile device’s MFCI and service-subscription information to determine the best way to send a message that is compatible with the capabilities and subscriptions of the receiving mobile device. APPLE-1005, [0041], [0049], [0052]-[0054], [0062]; APPLE-1003, ¶88.

Where, for example, the sending mobile device is registered with the packet-switched network and the packet-switched network to which the sending mobile

device is registered is an 802.11 network, Horvath-Tsampalis-Kansal-Quon's sending mobile device will send a message via an 802.11 bearer. See APPLE-1004, [0024], [0050]; APPLE-1003, ¶89.

Accordingly, Horvath-Tsampalis-Kansal-Quon's sending mobile device *transmit[s], via the client program* (e.g., the combination's application client, which implements Tsampalis's send message circuitry) *and a wireless local area network (WLAN)* (e.g., the packet-data network 102 is an 802.11 network), *based on the first response, first message content, to a mobile wireless device associated with the first phone number* (e.g., the sending phone sends a message to the first receiving mobile device via the 802.11 network). APPLE-1003, ¶90.

[1g]

Horvath-Tsampalis-Kansal-Quon's sending mobile device would follow the procedures described with respect to [1d], *supra*, every time that a user creates a new message and/or enters a new recipient ID for a message. See APPLE-1005, [0033], [0046]; APPLE-1003, ¶91. In fact, Tsampalis describes an example where a user enters multiple recipients for a single message, and "for each recipient 402 entered in the active message recipient list 218, the same remote message format capabilities determinator circuitry 208 is then invoked to generate" an MFCI request. APPLE-1005, [0034]. This process would be followed for each "new

unformatted message 110 entered by a user through the send message circuitry 106.” *See* APPLE-1005, [0046].

Accordingly, in Horvath-Tsampalis-Kansal-Quon, the sending mobile device ***transmitting, via the client program*** (*e.g.*, the combination’s application client, which implements Tsampalis’s MFCI functionality), ***second information comprising a second phone number*** (*e.g.*, sending a request to the HLR and/or HSS including the receiving mobile device’s telephone number to determine a second receiving mobile device’s MFCI). APPLE-1003, ¶92.

[1h]

As discussed for [1e2], *supra*, the response from the network element (*e.g.*, HLR and/or HSS) with the MFCI would also include subscription information (*e.g.*, to an IM service). APPLE-1003, ¶93. The HLR 202 and/or HSS 210 would provide a response to every request for format capabilities and service subscription information, regardless of the formats or services stored in the profile associated with the receiving mobile device. *See, e.g.*, APPLE-1005, [0035], [0042], [0057]-[0060]. And it was well-known that some mobile devices had “limited messaging capabilities.” *See, e.g.*, APPLE-1005, [0003], [0034], [0061]-[0062]; APPLE-1029, [0029]; APPLE-1042, [0078]; APPLE-1053, 2:9-17. Thus, for certain receiving mobile devices, the HLR and/or HSS would provide a response

indicating the phone number of the receiving mobile device is not associated with a subscriber of an IM service. *See, e.g.*, APPLE-1004, [0047], [0053]; APPLE-1003, ¶93.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, *the second phone number is not associated with a subscriber of the service*. APPLE-1003, ¶94.
[1i]

As discussed for [1a], *supra*, Quon teaches that “[a]n application client 1 may communicate with service core 7 to determine which contacts are also service users, such as by a comparison of mobile number or service ID.” APPLE-1029, [0030]. That is, some contacts of a sending mobile device will not already be utilizing the application client and Tsampalis’s associated MFCI service. *See id.*; APPLE-1003, ¶95. Like in Quon’s application client, Horvath-Tsampalis-Kansal-Quon’s application client would have indicated to the user of a sending mobile device whether their contacts (*e.g.*, the recipient IDs of receiving mobile devices) also have an application client and are participating in the associated exchange of MFCI. *See id.* Where they are not, the sending mobile would not be able to gather the same amount of information about the contacts. *See id.* Thus, in order to provide access to the Horvath-Tsampalis-Kansal-Quon system, a user would have needed to invite their non-participating contacts to join, as described by Quon. *Id.*

Specifically, Quon describes, “where the service user may decide to invite non-user contacts manually[,]...[a] service invitation message may preferably be delivered to the invitee as an SMS message.” APPLE-1029, [0031]. “This invitation message may contain a link to a web page where an invitee can sign up and download an application client 1, 3 to his or her own phone.” APPLE-1029, [0032]. Thus, in Horvath-Tsampalis-Kansal-Quon, where the mobile device associated with the second phone number is not utilizing the combination’s application client and associated services, the user of the sending mobile device would invite the second receiving mobile device by sending an invitation SMS message. *See* APPLE-1029, [0031]-[0032]; APPLE-1003, ¶96.

In Horvath-Tsampalis-Kansal-Quon, the application client would have composed and sent the invitation message in response to the user of the sending mobile device requesting that an invite be sent. APPLE-1003, ¶97. Quon discloses that “the service [*i.e.*, the service core 7] can spoof the originating mobile number of the SMS message that originates from the service to be that of the mobile MSISDN of the user’s device terminal 2.” APPLE-1029, [0031]. However, Quon describes that the service core 7 acts as a gateway “for bridging core services extended to the application clients.” APPLE-1029, [0027]. In this regard, the service core 7 acts as a proxy for the various communication services. *See* APPLE-1029, [0026]-[0028]; APPLE-1003, ¶97.

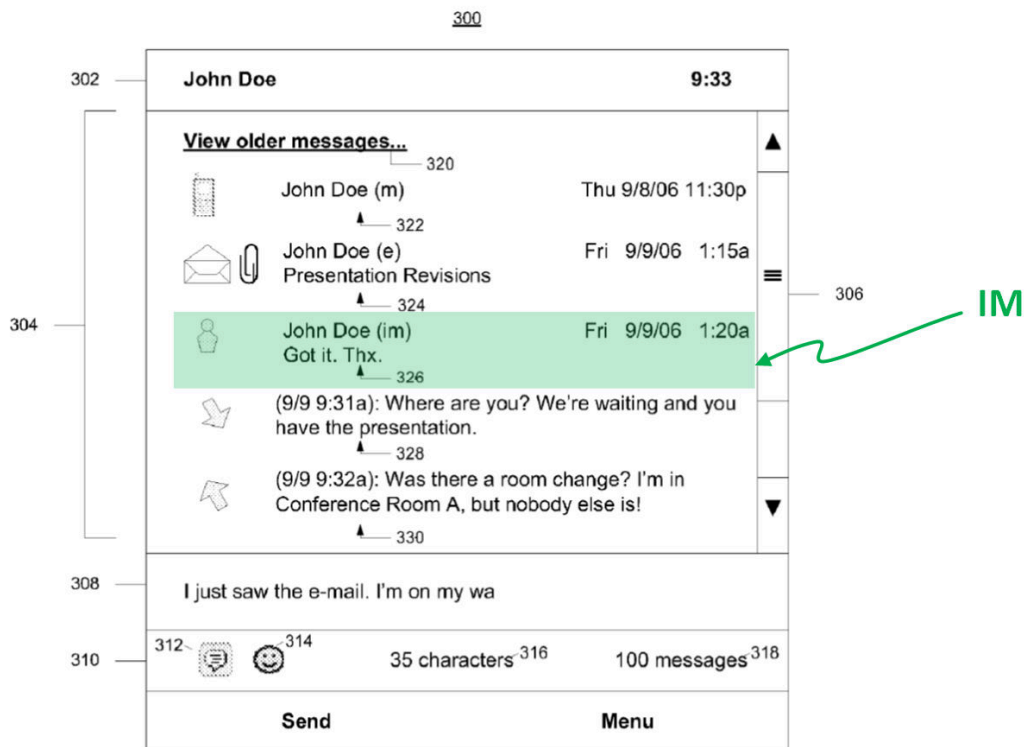
Unlike in Quon, Horvath-Tsampalis-Kansal-Quon's application client has the interface software necessary to directly communicate with the services, as taught by Tsampalis (*e.g.*, the send message circuitry 106) and Kansal (*e.g.*, messaging applications 130). *See* APPLE-1005, [0025]; APPLE-1029, [0035]; APPLE-1003, ¶98. Thus, the combination's application client would be able to directly send the SMS invitation to the receiving mobile device being invited. *Id.*

Indeed, systems in which a mobile device directly sends invitation messages to "non-members" of a communication service were well known. *See, e.g.*, APPLE-1079, [0080] ("the communication may be an update request bearing an invitation to join the private network, a download of client software, or the like"), [0085]-[0086]; APPLE-1050, [0006], [0014]-[0015]; APPLE-1003, ¶99.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, the sending mobile device would *insert[], via the client program, second message content into a message for delivery to a mobile wireless device associated with the second phone number* (*e.g.*, the application client of the sending mobile device composing an invitation message to a non-user and inserting a link to download the application client and sign-up for the services of the combination), *wherein the second message content is received by the mobile wireless device associated with the second phone number via SMS or EMS protocol* (*e.g.*, the invitation message is an SMS, per Quon). APPLE-1003, ¶100.

[1j]

As discussed for [1c], *supra*, one type of message service provided over Horvath's SIP network is an IM service. APPLE-1004, [0033]; APPLE-1003, ¶101. Indeed, Kansal illustrates and describes a “message thread 304 includes a message 326 comprising a sent IM message that displays linked IM screen name information of the contact, the text of the IM message, and the date sent...” APPLE-1042, [0062].



APPLE-1042, FIG. 3 (annotated)

Accordingly, in Horvath-Tsampalis-Kansal-Quon, *the service is a service for exchanging message content between subscribers* (e.g., an IM service for exchanging IMs). APPLE-1003, ¶102.

[1k]

Horvath-Tsampalis-Kansal-Quon’s application client would have requested presence information, either as part of the MFCI information request and response taught by Tsampalis or directly from the application server(s) hosting the messaging services. *See* APPLE-1004, [0035], [0039]; *see also* APPLE-1074, [0069] (“The IMS domain includes standard network elements such as HSS (Home Subscriber Server) 608, ...IMM (Instant Multimedia Messaging) application server 626, and Presence application server 628.”); APPLE-1003, ¶103. For example, Kansal illustrates and describes that “message thread 304 includes a message 326 comprising a sent IM message...” APPLE-1042, [0062]. “In some embodiments, an IM icon associated with the message 326 may indicate whether the contact is currently online and available to receive an IM message.” *Id.* This type of status was known as “presence information.” *See, e.g.*, APPLE-1006, [0018]; APPLE-1053, 8:3-7; APPLE-1061, [0034]; APPLE-1064, 8:23-28; APPLE-1003, ¶104.

According to Quon, “the major Instant Messaging clients” around the Critical Date included “MSN Messenger, GoogleTalk, Yahoo, AIM, and ICQ.”

APPLE-1029, [0006]. Each of these clients were known to support some form of presence. *See, e.g.*, APPLE-1007, Title, Abstract, p. 4. Accordingly, Horvath-Tsampalis-Kansal-Quon's application client would have integrated presence in order to support the presence information already available within these common IM services. APPLE-1003, ¶105.

Quon further describes when one subscribing user ("inviter") attempts to add another subscribing user ("invitee") to their service phonebook the "invitee service user does not show up in the inviter service user service phonebook until the invitee service user accepts the invitation request." APPLE-1029, [0045]. It would have been obvious that, until the invitee service user shows up in the inviter service user's service phonebook, various information about the invitee service user (*e.g.*, "whether the contact is also a service user, the availability of another service user, preferred modes of communication for the other service user and the like") would not be shared with the inviter. *See* APPLE-1029, [0029]. Indeed, Quon-Prov describes that the messaging system is able to provide "an aggregated view of the collected presence information" for a given user to the user's other contacts, but that the "type of aggregated presence (*e.g.* aggregated person status, aggregated service status etc.) which the contact nodes can receive is determined by the policy specified by the user for privacy protection." APPLE-1030, 47-49. In other words, Quon explains that a messaging system like the combination's

would advantageously set limits on the type and amount of user information (e.g., presence information) shared with other subscribing and non-subscribing users (*third parties*) in order to beneficially maintain appropriate privacy levels. *See id.*; APPLE-1003, ¶106.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, *the service restricts third parties from receiving certain subscriber information absent subscriber consent*. APPLE-1003, ¶107.

4. Claim 2

Kansal describes that the unified messaging UI determines sending format “based on programmed and/or detected preferences, constraints [e.g., the sending mobile phone’s registration or connection status with the circuit-switch and packet-switched networks], and/or availability of a recipient to receive messages of a certain format.” APPLE-1052, [0078]. Quon-Prov provides examples of when determining and accounting for user preferences is particularly advantageous. *See* APPLE-1030, 20-21 (describing advantages of changing preferences based on location or other availability to participate in conversations); APPLE-1003, ¶108. Indeed, it was well known to utilize users’ preferences when determining how and when to communicate with them. *See, e.g.*, APPLE-1068, [0050], claim 8; APPLE-1063, [0110], [0122]; APPLE-1003, ¶109.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, a user of the combination's application client would provide preference information about how they would like to receive messages, including a preference of communication mode (e.g., SMS, email, IM), regardless of whether they are authenticated and signed into any particular service (e.g., an IM service). APPLE-1003, ¶110. The application client would send this preference information to, e.g., the HSS 210 that stores user profiles including MFCI and subscription information. See APPLE-1004, [0035], [0041]. The application clients of the user's contacts would receive this preference information along with the MFCI and utilize it in determining how to communicate with the user, as taught by Kansal. See APPLE-1052, [0078]. For example, the user may indicate a preference to receive communications through SMS under certain circumstances, even where the user is authenticated and signed into other messaging services (e.g., an IM service). In at least this case, the Horvath-Tsampalis-Kansal-Quon application client would *receiv[e] an SMS message, including content originated by a subscriber of the service, subsequent to the phone number associated with the mobile wireless device being authenticated to the service*. APPLE-1003, ¶110.

Additionally or alternatively, *a subscriber of the service* may not always be authenticated with and signed into the service to which they subscriber (e.g., an IM service). Quon provides a similar example where a "contact C has a telephone

number, a VoIP account, and an instant messaging screen name,” yet “[a]t any given time,...the user may see that...contact C may be available only through the VoIP account....” APPLE-1029, [0029]. That is, contact C is a subscriber of an instant messaging service, because they have a screen name, but they may not be signed into that service. *See id.* This may be due to the fact that the user’s mobile wireless device only has access to Horvath’s circuit-services network, and not the packet-data network. *See* APPLE-1004, [0062]. In this case, the *subscriber of the service* would be forced to communicate by sending *an SMS message*, even after the *mobile wireless device [was] authenticated to the service*. APPLE-1003, ¶111.

5. Claim 3

For example, both Horvath and Tsampalis disclose messaging text as well as multimedia messages, which were known to include images, audio, and video messages. APPLE-1004, [0025], [0029], [0033]-[0034], [0068]-[0069] (“a multimedia message received by the wireless device 106 may include a video media component that provides a vibration during playback of the multimedia message”); APPLE-1005, [0062]; APPLE-1042, [0075]-[0077] (describing ability to add “media objects such as pictures, video, and/or sounds to a message”); APPLE-1007, page 8, page 11; APPLE-1061, [0049]; APPLE-1063, [0083]; APPLE-1003, ¶112.

6. Claim 4

As discussed for [1a], *supra*, each of Tsampalis, Kansal, and Quon confirm that information regarding the services to which a user of a given mobile device is subscribed may be determined based on a telephone number of the user's mobile device. *See* APPLE-1005, [0033], [0035], [0061]; APPLE-1042, [0037]-[0038], [0041]-[0042], [0066]; APPLE-1029, [0007], [0030], [0037]; APPLE-1003, ¶113.

In fact, Quon describes an example in which “the service user may decide to invite non-user contacts manually,” in which case “the service user may be presented with a list of the service user's non-user contacts with mobile numbers to invite.” APPLE-1029, [0031]. On the other hand, “[w]hen service user A adds or imports a mobile number belonging to service user B, the service can automatically send an add request to service user B to add service user A to service user B's service phonebook.” APPLE-1029, [0037]. In either case, the system is recognizing a user based only on its telephone number. APPLE-1003, ¶114.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, *the service is adapted to identify a subscriber based on a phone number absent user input of a username and absent user input of an email address*. APPLE-1003, ¶115.

7. Claim 5

Kansal describes that “identifying information (e.g., telephone number, e-mail address, IM screen name, SMS identifier, MMS identifier, etc.), included in messages received by the messaging applications 130 may be compared against the contacts database 142 to identify the sender of a message.” *See* APPLE-1042, [0038]. “The contacts database 142 also may be used or accessed when composing and/or sending messages.” *Id.*; APPLE-1003, ¶116.

As discussed for [4], *supra*, “[i]nstant messages may be directed to the instant messaging service to which the user subscribes, with the user being identified with a username,” or “screen name.” APPLE-1016, [0019], [0030]; APPLE-1029, [0024]; *see also* APPLE-1024, 3:28-35; APPLE-1059, [0025]. It was well known that, in some instances, the “IM screen name” or “username” used to address instant messages to a receiving mobile phone was an e-mail address of the receiving user. *See, e.g.*, APPLE-1062, [0053]-[0054], [0064] (describing a user being “connected to an instant messaging server” with a work e-mail address); APPLE-1032, [0017], [0025], FIGS. 2, 5; APPLE-1033, 3:4-5, 4:2-6; APPLE-1003, ¶117.

Accordingly, a POSITA would have found obvious that, in Horvath-Tsampalis-Kansal-Quon, *the client program is adapted to send a message to a subscriber based on each one of a user name (e.g., IM screen name), phone number and email address.* APPLE-1003, ¶118.

8. Claim 6

As discussed for [1k], *supra*, Horvath's IMS network provides an IM service, which may be hosted on an application server. APPLE-1004, [0033], [0039]. Indeed, it was well known that in an IMS network like the one taught by Horvath, the IM *service* would be administered by an application *server* within the IMS domain. *See, e.g.*, APPLE-1074, [0069] ("The IMS domain includes standard network elements such as ...IMM (Instant Multimedia Messaging) application server 626..."); APPLE-1004, [0039]; APPLE-1003, ¶119.

The IMS domain is distinct from the cellular core network, and therefore the application server that provides the IM service and is part of the IMS domain *is located outside of a cellular network*. *See* APPLE-1004, [0039]; APPLE-1003, ¶120 (citing APPLE-1072, FIG. 3 (illustrating the application servers 360 outside of the core network 310), [0059]-[0061]; APPLE-1074, FIGS. 5A-5C; [0068], [0069]; APPLE-1014, [0006], [0047]).

Moreover, in Horvath-Tsampalis-Kansal-Quon, the application server of the IM service would *maintain[] a subscriber list*. For example, Horvath describes that "[a] subscriber profile sent to the S-CSCF includes the filter criteria which are used by the S-CSCF to determine the application servers that are to be notified that they are to provide services for the wireless device 106." APPLE-1004, [0041]. In

other words, the application server receives notifications for all of the registered wireless devices to which they are to provide services, and because the provision of these services would have been an ongoing function, the application server would have kept a list of the registered and subscribed wireless devices. *See id.*; APPLE-1003, ¶121. Indeed, it was well known that application servers providing messaging services maintained lists of information about subscribers, such a presence information. *See, e.g.*, APPLE-1046, [0035]; APPLE-1006, [0004]; APPLE-1003, ¶121.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, *a server of the service which maintains a subscriber list* (e.g., an application server providing the IM service) *is located outside of a cellular network*. APPLE-1003, ¶122.

9. Claim 7

The Horvath-Tsampalis-Kansal-Quon sending mobile device would follow the procedures described with respect to [1d], [1e1], and [1e2], *supra*, every time that a user creates a new message and/or enters a new recipient ID for a message. *See* APPLE-1005, [0033], [0046]; APPLE-1003, ¶123. Tsampalis's process would be followed for each "new unformatted message 110 entered by a user through the send message circuitry 106." *See* APPLE-1005, [0046].

As discussed for [1a], *supra*, each of Tsampalis, Kansal, and Quon confirm that information regarding the services to which a user of a given mobile device is subscribed may be determined based on a telephone number of the user's mobile device. *See* APPLE-1005, [0033], [0035], [0061]; APPLE-1042, [0037]-[0038], [0041]-[0042], [0066]; APPLE-1029, [0007], [0030], [0037]; APPLE-1003, ¶124.

The profiles stored by the HLR 202 and/or HSS 210 would include information about all of a user's devices and addresses on the various messaging services, because this would have helped in identifying the best way to send a message to the user and then sending it. APPLE-1003, ¶125. For example, Kansal teaches the "contact record for an individual may comprise identifying information such as first name, last name, company/employer name, mailing addresses (e.g., home, work, other), telephone numbers (e.g., home, work, mobile, fax, pager), e-mail address (e.g., home, work, primary, alternative), IM screen names, SMS identifier, MMS identifier, personal information, notes, and so forth." APPLE-1042, [0037]. In other words, it was known that a user would have multiple devices (e.g., multiple telephones) and addresses, and that a profile of that user (e.g., a contact record in a contact database) would include information about each of these multiple devices. *See id.*; *see also* APPLE-1053, 4:34-41, 5:24-43; APPLE-1063, [0110], APPLE-1064, 8:20-51, 11:4-7. Thus, a sending mobile wireless device would have transmitted a request for MFCI based on a receiving

mobile wireless device's telephone number, and included with the MFCI would be information about all of a user's devices and addresses (*e.g.*, screen names) on the various messaging services. APPLE-1003, ¶125.

Accordingly, Horvath-Tsampalis-Kansal-Quon's sending mobile wireless device would *transmit[], via the client program, third information comprising a third phone number* (*e.g.*, a request for MFCI based on a receiving mobile wireless device's telephone number); *and receiv[e], via the client program, an indication that a user name associated with the third phone number is associated with a subscriber of the service* (*e.g.*, receiving an MFCI response that includes all of the information about all of a user's devices and addresses, such as screen names). APPLE-1003, ¶126.

10. Claim 8

Supra, [1i] (describing that the combination's application client would have determined whether a phone number of a contact is associated with a subscriber, and, if not, sent an SMS invitation to the phone number).

11. Claim 9

As discussed for [1k], *supra*, the Horvath-Tsampalis-Kansal-Quon application client would have requested presence information, either as part of the MFCI information request and response taught by Tsampalis or directly from the

application server(s) hosting the messaging services. APPLE-1003, ¶128. It was well known that “active” and “inactive” were types of presence information and would have been determined by the IM service. *See, e.g.*, APPLE-1063, 7:5-15, 7:45-52, 7:55-59; APPLE-1080, [0070] (“inactive” is a “presence state”), [0086]; APPLE-1081, [0021]; APPLE-1003, ¶128.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, *the service distinguishes between active and inactive subscribers* (e.g., the IM service tracks presence of the users and presence includes whether subscribers are active or inactive). APPLE-1003, ¶129.

12. Claim 10

Supra, [1i].

13. Claim 11

Supra, [1i].

14. Claim 12

Horvath-Tsampalis-Kansal-Quon’s sending mobile device would follow the procedures described with respect to [1d], [1e1], and [1e2], *supra*, every time that a user creates a new message and/or enters a new recipient ID (e.g., *a third phone number* and *a fourth phone number*) for a message. *See* APPLE-1005, [0033], [0046]; APPLE-1003, ¶132. In fact, Tsampalis describes an example where a user

enters multiple recipients for a single message, and “for each recipient 402 entered in the active message recipient list 218,” the determinator circuitry 208 is invoked to generate an MFCI request. APPLE-1005, [0034]. This process would be followed for each “new unformatted message 110 entered by a user through the send message circuitry 106.” *See* APPLE-1005, [0046].

Further, Tsampalis teaches “the use of an active message recipient list” having a plurality of recipients in a single active message, each recipient having a “recipient ID” that the user enters in the form of phone numbers for the same active message that the use composes. *See e.g.*, APPLE-1005, [0004], [0009], [0032], [0055], FIG. 4 (below); APPLE-1003, ¶133. Thus, Horvath-Tsampalis-Kansal-Quon’s method comprises sending a group-based message to the third receiving mobile device and to a fourth receiving mobile device, in accordance with at least Tsampalis. APPLE-1003, ¶134.

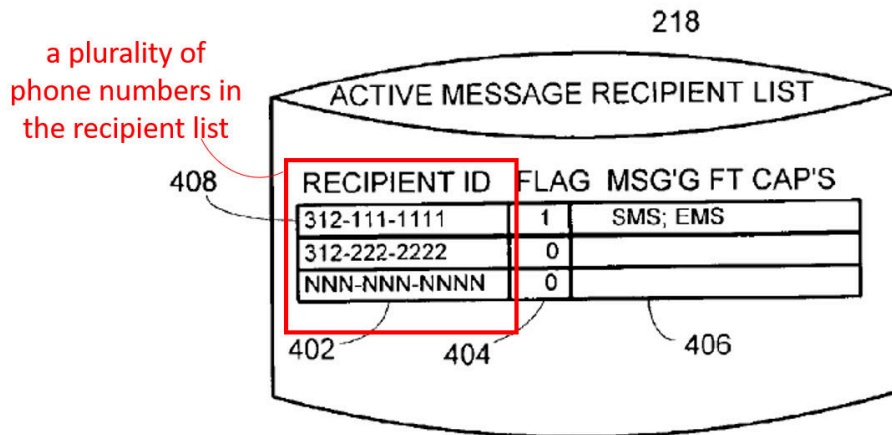


FIG. 4

APPLE-1005, FIG. 4 (annotated)

Furthermore, the group message would have been sent *via a packet switched bearer* when the sending, third, and fourth mobile wireless devices were all associated with subscribers to the IM service, and the sending mobile wireless device determines to send the message via the IM service. *See, e.g.*, APPLE-1004, [0024], [0033]; APPLE-1055, [0014]; APPLE-1054, 4:42-46; APPLE-1003, ¶135.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, *the client program is adapted to: receive as input, address information consisting of a third phone number* (e.g., a user enters a third phone number as a recipient ID into an active message recipient list); *receive as input, address information consisting of a fourth phone number* (e.g., a user also enters a fourth phone number as a recipient ID into the same active message recipient list); *send a group message, via a*

packet switched bearer (e.g., GPRS), to a plurality of mobile wireless devices, based on the third phone number and the fourth phone number (e.g.,

Tsampalis's send message circuitry "loop[s] through of the recipient IDs 402 in the active message recipient list 218 to send messages to each designated recipient").

APPLE-1003, ¶136.

15. Claim 13

It was well-known that "some representative push technologies include Short Message Service (SMS), Wireless Application Protocol (WAP) Push, Multimedia Messaging Service (MMS), Session Initiation Protocol (SIP), as well as others" *See* APPLE-1083, 2:11-14; *see also* APPLE-1082, [0033]. Horvath teaches that its system sends and receives SMS, MMS, and IM, which are all operated as a *push model*. APPLE-1004, [0033], [0039]; APPLE-1003, ¶137.

16. Claim 14

As discussed for [1k], *supra*, until the invitee service user shows up in the inviter service user's service phonebook, various information about the invitee service user (e.g., "whether the contact is also a service user, the availability of another service user, preferred modes of communication for the other service user and the like") would not be shared with the inviter. *See* APPLE-1029, [0029]. "Preferred modes of communication" are a type of *contact information used to send messages to the client program*. APPLE-1003, ¶138.

17. Claim 15

Supra, [1h] (describing that, for certain receiving mobile devices, the HLR 202 and/or HSS 210 would provide a response when the phone number of the receiving mobile device is not associated with a subscriber of an IM service), [1i] (describing invitation is sent from the combination's application client via SMS).

18. Claim 16

Supra, [3].

19. Claim 17

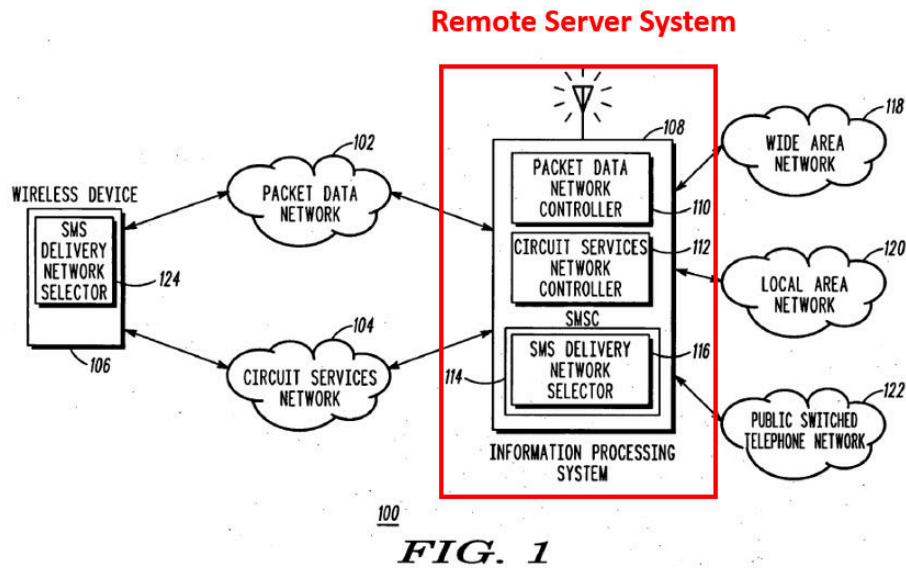
Supra, [1d].

20. Claim 18

[18pre]

Horvath describes an information processing system 108 that “includes, in one embodiment, a packet data network controller 110 and a circuit services network control 112 for maintaining each network 102, 104, respectively.”

APPLE-1004, [0028]; APPLE-1003, ¶142.



APPLE-1004, FIG. 1 (annotated)

Horvath describes that wireless communication system 100 includes a home location register (“HLR”) 202 and a mobile switching center (“MSC”) 204 that are coupled to and control the circuit services network. APPLE-1004, [0002]-[0003], [0031]-[0033], FIGS. 1, 2; APPLE-1003, ¶143. The wireless communication system 100 also includes a “proxy call session control function (‘P-CSCF’) 206,” an “interrogating/serving call session control function (‘I, S-CSCF’) 208,” and a “registrar such as a home subscriber server (‘HSS’),” which are coupled to the packet switched network. See APPLE-1004, [0004], [0006], [0008], [0028], [0033]-[0038], [0075]-[0076], FIGS. 1, 2, 3.

Horvath teaches that, “[a]lthough only the SMSC 114 is shown as residing in

the main memory 306, any combination of IMS components such as the P-CSCF 206, I,S-CSCF 208, and HSS 210 can also reside in the main memory 306.”

APPLE-1004, [0052]. And Horvath teaches that “[a]ny suitably configured processing system is similarly able to be used as the information processing system 108,” including, for example, “a personal computer, workstation, or the like,” which can run the “Windows Server 2003 operating system.” APPLE-1004, [0052], [0057]. Accordingly, Horvath teaches *a server system* (e.g., information processing system 108 including at least P-CSCF 206, I,S-CSCF 208, and HSS 210). APPLE-1003, ¶144.

Horvath describes that “[t]he packet data network 102 and the circuit services network 104 support any number of wireless devices 106.” APPLE-1004, [0027]. As discussed for [1a], *supra*, the combination includes a single application client downloaded to and run on the wireless devices to achieve the benefits identified in §IV.A.2(e). Because the information processing system 108 (*server system*) includes controllers for each of the networks 102 and 104—thus supporting the networks—and the networks support any number of wireless devices 106 executing the combination’s application client, the information processing system 108 (*server system*) *support[s] a plurality of client programs*. APPLE-1003, ¶145.

[18a]

Horvath describes that the information processing system 108 “includes a computer 302” that “has a processor 304...connected to a main memory 306” (*a storage device*). APPLE-1004, [0052]; APPLE-1003, ¶146.

[18b]

Horvath teaches that the information processing system 108 has a “network adapter hardware 312” that is used to provide “an interface to the packet data network 102 and the circuit services network 104” (*a network interface*), where the packet data network 102 is “an Internet Protocol (‘IP’) connectivity network, which provides data connections at much higher transfer rates than [*sic*] a traditional circuit services network” (*supports Internet Protocol (IP)*). APPLE-1004, [0024], [0058], FIGS. 1-3; APPLE-1003, ¶147.

[18c]

Supra, [1c].

[18d]

As discussed for [1c], *supra*, the information processing system 108 registers and authenticates the wireless devices 106, through the S-CSCF, P-CSCF 206, and HSS 210. *See* APPLE-1004, [0035]-[0041]; APPLE-1003, ¶149. Horvath describes that HSS 210—a part of information processing system 108—“comprises a database including profiles associated with each wireless device 106

registered with the IMS.” APPLE-1004, [0035]. HSS 210 identifies each registered wireless device 106 with a “tel-URI, [which] for example is the telephone number assigned to the wireless device 106.” *Id.*

Accordingly, in Horvath-Tsampalis-Kansal-Quon, the server system (*e.g.*, information processing system 108) ***adds the phone number to a subscriber list*** (*e.g.*, the addition of a new wireless device 106 profile to the database), ***stored on the storage device*** (*e.g.*, because HSS 210 is part of information processing system 108, at least a portion of the profile database will be stored in main memory 306, particularly where the HSS 210 is performing any functions with respect to the profiles), ***based on the authentication*** (*e.g.*, the creation of a profile results from wireless device 106 registering, which requires authentication). APPLE-1003, ¶150.

[18e]

Supra, [1d].

[18f]

Supra, [1d], [7].

[18g]

Supra, [1e1]-[1e2], [7].

[18h]

As discussed for [6], *supra*, in an IMS network like the one taught by Horvath, the IM service would be administered by an application server within the IMS domain. Horvath describes that “application server interfaces with the S-CSCF component of the I,S-CSCF 208 using SIP.” APPLE-1004, [0039]. “The S-CSCF [] determines which application server(s) to forward [an] SIP message associated with the wireless device 106 so that the services subscribed to by the device 106 can be provided.” APPLE-1004, [0038]. In other words, the S-CSCF component of the I,S-CSCF 208 acts as a router for the SIP messages sent between wireless devices 106 and the application server(s). *See* APPLE-1004, [0038]-[0039]. Because the I,S-CSCF 208 is part of the information processing system 108, the messages routed through the I,S-CSCF 208 would be received via the network adapter hardware 312 (*the network interface*) that is used to provide “an interface to the packet data network 102.” *See* APPLE-1004, [0052]; APPLE-1003, ¶154.

One type of service provided over Horvath’s IMS network is an IM service. APPLE-1004, [0033]. As discussed for [6], *supra*, in Horvath’s IMS network, the IM service would be administered by an application server within the IMS domain. IM servers “facilitat[e] passage of instant messages between subscribers who have registered.” *See, e.g.*, APPLE-1006, [0018]. Thus, IM messages would be sent by a sending mobile device, routed through the information processing system 108 to

the IM service application server, and then passed to a receiving mobile device via the information processing system 108 (particularly where the sending and receiving mobile devices shared the same home network). APPLE-1003, ¶155.

An example of this message flow is illustrated below, where the sending mobile device 701 sends an IM to the IM service application server 704 (shown by green arrows) and the IM service application server 704 passes the IM to the receiving mobile device 703 (shown by blue arrows). APPLE-1003, ¶155.

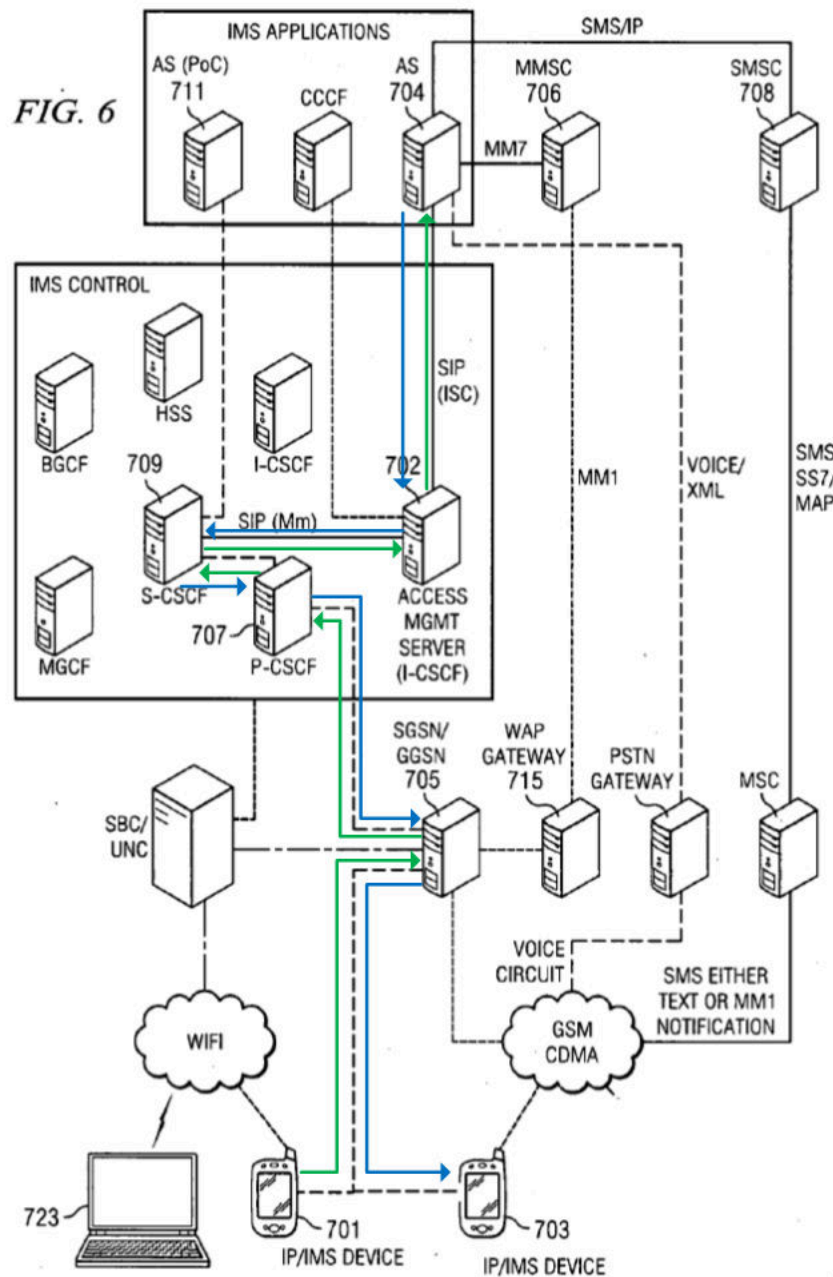


Diagram Based on Modified FIG. 6 of APPLE-1074

“Instant messages may be directed to the instant messaging service to which the user subscribes, with the user being identified with a username,” otherwise

known as a “screen name.” APPLE-1016, [0019], [0030]; APPLE-1029, [0024];
see also APPLE-1024, 3:28-35; APPLE-1059, [0025]; APPLE-1003, ¶156.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, the server system (*e.g.*, information processing system 108) ***receives content originated from the client program*** (*e.g.*, an IM message composed with the application client through the unified messaging UI), ***via the network interface*** (*e.g.*, via the network adapter hardware 312 of information processing system 108), ***and provides the content to another client program operable on a second mobile wireless device associated with the user name*** (*e.g.*, routing the sending mobile device’s IM to the application server of the IM service and then on to the application client of the receiving mobile device). APPLE-1003, ¶157.

[18i]

Supra, [1d].

[18j1]

Supra, [1e1].

[18j2]

Supra, [1e2].

[18k1]

Supra, [1g].

[18k2]

Supra, [1h].

[18l]

Supra, [1h]-[1i] (the same mechanism for inserting message content into a second message addressed to the second phone number of second receiver mobile wireless device which is not associated with a subscriber of the IM service, as discussed above for [1h]-[1i], applies to inserting message content into a message addressed to a phone number of a third receiver mobile wireless device which is not associated with a subscriber of the IM service).

21. Claim 19

Supra, [3].

22. Claim 20

Supra, [3].

23. Claim 21

Supra, [18h]; APPLE-1059, [0025] (“Instant messages can be addresses using a User-ID which is a unique instant messaging address assigned to a user. The User-ID is syntactically equivalent to an e-mail address.”).

24. Claim 22

Supra, [5].

25. Claim 23

Supra, [1k].

26. Claim 24

Supra, [1c], [1d].

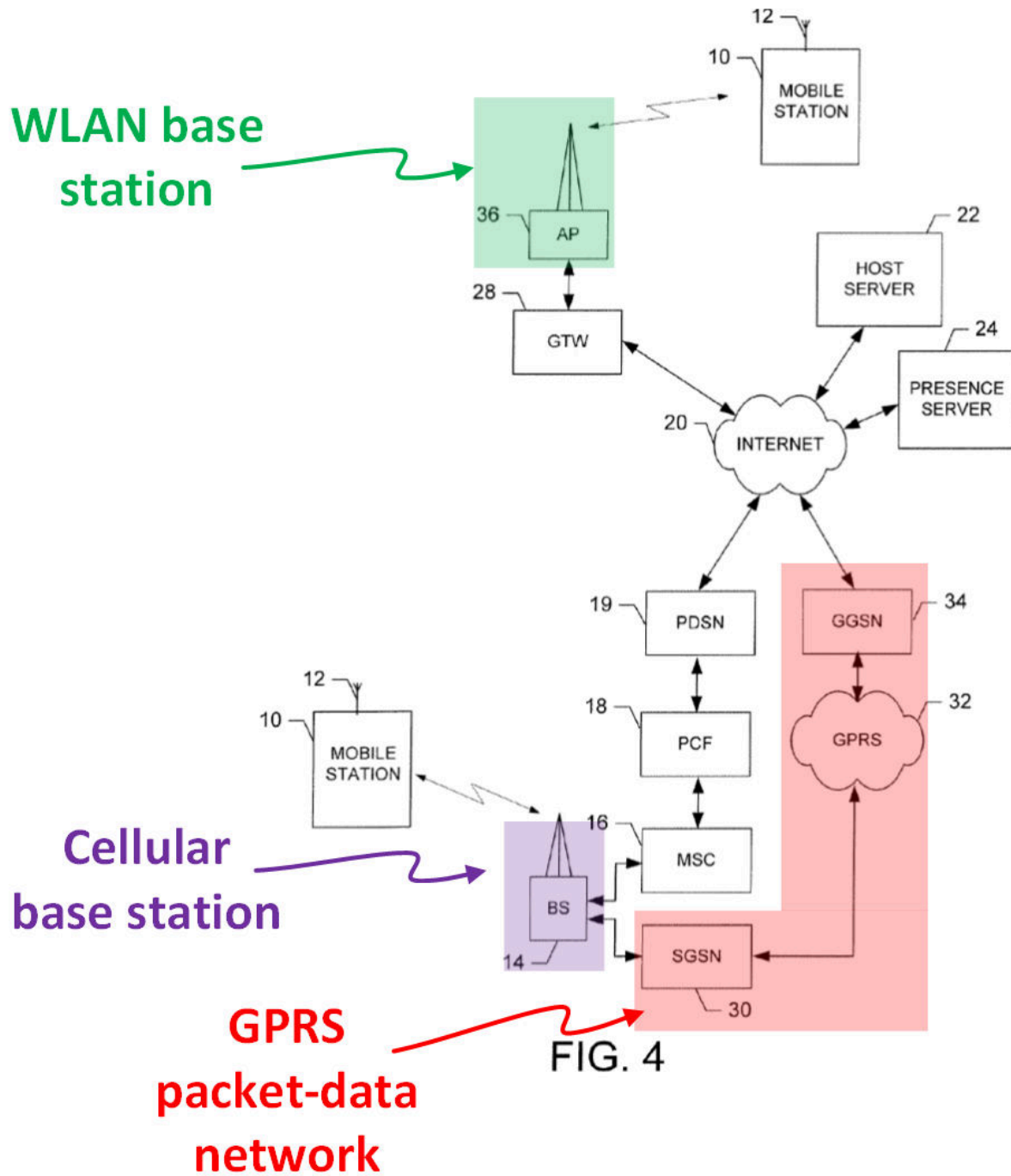
27. Claim 25

[25pre]

Supra, [1pre1].

[25a]

Horvath explains that the “packet data network 102, in one embodiment, comprises...a General Packet Radio Service (‘GPRS’) network,..., an 802.11 network,...or the like.” *See e.g.*, APPLE-1004, [0024]. As shown in the following diagram, a mobile device communicating via GPRS communicates with a base station of a cellular network. *See* APPLE-1053, FIG. 4, 12:54-13:60. And a mobile device communicating via an 802.11 network communicates with a WLAN access point, which is a type of base station. *See* APPLE-1053, FIG. 4, 13; APPLE-1003, ¶171 (citing APPLE-1011, 5:1-33, 6:27-32, FIG. 5B; APPLE-1009, 1, 3, 4; APPLE-1037).



APPLE-1053, FIG. 4 (annotated)

[25b]

Supra, [18pre].

[25c]

As discussed for [6], *supra*, in an IMS network like the one taught by Horvath, the IM service would be administered by an application server within the IMS domain of the SIP network. APPLE-1003, ¶173. “A subscriber profile sent to the S-CSCF includes the filter criteria which are used by the S-CSCF to determine the application servers that are to be notified that they are to provide services for the wireless device 106.” APPLE-1004, [0041]. Horvath describes that these subscriber profiles are stored in the HSS database, which is included in the information processing system 108 (*server system*). APPLE-1004, [0035].

At the time a mobile device subscribes to services of an application server, the “subscription updates the subscriber record in the IMS HSS.” *See, e.g.*, APPLE-1014, [0058], [0077]; APPLE-1003, ¶174. When a user is subscribed to Horvath-Tsampalis-Kansal-Quon’s IM service, at least one mechanism for updating the subscription information stored in the HSS would have been *a subscription message indicating that the first mobile wireless device is subscribing to* the IM service, because the subscription information would have to be communicated to the HSS in some form of message in order to update the appropriate subscriber profile. *See id.*

Horvath-Tsampalis-Kansal-Quon’s IM service is a packet-switched message service that is for sending and receiving packet-switched messages other than

SMS, EMS, and MMS messages, over the packet data network (e.g., the “SIP network” / “IMS network”). See APPLE-1004, [0033]. IM messages were formatted using, among others, the SIP/SIMPLE or Jabber/XXMP standards. APPLE-1007, 8 (Box 1, Box 2). Each of SIP/SIMPLE and Jabber/XXMP are different formats from the SMS/MMS/EMS message formats. APPLE-1003, ¶175. Accordingly, the IM service implemented by Horvath’s SIP network would have been *a service for sending and receiving messages other than Short Message Service (SMS) messages, Enhanced Messaging Service (EMS) messages and Multimedia Messaging Service (MMS) messages*. APPLE-1003, ¶175.

[25d]

As discussed for [1d], *supra*, Tsampalis teaches that an “active message” being composed by a user of the sending mobile device contains a “recipient ID” received from the user, e.g., a phone number in the form of a MSISDN. See APPLE-1005, FIG. 4, [0032]-[0033], [0046], [0061], [0064], FIGS. 3-4, 7, 10; APPLE-1052, 12:53-60; *see also* APPLE-1042, [0037]-[0038], [0066], [0072]; APPLE-1003, ¶176. Tsampalis describes that as a user enters message text (*a message being composed*) and an active message recipient list into the sending mobile device’s user interface, the determinator circuitry 104 “retrieve[s] the [receiving] mobile wireless communication device [MFCI] 110 associated with the” recipient ID of a receiving mobile device entered into the active message

recipient list. APPLE-1005, [0033]; *see also id.*, [0046]. If the MFCI is not available in the sending mobile device's local phonebook, "the remote message format capabilities determinator circuitry 208 [of the sending mobile device] is then invoked and generates a second mobile wireless communication device messaging format capabilities information request 226." APPLE-1005, [0033]-[0034].

As discussed for [1d], *supra*, to obtain the MFCI, the combination's sending mobile device would send a request that included the telephone number of the receiving mobile device to the "network element within the network" (*e.g.*, HLR 202 and/or HSS 210), so that the network element was able to look up the profile of the receiving phone. *See* APPLE-1004, [0035], [0044]; APPLE-1005, [0033], [0039], [0046], [0056]-[0057], [0061]; *see also* APPLE-1042, [0068]; APPLE-1003, ¶177.

As discussed for [25a], *supra*, Horvath explains that the "packet data network 102...comprises...a General Packet Radio Service ('GPRS') network...", and a mobile device communicating, for example, via GPRS communicates with a **base station** of a cellular network. *See* APPLE-1004, [0024]; APPLE-1053, FIG. 4, 12:54-13:60. That is, all communications with the IMS network, including, *e.g.*, the HSS 210, would have been through the packet-data network and therefore ***via the base station***. APPLE-1003, ¶178.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, the server system (e.g., information processing system 108) ***receives a first request*** (e.g., HSS 210 of the IMS network receives an MFC I request), ***from the first mobile wireless device via the base station*** (e.g., from a sending mobile wireless device), ***the first request comprising a numeric identifier in the format of a phone number*** (e.g., the MFC I request includes the recipient ID entered by the user of the sending mobile wireless device, which would have been telephone number), ***wherein the numeric identifier is retrieved, by the first mobile wireless device, from a message being composed*** (e.g., the send message circuitry of the sending mobile wireless device invokes the remote message format capabilities determinator circuitry 208 while an “active message” is being composed). APPLE-1003, ¶179.

[25e]

As discussed for [1d], *supra*, the HSS is a network element that would store MFC I. See APPLE-1004, [0035]; APPLE-1005, [0039]; APPLE-1003, ¶180. The HSS is “part of an Internet Protocol multimedia subsystem (‘IMS’) core that supports the SIP network.” See APPLE-1004, [0033]. “An IMS network usually implements private and public subscriber identities, known as an IP multimedia private identity (IMPI) and an IP multimedia public identity (IMPU).” APPLE-1076, [0004]. “An IMPI is unique to a subscriber terminal (e.g., a telephone),

which may have multiple IMPUs (e.g., a telephone URI and an SIP URI) per IMPI.” *Id.*

Indeed, Kansal describes that “[t]he contact record for an individual may comprise identifying information such...telephone numbers (e.g., home, work, mobile, fax, pager), e-mail address (e.g., home, work, primary, alternative), IM screen names, SMS identifier, MMS identifier,... and so forth.” APPLE-1042, [0037]. “The contacts database 142 also may be used or accessed when composing and/or sending messages.” APPLE-1042, [0038]. And Quon teaches that “the service phonebook may have various features, but preferably it contains at least contact names and associated contact information, such as mobile or land-based phone numbers, instant messaging screen names, email addresses, and the like.” APPLE-1029, [0029]. In other words, it was known to create profiles that associated all of a user’s public identities. APPLE-1003, ¶181.

Thus, the MFCI and service-subscription information for the registered wireless mobile devices would have included any available contact addresses for the services associated with the registered wireless mobile devices in order to better determine how best to send a message. *See* APPLE-1004, [0075]; APPLE-1005, [0029], [0031]; APPLE-1042, [0037]-[0038]; *see also* APPLE-1076, [0011]; APPLE-1074, [0010], [0052]; APPLE-1082, [0009]; APPLE-1003, ¶182.

Accordingly, in Horvath-Tsampalis-Kansal-Quon, the server system (e.g., information processing system 108) ***determines that an email address is associated with the numeric identifier and that the email address is associated with a second mobile wireless device*** (e.g., the subscriber profiles stored by the HSS would include all of a user's public identities, such the user's telephone numbers and email addresses, and as a user provided these various public identities through interactions with the IMS system, the HSS would determine associations between identities and devices in order to map all of a user's contact information). APPLE-1003, ¶183.

[25f1]

As discussed for [25e], *supra*, the MFCI and service-subscription information for the registered wireless mobile devices would have included any available contact addresses for the services associated with the registered wireless mobile devices. For similar reasons to those described in §IV.A.2(e)(i), *supra*, providing a sending mobile wireless device with more detailed information about the receiving mobile wireless device, including information about all available contact addresses, would help the sending user determine how and where to send a message and what content should be included. APPLE-1003, ¶184.

Including these contact addresses in the response to the MFCI request would have been made possible where the HSS determined associations between

identities and devices in order to map all of a user's contact information. *See, e.g.*, APPLE-1076, [0011]; APPLE-1003, ¶185. Accordingly, in Horvath-Tsampalis-Kansal-Quon, the server system (*e.g.*, information processing system 108) ***sends, based on the determination that the email address is associated with the second mobile wireless device*** (*e.g.*, a response containing information about all available contact addresses was made possible because the HSS determined associations between identities and devices and therefor the response is “based on” those associations), ***a first response to the first request, to the first mobile wireless device*** (*e.g.*, the HSS providing a response to the MFCI request that included information about all available contact addresses).

[25f2]

Supra, [1e2]-[1f].

[25g]

Supra, [1g] (the “second phone number” recited in [1g]-[1i] corresponds to the “another phone number” recited in [25g]).

[25h]

Supra, [1g]-[1h] (the “second phone number” recited in [1g]-[1i] corresponds to the “third mobile wireless device” recited in [25h]). Because the MFCI in the response indicated that the “third mobile wireless device” had limited

messaging capabilities, the second response *indicating that a message to a third mobile wireless device is not to be sent via the service*. Tsampalis describes “embodiments [that] include no user prompts whatsoever” with respect to the format transformation of messages being sent, which would have resulted in an automatic transformation away from any message format that the MFCI indicates a recipient is not capable of receiving (*not [being] sent via the service*). See APPLE-1005, [0033], [0053]-[0055], [0062]; APPLE-1003, ¶188.

28. Claim 26

Supra, [9] (regarding determination of a device being “inactive,” which could be determined at any time), [25h] (where the indication that a message should not be sent would have been sent *to a plurality of mobile wireless devices* when a plurality of mobile wireless devices each request the MFCI of the same mobile wireless device with limited capabilities). APPLE-1003, ¶189.

29. Claim 27

Supra, [1c] (authentication via SMS), [18d] (adding the phone number to a subscriber list subsequent to authentication), [5] (message sent to receiver device via IM service where screen name is the same as the e-mail address). APPLE-1003, ¶190.

30. Claim 28

Supra, [26].

31. Claim 29

Supra, [18h], [26].

32. Claim 30

Supra, [5], [27] (at least one message to the second mobile wireless device is routed via the email address and via the IM service).

As discussed for [1g]-[1h], *supra*, certain wireless mobile device's MFCI would indicate that they had "limited messaging capabilities." *See, e.g.*, APPLE-1005, [0003], [0034], [0061]-[0062]; APPLE-1029, [0029]; APPLE-1042, [0078]; APPLE-1053, 2:9-17; APPLE-1003, ¶194.

For at least some wireless mobile devices with limited capabilities, the MFCI would indicate it is only capable of receiving SMS, so the sending mobile phone would send an SMS message to the receiving mobile phone. *See id.* This is consistent with the unified messaging UI described by Kansal, which determines sending format "based on programmed and/or detected preferences, constraints [*e.g.*, the sending mobile phone's registration or connection status with the circuit-

switch and packet-switched networks], and/or availability of a recipient to receive messages of a certain format.” APPLE-1042, [0078]; APPLE-1003, ¶195.

Tsampalis describes “embodiments [that] include no user prompts whatsoever” with respect to the format transformation of messages being sent, which would have resulted in an automatic transformation to an SMS message format when the MFCI indicates the receiving mobile wireless device is only capable of receiving SMS (*should be sent via SMS*). See APPLE-1005, [0033], [0053]-[0055], [0062]; APPLE-1003, ¶196.

V. CONCLUSION AND FEES

Petitioner respectfully requests institution of IPR and cancellation of all Challenged Claims. Petitioner authorizes the Patent and Trademark Office to charge any fees to Deposit Account No. 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)

Apple Inc. is the petitioner and the real party-in-interest.

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

Petitioner is not aware of any disclaimers, reexamination certificates or petitions for inter partes review for the ’601 Patent. The ’601 Patent is the subject of a number of civil actions including: *HBCU Messaging US LP v. Apple, Inc. et al.*, 1-24-cv-01199 (WDTX), filed October 7, 2024.

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

Petitioner provides the following designation of counsel.

Lead Counsel	Backup counsel
W. Karl Renner, Reg. No. 41,265 Fish & Richardson P.C. 60 South Sixth Street Suite 3200 Minneapolis, MN 55402 Tel: 202-783-5070 Fax: 877-769-7945 Email: IPR50095-0265IP1@fr.com	David Holt, Reg. No. 65,161 Nicholas Stephens, Reg. No. 74,320 Charlene Thrower, Reg. No. 79,289 Joseph Bauer, Reg. No. 81,218 Fish & Richardson P.C. 60 South Sixth Street Minneapolis, MN 55402 Tel: 202-783-5070 Fax: 877-769-7945 Email: IPR50095-0265IP1@fr.com

D. Service Information

Please address all correspondence and service to the address listed above.

Petitioner consents to electronic service by email at IPR50095-0265IP1@fr.com.

Respectfully submitted,

Dated: October 31, 2025

/David L. Holt/
W. Karl Renner, Reg. No. 41,265
David Holt, Reg. No. 65,161
Nicholas Stephens, Reg. No. 74,320
Charlene Thrower, Reg. No. 79,289
Joseph Bauer, Reg. No. 81,218
Fish & Richardson P.C.
60 South Sixth Street
Minneapolis, MN 55402
T: 202-783-5070
F: 877-769-7945

(Control No. IPR2026-00107)

Attorneys for Petitioner

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 13,655 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated: October 31, 2025

/David L. Holt/

W. Karl Renner, Reg. No. 41,265
David Holt, Reg. No. 65,161
Nicholas Stephens, Reg. No. 74,320
Charlene Thrower, Reg. No. 79,289
Joseph Bauer, Reg. No. 81,218
Fish & Richardson P.C.
60 South Sixth Street
Minneapolis, MN 55402
T: 202-783-5070
F: 877-769-7945

(Control No. IPR2026-00107)

Attorneys for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on October 31, 2025, a complete and entire copy of this Petition for *Inter partes* Review, Power of Attorney, and all supporting exhibits were provided via Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

VOLPE KOENIG
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103
UNITED STATES
(215) 568-6400

/Crena Pacheco/

Crena Pacheco
Fish & Richardson P.C.
60 South Sixth Street
Minneapolis, MN 55402
pacheco@fr.com