

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Graham Merrett
U.S. Patent No.: 11,653,183 Attorney Docket No. 50095-0262IP1
Issue Date: May 16, 2023
Appl. Serial No.: 17/959,697
Filing Date: October 4, 2022
Title: UNDELIVERED MESSAGE THRESHOLD

Mail Stop Patent Board

Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

**PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT
NO. 11,653,183 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	REQUIREMENTS FOR IPR	1
	A. Grounds for Standing.....	1
	B. Challenge and Relief Requested.....	1
	C. Level of Ordinary Skill in the Art.....	2
III.	SUMMARY OF THE '183 PATENT	2
	A. Brief Description.....	2
	B. Prosecution History.....	3
	C. Claim Construction	4
IV.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	4
	A. GROUND 1 – Horvath-Tsampalis-Kansal-Dorenbosch Renders	
	Obvious Claims 1-30	4
	1. Analogous Art	4
	2. Proposed Combination	5
	3. Claim 1	28
	4. Claim 2	58
	5. Claim 3	61
	6. Claim 4	61
	7. Claim 5	62
	8. Claim 6	64
	9. Claim 7	65
	10. Claim 8	67
	11. Claim 9	68
	12. Claim 10	68
	13. Claim 11	68
	14. Claim 12	68
	15. Claim 13	69
	16. Claim 14	69
	17. Claim 15	73
	18. Claim 16	74
	19. Claim 17	74
	20. Claim 18	75
	21. Claim 19	77
	22. Claim 20	77

23.	Claim 21	78
24.	Claim 22	78
25.	Claim 23	79
26.	Claim 24	79
27.	Claim 25	80
28.	Claim 26	80
29.	Claim 27	80
30.	Claim 28	80
31.	Claim 29	82
32.	Claim 30	82
V.	CONCLUSION AND FEES	83
VI.	MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1).....	83
A.	Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1).....	83
B.	Related Matters Under 37 C.F.R. § 42.8(b)(2).....	83
C.	Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3).....	84
D.	Service Information	84

LIST OF EXHIBITS

APPLE-1001	U.S. Patent No. 11,653,183 (“the ’183 Patent”)
APPLE-1002	File History of U.S. Patent No. 11,653,183
APPLE-1003	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-1013-1024	RESERVED
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-1026-1031	RESERVED
APPLE-1032	U.S. Pub. No. 2008/0261577 (claiming priority to Provisional App. No. 60/913,187) (“Celik”)
APPLE-1033	U.S. Provisional Application No. 60/913,187
APPLE-1034-1036	RESERVED

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

APPLE-1038-1041 RESERVED

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

APPLE-1043 RFC 2778 – A Model for Presence and Instant Messaging. Available at <https://datatracker.ietf.org/doc/html/rfc2778>. February 2000.

APPLE-1044 RESERVED

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

APPLE-1046 RESERVED

APPLE-1047 U.S. Pub. No. 2008/0120427 (“Ramanathan”)

APPLE-1048-1049 RESERVED

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

APPLE-1051 U.S. Pub. No. 2008/0176538 (“Terrill”)

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 U.S. Pub. No. 2005/0002407 (“Shaheen”)

APPLE-1057 U.S. Patent No. 6,757,365 (“Bogard”)

APPLE-1058 WO 01/41477 (“Lee”)

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

APPLE-1060 U.S. Pub. No. 2003/0208545 (“Eaton”)

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-1065-1071	RESERVED
APPLE-1072	U.S. Pub. No. 2008/0310425 (“Nath”)
APPLE-1073-1074	RESERVED
APPLE-1075	U.S. Pub. No. 2014/0258423 (“Schaedler”)
APPLE-1076-1083	RESERVED
APPLE-1084	U.S. Pub. No. 2005/0025174 (“Fischer”)
APPLE-1085	U.S. Pub. No. 2005/0270977 (“King”)
APPLE-1086	U.S. Pub. No. 2006/0039395 (“Perez-Costa”)
APPLE-1087	U.S. Pub. No. 2008/0045214 (“Wen”)
APPLE-1088	U.S. Pub. No. 2006/0185003 (“Laitinen”)
APPLE-1089-1099	RESERVED
APPLE-1100	Complaint, <i>HBCU Messaging US LP v. Apple, Inc. et al.</i> , 1-24-cv-01199 (WDTX) (Oct. 7, 2024)
APPLE-1101	Infringement Charts of the ’183 Patent

LISTING OF CLAIMS

Claim 1	
1pre	A system comprising:
1a	a sending mobile phone that transmits short message service (SMS) messages via a cellular network and packet switched messages via a packet switched message service (PSMS); and
1b	server that supports the PSMS;
1c1	wherein: the sending mobile phone retrieves first information representing a phone number of a first receiving mobile phone from a first message and
1c2	sends the first information to the server;
1d	the server, in response to receipt of the first information, sends a first response to the sending mobile phone when the phone number of the first receiving mobile phone is not associated with a subscriber of the PSMS;
1e	after the first response is received by the sending mobile phone, the sending mobile phone sends the first message via an SMS bearer to the first receiving mobile phone;
1f1	the sending mobile phone retrieves second information representing a phone number of a second receiving mobile phone from a second message being composed and
1f2	sends the second information to the server; the second receiving mobile phone being associated with a subscriber of the PSMS;
1g	the server, in response to receipt of the second information, sends a second response to the sending mobile phone, the second response communicating a different query result than the first response;

1h	the sending mobile phone sends the second message via a wireless local area network (WLAN) and via the PSMS, to the second receiving mobile phone on a condition that a maximum number of undelivered messages corresponding to the second receiving mobile phone has not been exceeded;
1i	the PSMS is a service for sending and receiving packet switched messages other than SMS, enhanced message service (EMS) and multimedia message service (MMS) messages; and
1j	content of the first message and content of the second message is displayed by a same messaging client.
Claim 2	
2pre	The system of claim 1,
2a	wherein one or more undelivered messages are queued for later delivery to the second receiving mobile phone;
2b	wherein the sending mobile phone and the second receiving mobile phone are authenticated to the PSMS based on hardware identification.
Claim 3	
3	The system of claim 2, wherein the server, in response to receipt of the second information, sends the second response to the sending mobile phone when the phone number of the second receiving mobile phone has an active status.
Claim 4	
4	The system of claim 3, wherein the second receiving mobile phone has an active status when the one or more undelivered messages queued for later delivery do not exceed the maximum number of undelivered messages.

Claim 5	
5	The system of claim 1, wherein subsequent to one message becoming queued for the second receiving mobile phone, messages from another sending mobile phone to the second receiving phone are no longer routed via the PSMS.
Claim 6	
6	The system of claim 1, wherein a third message is sent to the second receiving mobile phone, via an SMS bearer, on a condition that the maximum number of undelivered messages has been exceeded.
Claim 7	
7pre1	A method performed by
7pre2	a sending mobile phone that transmits short message service (SMS) messages via a cellular network and packet switched messages via a packet switched message service (PSMS), the method comprising:
7a1	retrieving, by the sending mobile phone, first information representing a phone number of a first receiving mobile phone from a first message and
7a2	sending the phone number of the first receiving mobile phone to a server;
7b	receiving, by the sending mobile phone, a first response, when the phone number of the first receiving mobile phone is not associated with a subscriber of the PSMS;
7c	sending, by the sending mobile phone, after the first response is received by the sending mobile phone, the first message, via an SMS bearer, to the first receiving mobile phone;
7d1	retrieving, by the sending mobile phone, second information representing at least a phone number of a second receiving mobile phone from a second message being composed and

7d2	sending the phone number of the second receiving mobile phone to the server, the second receiving mobile phone being associated with a subscriber of the PSMS;
7e	receiving a second response, by the sending mobile phone, the second response communicating a different query result than the first response; and
7f	sending, by the sending mobile phone, a second message via a wireless local area network (WLAN) and via the PSMS, to the second receiving mobile phone on a condition that a maximum number of undelivered messages corresponding to the second receiving mobile phone has not been exceeded;
7g	wherein the PSMS is a service for sending and receiving packet switched messages other than SMS, enhanced message service (EMS) and multimedia message service (MMS) messages; and
7h	wherein content of the first message and content of the second message is displayed by a same messaging client.
Claim 8	
8	The method of claim 7, wherein one or more undelivered messages are queued for later delivery to the second receiving mobile phone; wherein the second message is sent according to an email address.
Claim 9	
9	The method of claim 7, wherein the server, in response to receipt of the second information, sends the second response to the sending mobile phone when the phone number of the second receiving mobile phone has an active status; wherein the second message is sent according to a user identifier.

Claim 10	
10	The method of claim 9, wherein the second receiving mobile phone has an active status when the one or more undelivered messages queued for later delivery do not exceed the maximum number of undelivered messages.
Claim 11	
11	The method of claim 7, wherein subsequent to one message becoming queued for the second receiving mobile phone, messages from another sending mobile phone to the second receiving phone are no longer routed via the PSMS.
Claim 12	
12	The method of claim 7, further comprising: sending, by the sending mobile phone, a third message to the second receiving mobile phone, via an SMS bearer, on a condition that the maximum number of undelivered messages corresponding to the second receiving mobile phone has been exceeded.
Claim 13	
13	The method of claim 7, wherein the sending mobile phone is authenticated to the PSMS via a hardware identification and the sending mobile phone is authenticated to the PSMS via SMS protocol.
Claim 14	
14pre	A system comprising:
14a	a sending mobile phone that transmits short message service (SMS) messages via a cellular network and packet switched messages via a packet switched message service (PSMS); and
14b	at least one server that supports the PSMS;

14c1	wherein: the sending mobile phone retrieves first information representing a phone number of a receiving mobile phone from a first message being composed and
14c2	sends the first information to the at least one server;
14d	the at least one server, in response to receipt of the first information, sends a first response to the sending mobile phone, the receiving mobile phone being associated with a subscriber of the PSMS;
14e	after the first response is received by the sending mobile phone, the sending mobile phone sends the first message to the receiving mobile phone via a wireless local area network (WLAN) and the PSMS;
14f	the sending mobile phone sends second information representing the phone number of the receiving mobile phone to the at least one server;
14g	the at least one server, in response to receipt of the second information, sends a second response to the sending mobile phone based at least in part on a message being undelivered to the receiving mobile phone, the second response communicating different information than the first response;
14h	the sending mobile phone sends a second message via an SMS bearer, to the receiving mobile phone, subsequent to the sending mobile phone receiving the second response;
14i	the PSMS is a service for sending and receiving packet switched messages other than SMS, enhanced message service (EMS) and multimedia message service (MMS) messages; and
14j	content of the first message and content of the second message is displayed by a same messaging client.
Claim 15	
15	The system of claim 14, wherein the message undelivered to the receiving phone is delivered to the at least one server of the PSMS.

Claim 16	
16	The system of claim 15, wherein the message undelivered to the receiving phone is sent by the sending mobile phone.
Claim 17	
17	The system of claim 15, wherein the message undelivered to the receiving phone is sent by another mobile phone.
Claim 18	
18	The system of claim 14, wherein the at least one server receives information from another mobile phone, the information indicating alternative capabilities.
Claim 19	
19	The system of claim 18, wherein based on receipt of the information indicating alternative capabilities, information associated with at least one capability of the subscriber is updated.
Claim 20	
20pre1	A method performed by
20pre2	a sending mobile phone that transmits short message service (SMS) messages via a cellular network and packet switched messages via a packet switched message service (PSMS), the method comprising:
20a1	retrieving, by the sending mobile phone, a phone number of a receiving mobile phone from a first message being composed and
20a2	sending first information representing the phone number of the receiving mobile phone;
20b	receiving, by the sending mobile phone, a first response to the sending, wherein the first response indicates that the receiving mobile phone is associated with a subscriber of the PSMS;

20c	after the first response is received by the sending mobile phone, sending, by the sending mobile phone, the first message via a wireless local area network (WLAN) and the PSMS; and
20d	sending, by the sending mobile phone, a second message via an SMS bearer, to the receiving mobile phone, subsequent to the sending mobile phone receiving the first response and based at least in part on the first message being undelivered to the receiving mobile phone;
20e	wherein the PSMS is a service for sending and receiving packet switched messages other than SMS, enhanced message service (EMS) and multimedia message service (MMS) messages.
Claim 21	
21	The method of claim 20, wherein the first message is undelivered to the receiving mobile phone but is delivered to a server of the PSMS.
Claim 22	
22pre	The method of 20,
22a	wherein the first message is undelivered to the receiving mobile phone;
22b	wherein the sending mobile phone is authenticated to the PSMS via a hardware identification and the sending mobile phone is authenticated to the PSMS via SMS protocol.
Claim 23	
23	The method of claim 20, wherein the first message is queued for delivery by the sending mobile phone.
Claim 24	
24	The method of claim 20, wherein a server of the PSMS receives information from another mobile phone, the information indicating alternative capabilities.

Claim 25	
25	The method of claim 24, wherein based on receipt of the information indicating alternative capabilities, information corresponding to the subscriber associated with the receiving mobile phone is updated.
Claim 26	
26	The method of claim 20, wherein a second response is received, based at least in part on another message being undelivered to the receiving mobile phone, wherein the second response indicates that at least one message should not be sent via the PSMS.
Claim 27	
27	The method of claim 20, further comprising: receiving a third message, via the PSMS, based on an email address of the sending mobile phone.
Claim 28	
28	The method of claim 27, wherein the third message is received by a plurality of devices.
Claim 29	
29	The method of claim 20, further comprising: receiving a third message, via the PSMS, based on a user identifier of the sending mobile phone.
Claim 30	
30	The method of claim 20, wherein during the entire time between when the phone number of the receiving mobile phone is retrieved and when the first response is received, the receiving mobile phone is not connected to any message server.

I. INTRODUCTION

Apple Inc. (“Apple” or “Petitioner”) petitions for IPR of claims 1-30 (“Challenged Claims”) of U.S. Patent No. 11,653,183 (“the ’183 Patent”). As explained in this Petition, there exists a reasonable likelihood that Petitioner will prevail with respect to at least one of the Challenged Claims.

II. REQUIREMENTS FOR IPR

A. Grounds for Standing

Apple Inc. certifies that the ’183 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	’183 Patent Claims	§ 103 Basis
1	1-30	Horvath-Tsampalis-Kansal-Dorenbosch

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

The ’183 Patent’s earliest claimed priority date is July 24, 2007. For purpose of this proceeding alone and without conceding the propriety of the claim, Petitioner treats this as the Critical Date. APPLE-1003, ¶¶17-18.

Reference	Filing Date	Publication Date
Horvath (APPLE-1004)	5/1/2006	11/1/2007
Tsampalis (APPLE-1005)	12/31/2002	10/14/ 2004
Kansal (APPLE-1042)	12/19/2006	6/26/2008
Dorenbosch (APPLE-1006)	5/15/2001	11/21/2002

C. Level of Ordinary Skill in the Art

A person of ordinary skill in the art relating to the subject matter of the '183 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 '183 PATENT

A. Brief Description

The '183 Patent describes techniques for messaging over wireless networks in which a sending wireless device selects a transmission mode for sending an outgoing message based on information indicating whether an intended recipient of the message is a subscriber of a service for receiving messages via a packet-switched bearer. APPLE-1001, 2:64-3:36, 7:65-10:2, Abstract; APPLE-1003, ¶¶24-25.

FIG. 3 is a flowchart that illustrates an example process for selecting a transmission mode for an outgoing message based on information about the recipient:

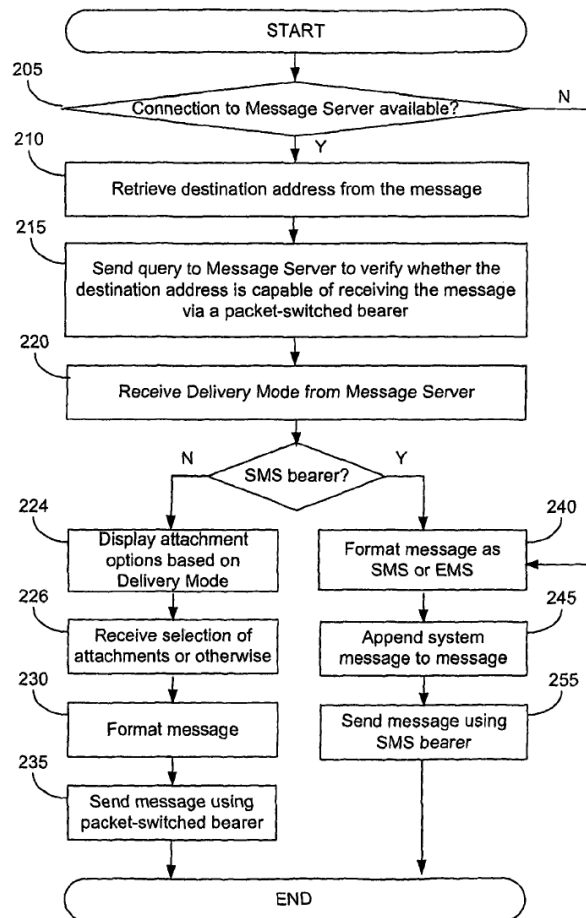


FIG. 3
APPLE-1001, FIG. 3

B. Prosecution History

During prosecution, the examiner allowed the claims without a prior art rejection; none of the art applied in this Petition was cited into the prosecution history. *See* APPLE-1002, 72, 108-116; APPLE-1003, ¶26.

C. Claim Construction

All claim terms should be construed according to the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. §42.100. Petitioner submits that no formal constructions are presently necessary for purposes of demonstrating obviousness of the Challenged Claims based on Grounds 1A and 1B. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“claim terms need only be construed to the extent necessary to resolve the controversy”) (internal quotations omitted). Indeed, this petition demonstrates that the prior art renders obvious the claims when applied in a manner consistent with disclosures found in the ’183 Patent itself and Patent Owner’s allegations of infringement before the district court.

IV. THE CHALLENGED CLAIMS ARE UNPATENTABLE

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

1. Analogous Art

Horvath, Tsampalis, Kansal, and Dorenbosch 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 ’183 Patent. APPLE-1003, ¶27; APPLE-1001, Title, Abstract; APPLE-1004, Title, Abstract; APPLE-1005, Title, Abstract; APPLE-1042, Abstract; APPLE-1006, Abstract; *infra*, §IV; *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). Like the ’183

Patent, the Horvath, Tsampalis, Kansal and Dorenbosch each seek to provide users with a wider range of messaging options. *See* APPLE-1001, 3:9-16; APPLE-1004, [0009] (ability to select wider range of message delivery networks); APPLE-1005, [0065] (“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-1042, [0009] (“a mobile computing device may send and receive messages of different types”); APPLE-1006, [0002] (improving use of instant messaging on mobile devices); APPLE-1003, ¶27.

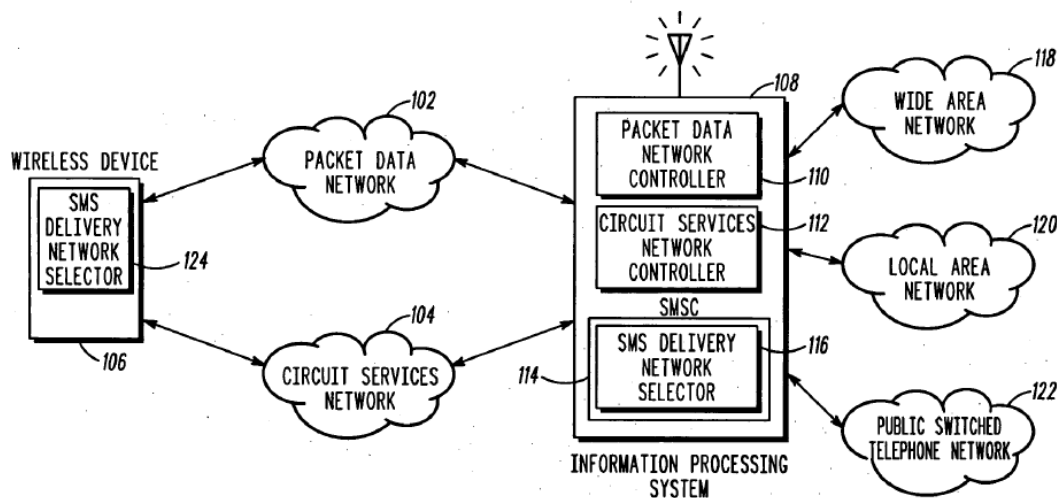
2. Proposed Combination

(a) Horvath¹ (APPLE-1004)

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. APPLE-1003, ¶¶28-31. 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],

¹ General prior art and combination descriptions are incorporated into forthcoming subsections. Emphasis and annotations are each added unless otherwise indicated.

[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.



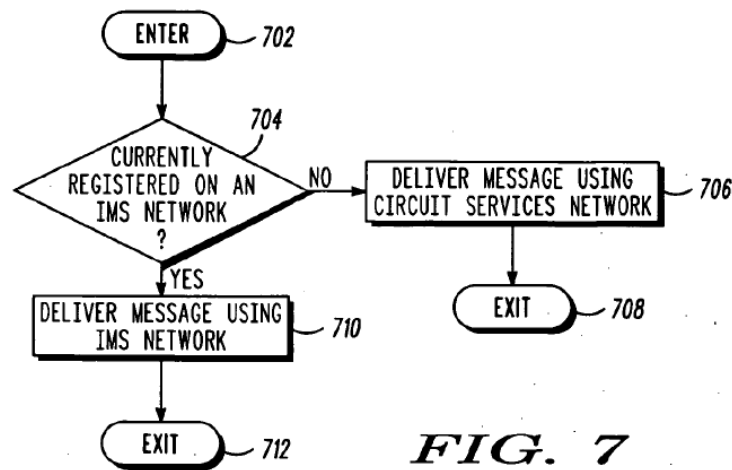
100
FIG. 1

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 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.

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.

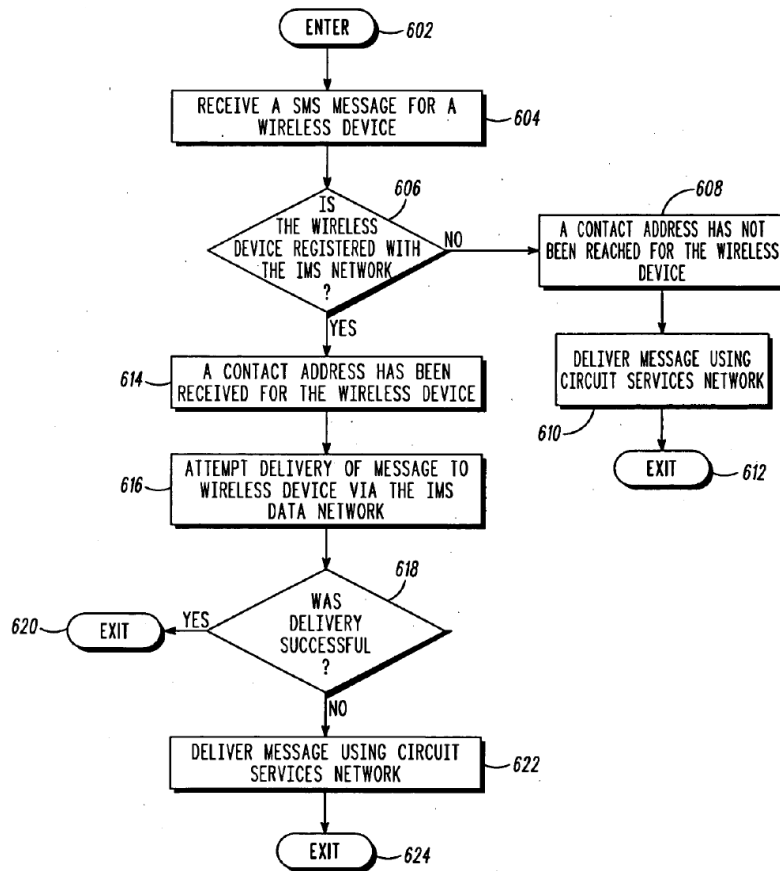


FIG. 6

APPLE-1004, FIG. 6 (server perspective)

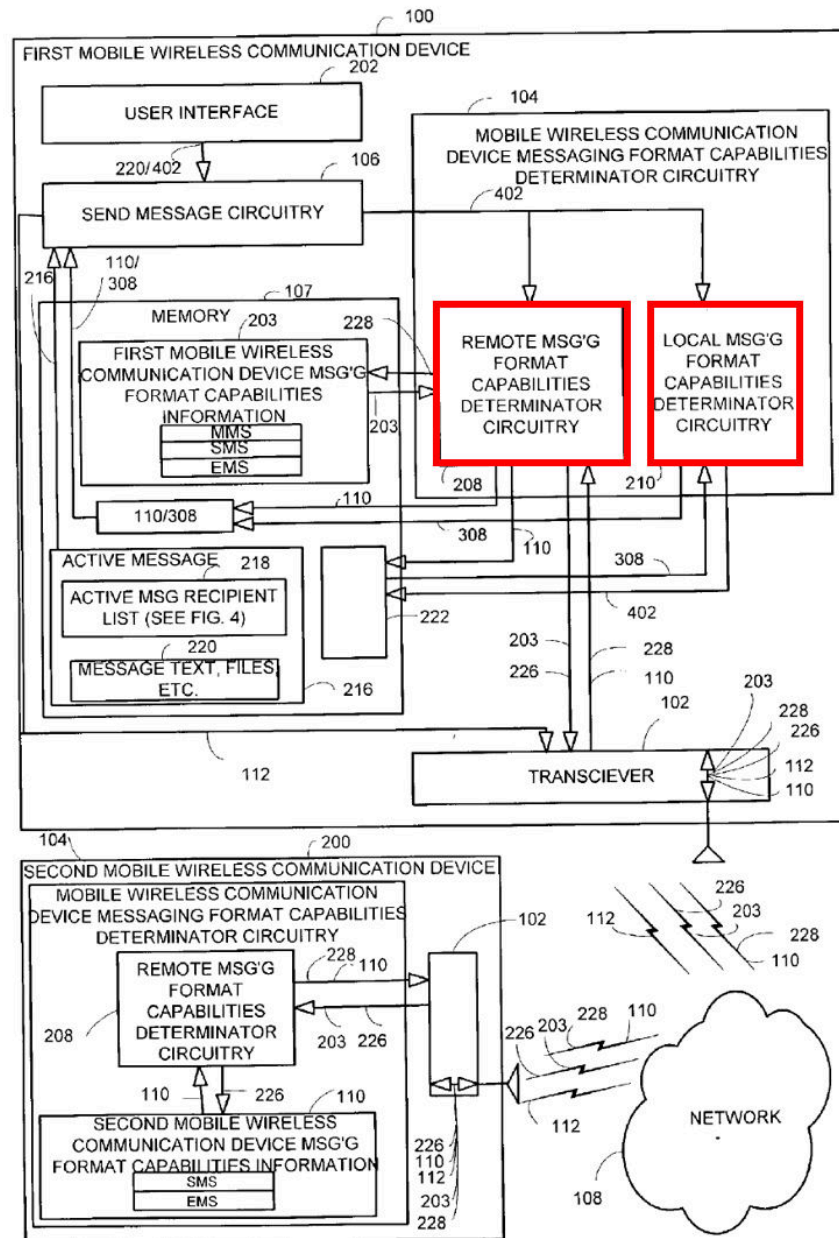
(b) Tsampalis (APPLE-1005)

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]; APPLE-1003, ¶32. In this way,

Tsampalis complements Horvath. APPLE-1003, ¶¶32-35.

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, highlighting the local and remote messaging format capabilities determinator circuitries residing on the first wireless device), FIGS. 5-7. Among the MFCI 110 are the types of messages (*e.g.*, SMS, MMS, EMS) that the intended recipient device is capable of processing. APPLE-1005, [0022]-[0024].

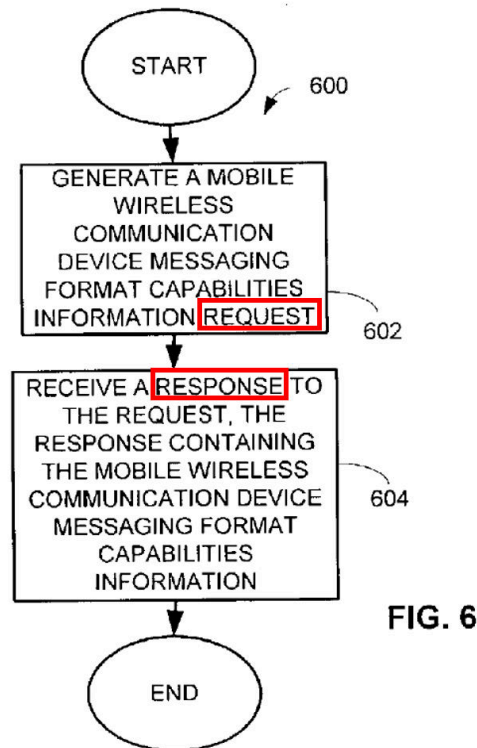
FIG. 2



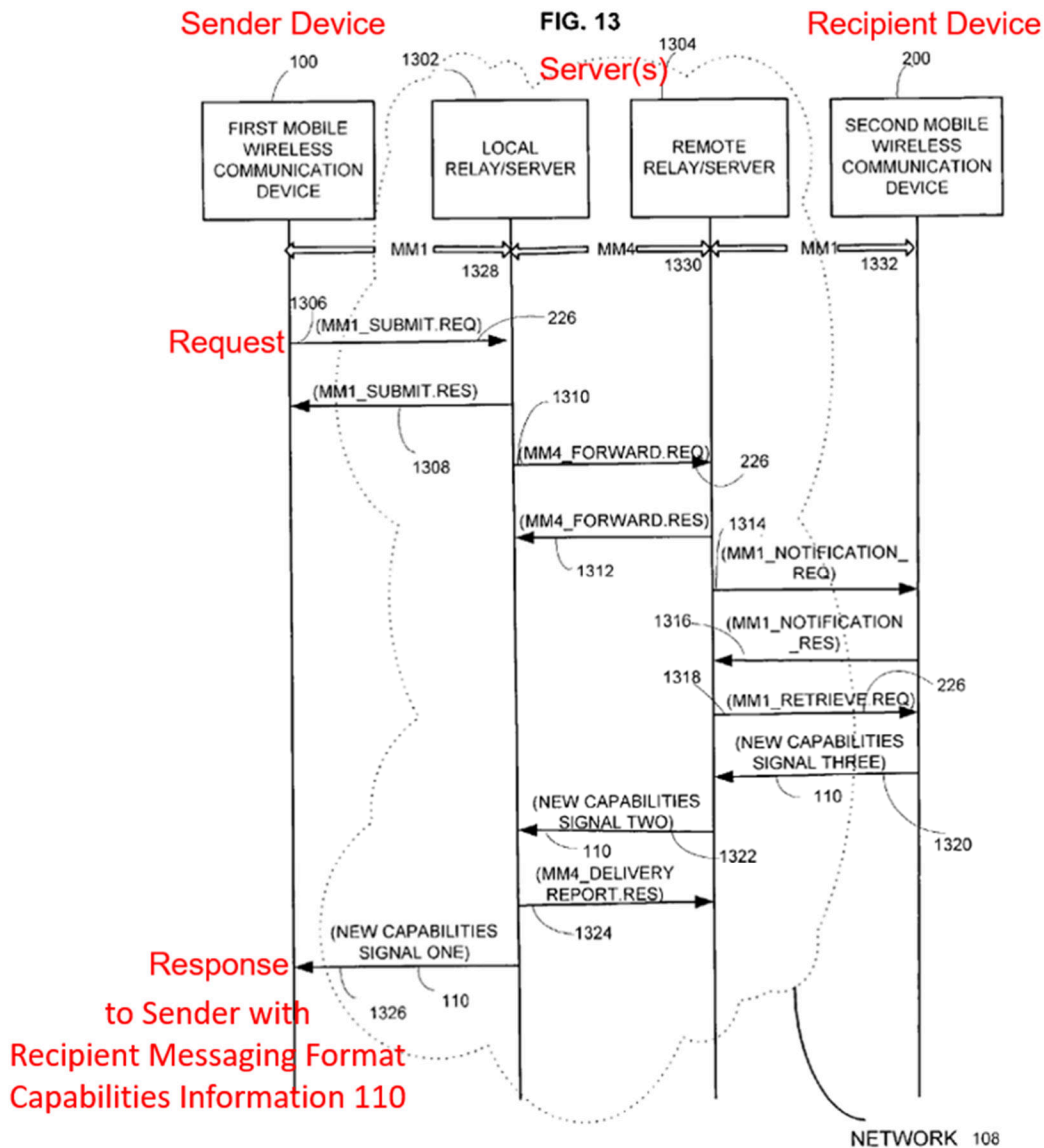
APPLE-1005, FIG. 2 (annotated)

By way of example, 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 (below), 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)

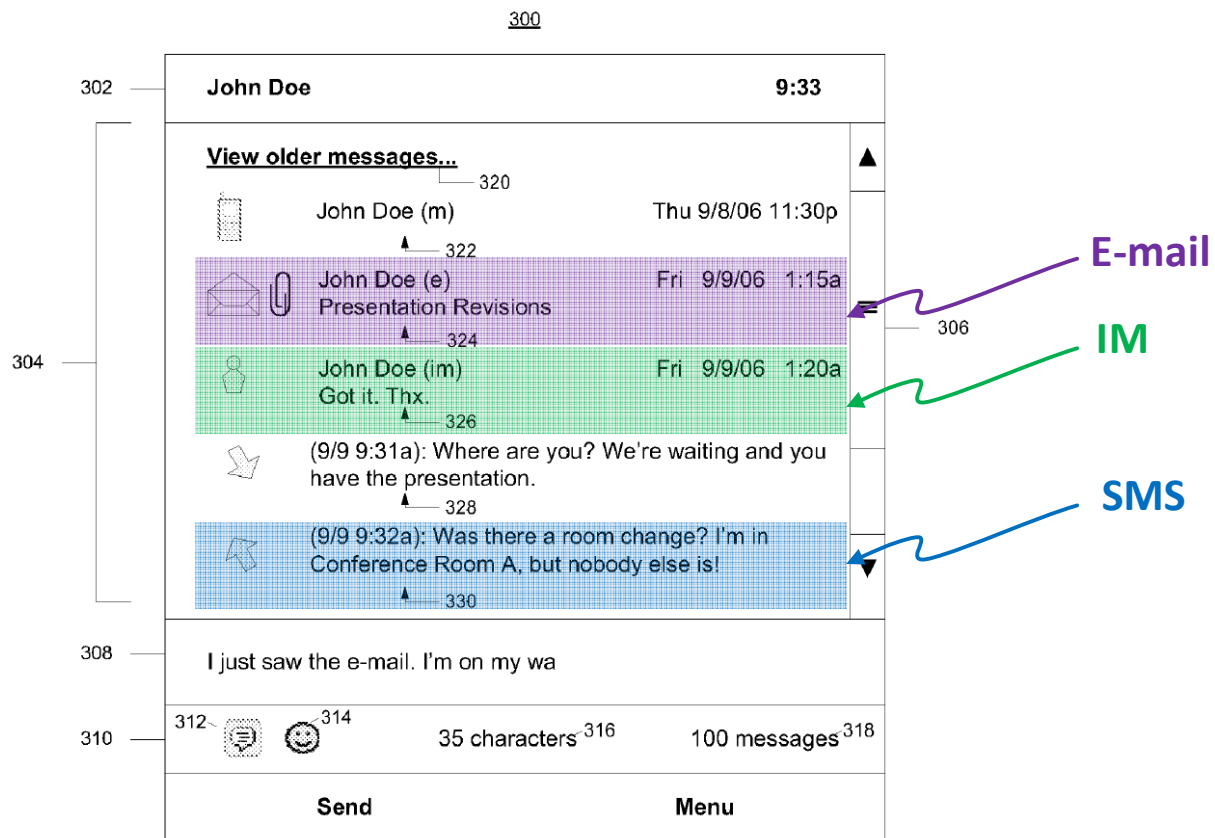


APPLE-1005, FIG. 13, (annotated)

(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 and aggregating for display 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]; FIGs. 2-3 (shown below). APPLE-1003, ¶¶36-37.



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.

(d) Dorenbosch (APPLE-1006)

Dorenbosch explains that then-conventional “IM systems typically rel[ie]d on a best-effort delivery mechanism in which a message intended for a target buddy is delivered if the IM login server determines that the target buddy is available.” APPLE-1006, [0005]. “If the IM login server determine[d] that the target buddy is not available, the message [was] dropped.” *Id.* Indeed, Dorenbosch attributes “considerable delay” and “high cost” to establishing and maintaining an open IM session connection over a circuit-switched mobile network. *Id.*, [0006]. As illustrated in FIG. 1 (below), Dorenbosch mitigates these issues with “an instant message proxy that is capable of maintaining the availability status of a mobile subscriber when the communicati[on] to the subscriber is temporarily broken.” APPLE-1006, [0002]. Dorenbosch teaches two related techniques that (1) help reduce dropped messages and (2) “minimize system connection overhead in a manner that also minimizes the amount of latency

introduced into the system,” respectively. *See* APPLE-1006, [0020], [0024], [0029], [0030], [0036], [0039]-[0040]; APPLE-1003, ¶¶38-41.

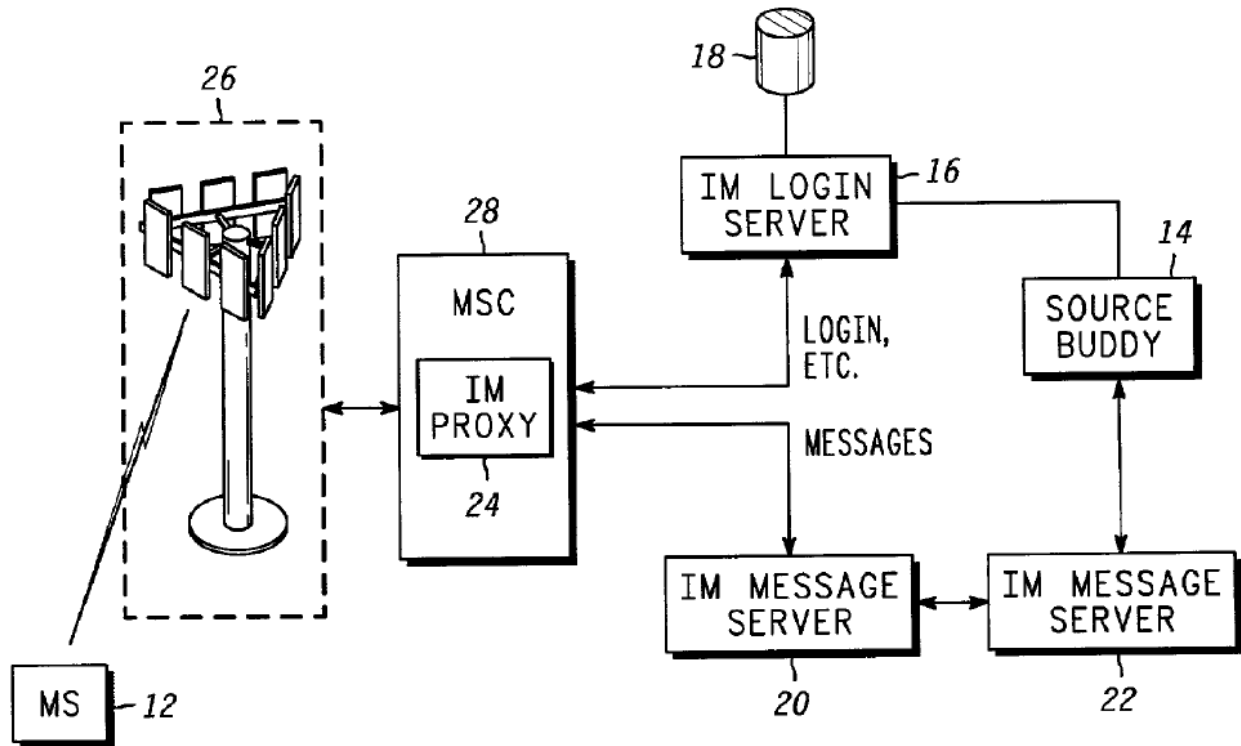


FIG. 1

APPLE-1006, FIG. 1

In one aspect, Dorenbosch describes “an IM session involving [a] mobile subscriber 12 and multiple buddies, such as conventional subscribers 14, 14’ and 14’’, in which [an] IM proxy 24’ stores and bundles IMs in its buffer 36 from the conventional subscribers 14, 14’ and 14’’ based on predetermined participant parameters.” APPLE-1006, [0036]. “When the IM proxy 24’ determines that download parameters have been met, the IM proxy 24’ establishes a connection

with the mobile subscriber 12 and at 122 downloads the stored and bundled messages to the mobile subscriber 12.” APPLE-1006, [0037]³. Two examples of download parameters are: (1) when “more than a predetermined number of messages are stored,” and (2) “a predetermined buffer memory threshold is exceeded.” APPLE-1006, [0040]. To illustrate, the proxy “flushes the IM proxy buffer” by sending the stored messages to the mobile device when the number of

³ Dorenbosch uses the designation ‘24’ when discussing the IM proxy with respect to the message delivery retry technique of the invention illustrated in FIGS. 1-6 and ‘24’ (i.e., with a hash mark) when discussing the message bundling technique of the invention illustrated in FIGS. 7-8. *See, e.g.*, APPLE-1006, [0020], [0032]. However, Dorenbosch describes both techniques as part of the same IM proxy. *See* APPLE-1006, Abstract (“In addition [to re-sending], the IM proxy of the present invention is capable of bundling” IMs), [0031] (“It should be understood that the underlying IM system of the embodiment discussed in connection with FIGS. 7 and 8 is substantially identical to that shown in FIGS. 1-3...”); APPLE-1003, ¶39. A POSITA would have implemented both techniques of Dorenbosch’s teachings in the same IM proxy, because such a configuration would have realized the distinct benefits of each technique and they are functionally complementary. APPLE-1003, ¶39.

messages stored in the IM proxy's buffer exceed a threshold number of messages, or when those messages exceed a threshold amount of that buffer's memory.

APPLE-1006, [0039]-[0040].

In another aspect of Dorenbosch's system, if a mobile IM subscriber temporarily loses network coverage and is therefore unavailable to receive messages, the IM proxy will continue to store messages in the message buffer and retry sending the message(s) (e.g., a predetermined number of times within a predetermined time period) before dropping the message(s) from the buffer.

APPLE-1006, [0020], [0024]. Dorenbosch describes a retry counter and timer that "enable the IM proxy 24 to maintain its IP connection with the IM login server 16, and therefore maintain the mobile subscriber's registered status with the IM login server 16, when the mobile subscriber 12 becomes temporarily unavailable due to roaming or the like." APPLE-1006, [0020]. In this way, even when a mobile subscriber has poor network coverage, the Dorenbosch interface reflects availability of the mobile subscribers. APPLE-1006, [0024]; *see also id.* [0030].

Only after the mobile subscriber "becomes unavailable for receiving instant messages for a period of time that exceeds the number of retries allotted by and programmed into the retry counter and/or the predetermined time period allotted by the timer" will the IM proxy drop "its connection with the IM login server 16" and

“indicat[e] to the IM server 16 that the mobile subscriber 12 is unavailable.”

APPLE-1006, [0028]-[0029].

Dorenbosch describes the above two aspects independently, but a POSITA would have understood that implementing them together would achieve the benefits of each individually.

(e) The Horvath-Tsampalis-Kansal-Dorenbosch Combination

Like the '183 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, 2:64-3:27; APPLE-1004, [0001], [0007], [0024]-[0026], [0050], [0061]-[0062], FIGS. 1, 4, 7; *supra*, §IV.A.2(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]. With this approach, Horvath diverts some of the load otherwise carried by and burdening the circuit-services network. APPLE-1004, [0004], [0009]. Still, a POSITA would have recognized that Horvath’s system was ripe for improvement. APPLE-1003, ¶42. 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-1005, [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, ¶42. 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.2(a) (Horvath); §IV.A.2(b) (Tsampalis). 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.2(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, ¶43.

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, ¶44. 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. APPLE-1003, ¶45. 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, ¶45 (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, ¶46.

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) (a supposed invention that “simply arranges old elements with each performing the same function it had been known to perform” is obvious); *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 straightforward manner that was well within the skill of a POSITA. APPLE-1003, ¶47.

Likewise, a POSITA would have reasonably expected success implementing the combination, especially since the resulting system would be implemented with conventional software and hardware techniques (*e.g.*, general-purpose processors on mobile devices executing programmable instructions) with messaging formats (*e.g.*, SMS, MMS, IM) that were well-defined and commonly implemented by the Critical Date of the '183 Patent. *KSR* at 401. Further, the techniques integrated from Tsampalis in the Horvath-Tsampalis combination are fully compatible with Horvath's and would not disturb the ability of Horvath's system to transmit or deliver SMS messages over either a packet-based or circuit-services network. APPLE-1003, ¶48.

(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). Kansal suggests using a unified messaging UI for precisely this kind of environment, with variously formatted messages unified within a single application interface. APPLE-1042, [0077]-[0078], [0086]. Multiple reasons

would have prompted a POSITA to implement this combination. APPLE-1003, ¶49.

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). APPLE-1003, ¶50. This would have predictably achieved Kansal's stated goals to meet the "need for an improved apparatus and methods for providing enhanced mobile messaging services." APPLE-1042, [0002]. 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, ¶50 (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. APPLE-1003, ¶51.

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.2(a)-(c), (e). Applying Kansal's suggestion for a unified messaging interface for each of these services in the context of references 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 involved were all well known before the Critical Date. APPLE-1003, ¶52. And the combination with Kansal described above would not fundamentally change any of the other operations of the combination. APPLE-1003, ¶52.

(iii) Dorenbosch's Techniques for Improved IM for Mobile Devices

A POSITA would have expected the known problems of wireless network disruption and general unreliability to have been exasperated when operating real-

time IM services using wireless devices, as contemplated by Horvath, Tsampalis and Kansal, and their combination. APPLE-1004, [0033]; APPLE-1047, [0007] (describing that when networks are unreliable “messages sent by real-time messaging clients often fail to get delivered to the recipient”); APPLE-1003, ¶53. Dorenbosch provides techniques that mitigate the impact of unreliable wireless networks on IM services. APPLE-1006, [0005] (by moving “in and out of service during an IM session, it may not be possible for the mobile station to maintain a reliable connection with the login server”), [0021].

As described in §IV.A.2(d), Dorenbosch describes an IM proxy caching and bundling IM messages for more efficient use of network overhead, maintaining presence status for IM subscribers, attempting redelivery of messages that are directed to IM subscribers who lose network coverage, and adjusting recipient IM subscriber presence status when the cached messages cannot be delivered after a number of retries. APPLE-1006, [0020], [0024], [0029], [0030], [0039]-[0040]. It would have been obvious to integrate Dorenbosch’s techniques into the combination to enhance Horvath’s IM communications over packet-data networks. APPLE-1003, ¶54. Multiple reasons would have prompted a POSITA to implement this combination. APPLE-1003, ¶54.

First, a POSITA would have been motivated to apply Dorenbosch’s message bundling and delivery retry techniques to the combination to reduce the number of

dropped messages when communicating through IM. APPLE-1006, [0021], [0024], [0026], [0030]. Because a mobile station may move in and out of service during an IM session, the mobile station may experience an unreliable connection with the login server, which normally results in “inadvertently dropped” messages APPLE-1006, [0005]. Dorenbosch’s IM proxy maintains a consistent connection with the IM server so that it can cache messages and retry delivering them when a mobile device temporarily loses network connection, which “minimizes the occurrence of instant messages intended for the mobile subscriber being dropped.” APPLE-1006, [0021], [0024], [0026], [0030]; APPLE-1003, ¶55.

Second, a POSITA would have been motivated to apply Dorenbosch’s message bundling and delivery retry techniques to the combination to decrease overhead in the wireless system, furthering similar goals in Horvath’s system. *Compare* APPLE-1004, [0004]-[0005] (identifying the need to overcome the problem of “creat[ing] unnecessary overhead” in the wireless system), [0039] *with* APPLE-1006, [0036]-[0038] (describing bundling techniques to “minimize system connection overhead in a manner that also minimizes the amount of latency”). Dorenbosch recognized that a “circuit-switched mobile network [like the one taught in Horvath] has both a considerable delay associated with an IM connection set-up and a high cost associated with maintaining an open connection during an

IM session,” and Dorenbosch’s message bundling techniques ease this high cost.

APPLE-1006, [0006], [0033], [0036]-[0037]; APPLE-1003, ¶56.

Third, a POSITA would have found obvious that maintaining a connection to the IM system on behalf of the mobile device, *e.g.*, with an IM proxy, would have allowed the “the mobile subscriber [to] continue[] to appear available to IM buddies when the mobile subscriber is roaming or temporarily out of service even after the IM proxy unsuccessfully attempts to send an instant message to the mobile subscriber.” APPLE-1006, [0030]. A POSITA would have readily recognized that this would have created a more pleasing experience for users of both the sending and receiving devices. *See* APPLE-1047, [0007]; APPLE-1003, ¶57.

Likewise, a POSITA would have reasonably expected success implementing the combination, especially since the resulting system could be implemented with conventional software and hardware techniques (*e.g.*, general-purpose processors on mobile devices executing programmable instructions) and with known IM protocols. *See* APPLE-1006, [0017]-[0020]. Because the combination interfaces with conventional IM services, as taught by Horvath, the combination with Dorenbosch described above would not fundamentally change any of the other operations of the combination. APPLE-1003, ¶58.

3. Claim 1

[1pre]

To the extent the preamble is limiting, Horvath-Tsampalis-Kansal-Dorenbosch renders [1pre] obvious. APPLE-1003, ¶59. For example, Horvath discloses methods and systems for wireless communication, such as wireless messaging. *See e.g.*, APPLE-1004, Title (“Method And System For Delivery Of Short Message Service Messages”), [0011]; *see also* APPLE-1005, [0001], [0006].

[1a]

Horvath’s FIG. 4 (below) shows an example “wireless device 106” (*a sending mobile phone*⁴) that communicates on “either the packet data network 102 or the circuit services network 104.” APPLE-1004, [0014], [0060]-[0070]; *see also* APPLE-1042, [0028]. APPLE-1003, ¶60. “The SMS delivery network selector 124 selects a network 102, 104 for the wireless device 106 to transmit” a message. APPLE-1004, [0062].

⁴ Bold and italicized text corresponds to claim language.

Selects network 102 or
104 for transmission

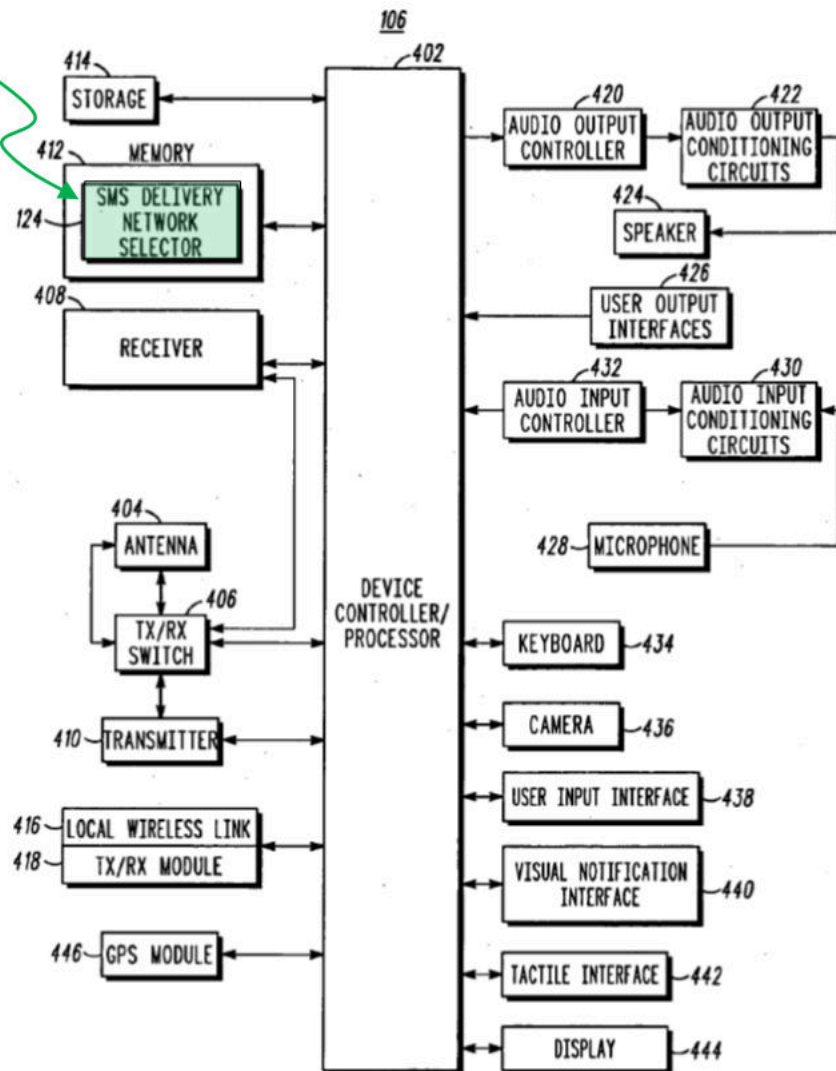
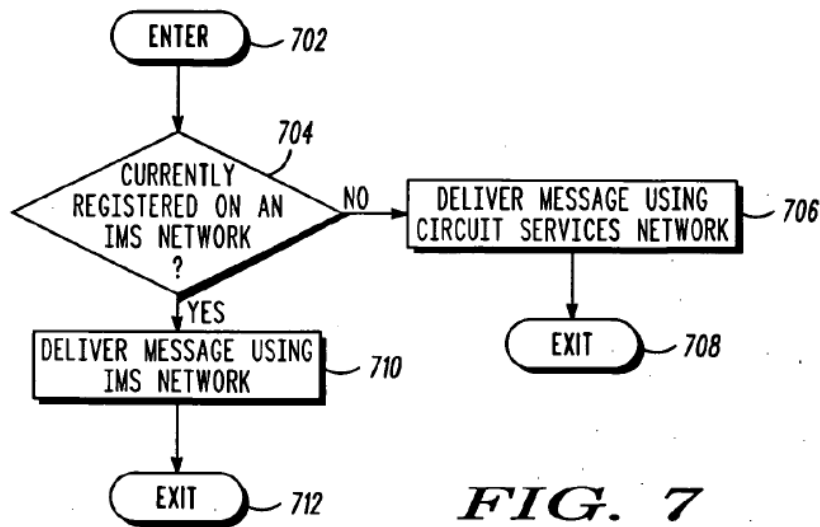


FIG. 4

APPLE-1004, FIG. 4 (annotated)

As shown in Horvath's FIG. 7, the sending mobile phone "select[s] a network for transmitting a [] message based on what network the wireless device is registered with." APPLE-1004, [0078]; APPLE-1003, ¶61.



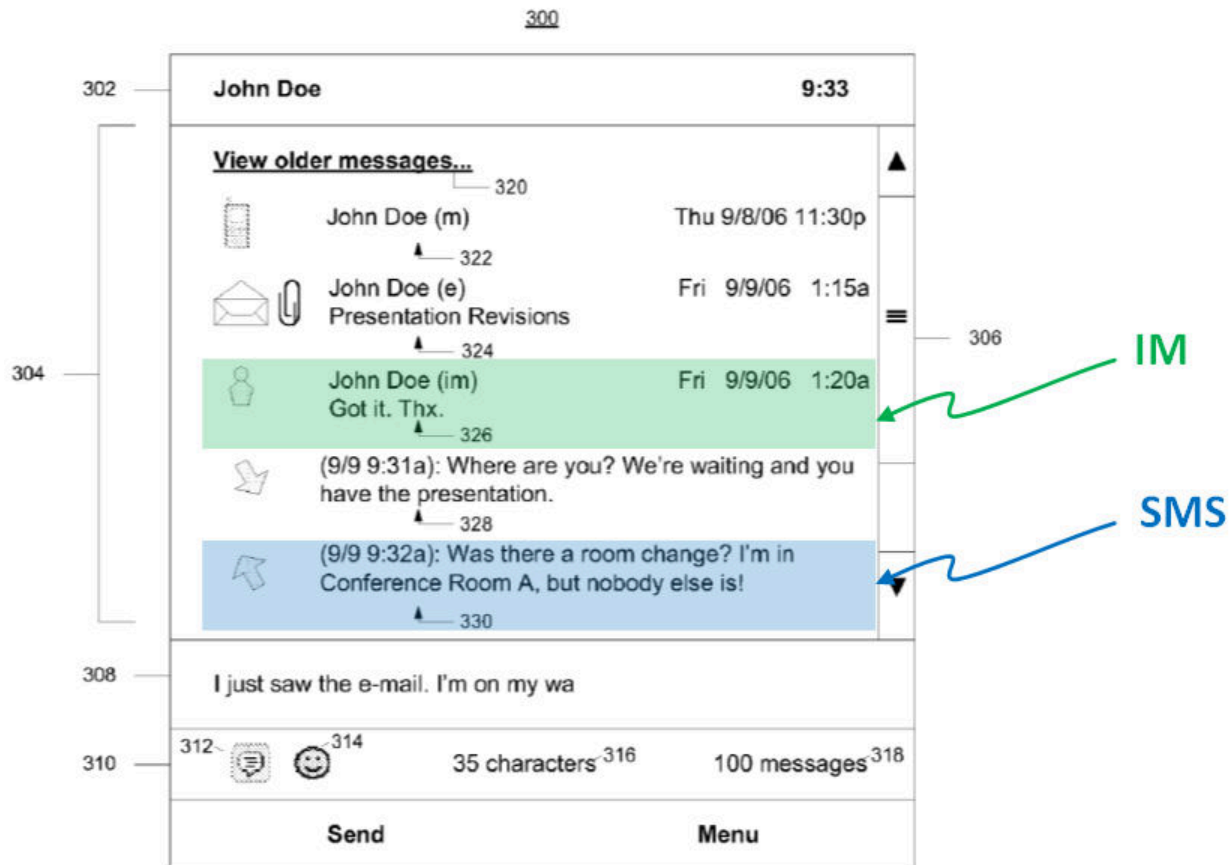
APPLE-1004, FIG. 7 (sender device perspective)

Wireless device 106 sends messages, *e.g.*, short message service (SMS) messages, “through a circuit services network” (*via a cellular 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]; APPLE-1003, ¶62.

On the other hand, when device 106 “[is] registered with the [SIP] registrar,” device 106 sends “SIP message[s]” in “SIP packets” (*packet switched messages*) “through the [SIP] network communicating over the packet data network.” APPLE-1004, [0002], [0006]-[0007], [0017], [0024], [0034], [0037] (messages are sent over the SIP network in “SIP packets”), [0038], [0039], [0041], [0078], FIG. 7. One type of message service provided over the SIP network is an “instant

messaging” service (*a packet switched message service (PSMS)*). APPLE-1004, [0033] (“The SIP network is used for establishing instant messaging...and other real-time communications over the Internet.”); APPLE-1003, ¶63.

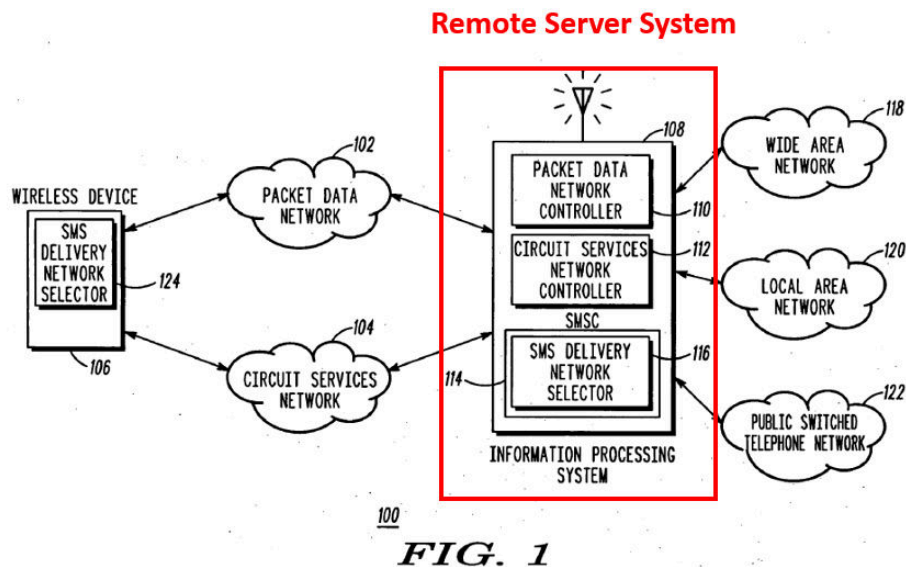
Moreover, as explained in §IV.A.2(e), *supra*, the combination includes a “messaging UI 500 [that] enable[s] a user to compose messages of different types of formats,” including “SMS..., MMS, e-mail, IM, etc.” APPLE-1042, [0077]-[0078]; *see also id.*, [0002], [0062]-[0063]; APPLE-1003, ¶64.



APPLE-1042, FIG. 3 (annotated)

[1b]

Horvath-Tsampalis-Kansal-Dorenbosch's remote *server* system (e.g., "information processing system 108") supports a packet switched IM service (*PSMS*). See e.g., APPLE-1004, [0028], [0033], [0038], [0046], [0052], FIGS. 1 (below), 2, 3; APPLE-1003, ¶65. "For example, the information processing system 108 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-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] (MSC 204 “controls switching functions” and HLR 202 “achieve[s] connection control in a telephony network”), FIGS. 1, 2; APPLE-1003, ¶66. 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. The wireless communication system 100 further includes a “Short Message Service Center (‘SMSC’ [114])” that is “communicatively coupled to the circuit services network 104 and communicatively coupled to the packet data network 102” and that “has knowledge of which network the recipient device is currently registered on prior to receiving a message for the device.” APPLE-1004, [0033].

Horvath explains that “[a]lthough, the SMSC 114, C-CSCF 206, I, S-CSCF 208, and HSS 210 are shown as separate components, each respective component can reside on the same or separate information processing system” (*server*).

APPLE-1004, [0038]; *see also id.*, [0052] (describing using “a personal computer, workstation, or the like” to implement information processing system 108 and “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” of the information processing system 108); APPLE-1003, ¶67.

At least Horvath's P-CSCF 206, I, S-CSCF 20S, and HSS 210 "are part of a session initiation protocol ('SIP') network," which is "used for establishing instant messaging," and "also comprise part of an Internet Protocol multimedia subsystem ('IMS') core that supports the SIP network" (*supports the PSMS*). APPLE-1004, [0033]-[0034]; APPLE-1003, ¶68.

[1c1]

Horvath explains that the sending mobile phone, *e.g.*, wireless device 106, 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, ¶69.

Horvath's functionality for receiving information associated with a destination address of a recipient is maintained in the combination with Tsampalis, which 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 phone contains a “recipient ID” received from the user, *e.g.*, a phone number. *See* APPLE-1005, FIG. 4 (below, showing “recipient ID” 402 list in the form of telephone numbers), [0032]-[0033], [0046], [0064], FIGS. 3-4 , 7, 10; *see also* APPLE-1042, [0037]-[0038], [0061], [0066], [0072] (“the address bar 504 may comprise a ‘To’ field which may display the contact name...through reverse look up in the contact records or the telephone number of the recipient”); APPLE-1052, 12:53-60; APPLE-1003, ¶70.

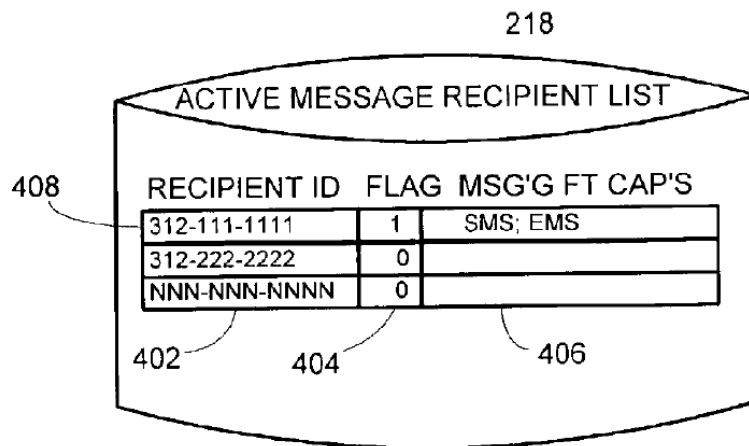


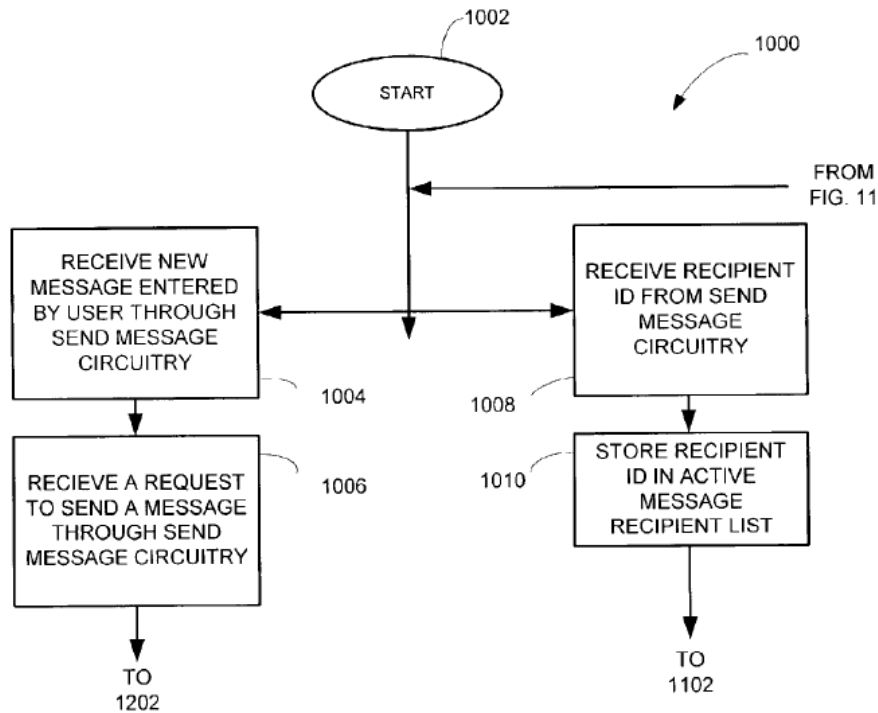
FIG. 4

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, ¶71. Tsampalis describes that as a user enters message text and an active message recipient list into the sending mobile phone’s user interface, “the mobile wireless communication device messaging format capabilities determinator circuitry 104...retrieve[s] the [receiving] mobile wireless communication device [MFCI] 110 associated with the” recipient ID of a receiving mobile phone entered into the active message recipient list. APPLE-1005, [0033]; *see also id.*, [0046].

FIG. 10



APPLE-1005, FIG. 10

Accordingly, Horvath-Tsampalis-Kansal-Dorenbosch's *sending mobile phone* (e.g., wireless device 106) *retrieves first information representing a phone number of a first receiving mobile phone* (e.g., the send message circuitry 106 retrieving a “destination address” or “recipient ID” phone number of a first receiving mobile phone entered by the user) *from a first message* (e.g., an active message being composed by the user of the sending mobile phone). APPLE-1003, ¶72.

[1c2]

As discussed for [1c1], *supra*, the combination's sending mobile phone "retrieve[s] the [receiving] mobile wireless communication device [MFCI] 110 associated with the" recipient ID of a receiving mobile phone entered into the active message recipient list. APPLE-1005, [0033]; *see also id.*, [0046]. As discussed in §IV.A.2(b), *supra*, Tsampalis describes that the recipient ID may be the phone's MSISDN, which was known to be "the standard international telephone number used to identify a given subscriber." *See* APPLE-1005, [0061], FIGS. 3, 4 (illustrating that the recipient ID may be a telephone number); APPLE-1052, 12:53-60; APPLE-1003, ¶73. If the MFCI is not available in the sending mobile phone's local phonebook or the phonebook's information has not been updated within a certain period of time, "the remote message format capabilities determinator circuitry 208 [of the sending mobile phone] is then invoked and generates a second mobile wireless communication device [MFCI] request 226." APPLE-1005, [0033]-[0034].

The requested MFCI 110 for the receiving mobile phone may be "stored in a location other than within the second mobile wireless communication device 200, for example, such as a network element within the network 108" (*e.g.*, a "web server"), and the sending mobile phone directs the request to the network element. APPLE-1005, [0039], [0056]-[0057]. In at least one obvious implementation, the

“web server” described by Tsampalis would be included in or combined with one or both of Horvath’s HLR 202 or HSS 210 (which are part of *the server*), because Horvath’s HLR and HSS are “network elements within the networks” and store similar information as Tsampalis’s web server. *See* APPLE-1004, [0035], [0044]; APPLE-1003, ¶74. Specifically, Horvath’s HLR “comprises a database including information associated with a wireless device subscribing to the circuit services network 104,” which includes “service(s) subscribed to by the wireless device 106.” APPLE-1004, [0031]. Similarly, Horvath’s HSS “comprises a database including profiles associated with each wireless device 106 registered with the IMS,” and these profiles “include[] subscription⁵ related information,” as well as capability information indicating whether each wireless phone is configured to receive messages through the packet-data network. APPLE-1004, [0035], [0044]. Indeed, Tsampalis teaches that, “while inputting the active message 216, the first

⁵ In the context of IMS networks, a “subscription” is a persistent characteristic of a user indicating service capability (*e.g.*, whether a user has signed up for and/or is paying for a service), whereas “registration” is a session specific “sign-in” through which a wireless device provides its location to the network and is assigned a corresponding S-CSCF that provides it with services. *See, e.g.*, APPLE-1051, [0002]-[0026]; APPLE-1003, ¶74.

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].

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, Horvath-Tsampalis-Kansal-Dorenbosch’s sending mobile phone would have sent a request that included the telephone number (*the first information*) of the receiving phone 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, ¶75.

Thus, Horvath-Tsampalis-Kansal-Dorenbosch’s sending mobile phone *sends the first information* (*e.g.*, the first receiving mobile phone’s telephone number) *to the server* (*e.g.*, the network element within the network 108, such as HLR 202 and/or HSS 210, that contains the MFCI). APPLE-1003, ¶76.

[1d]

As explained for [1c2], *supra*, to obtain the MFCI, Horvath-Tsampalis-Kansal-Dorenbosch's sending mobile phone to 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 phone based on the telephone number of the receiving phone. 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] ("In response, the remote relay/server 1304 then sends a new capabilities signal two 1322 (including a second mobile wireless communication device [MFCI] 110) to the local relay/server 1302," which sends this to the sending mobile phone). Because the combination's HLR 202 and/or HSS 210 store the MFCI and receive the request for this information from the sending mobile phone, the response described by Tsampalis would have been sent from the HLR 202 and/or HSS 210, which are part of the *server*. APPLE-1003, ¶77.

The HLR 202 and HSS 210 also store information regarding the "service(s) subscribed to by the wireless device 106." APPLE-1004, [0031], [0035], [0044]; APPLE-1005, [0061]; APPLE-1003, ¶78. Horvath and Tsampalis describe that two such services to which a wireless device may be subscribed are SMS and MMS. *See* APPLE-1004, [0002], [0025], [0039] ("A service for example, is SMS, MMS, caller ID, call waiting, push-to-talk, voicemail, and the like"); APPLE-

1005, [0002]-[0003], [0058]-[0063]. Horvath further describes that another service to which a wireless device may subscribe is “instant messaging” (IM). APPLE-1004, [0033]. And Kansal teaches that its unified messaging UI includes SMS, MMS, e-mail, and IM. APPLE-1042, [0041]-[0043], [0077]-[0078].

In Horvath-Tsampalis-Kansal-Dorenbosch, the response from the HLR 202 and/or HSS 210 with the MFCI would also include information about the services to which the wireless device 106 is subscribed (*e.g.*, IM). APPLE-1003, ¶79. 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 itself indicates subscriber information. *Id.*

And providing such subscription information along with format information to a sending mobile phone was well known. *See, e.g.*, APPLE-1053, 1:24-50 (“there are many different protocols or services that can be used for exchanging content,” including MMS and e-mail), 5:29-33, 7:28-8:45 (describing a sending mobile phone requesting and receiving from a presence server a “resource file,” which includes “information, such as the protocols and connectivity bearers supported by, the capabilities of, and/or the security associations relating to

respective devices operated by, or otherwise associated with, the” receiving mobile phone), 12:25-36; APPLE-1054, [0103] (“information related to the subscriber...and settings related to the purchased/subscribed service(s)”), [0107], [0115] (“delivery decision comprises delivery instructions with regard to destination device(s) and/or content and/or format and/or layout of the message to be delivered”), [0122] (describing a sending device receiving information about the destination device of a message to make a “delivery decision”), [0127]; APPLE-1003, ¶80. Thus, for similar reasons to those described in §IV.A.2(e)(i), *supra*, providing a sending mobile phone with more detailed information about the recipient, including their subscriber information, will help the sending user determine how and where to send a message and what content should be included. APPLE-1003, ¶80.

In Horvath-Tsampalis-Kansal-Dorenbosch, the HLR 202 and/or HSS 210 would have provided a response to every request for MFCI 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] (not conditioning a response to a format capabilities request on the information contained therein); APPLE-1003, ¶81. And it was well known that some wireless devices (*e.g.*, mobile phones) had limited messaging capabilities. *See, e.g.*, APPLE-1005, [0003] (describing receiving mobile phones

“capable of only receiving messages in” SMS), [0034] (describing a receiving mobile phones as having “limited messaging capabilities”), [0061]-[0062]; APPLE-1042, [0078]; APPLE-1053, 2:9-17 (“each device may have ... different capabilities...”); APPLE-1003, ¶81. Accordingly, for certain receiving mobile devices, the HLR 202 and/or HSS 210 would have provided a response when the phone number of the receiving mobile phone is not associated with a subscriber of an IM service. *See, e.g.*, APPLE-1004, [0047] (describing a case where “the recipient device is not registered on the packet data network 102”), [0053]; APPLE-1003, ¶81.

Thus, in the Horvath-Tsampalis-Kansal-Dorenbosch system, *the server* (e.g., the information processing system including HLR 202 and/or HSS 210), *in response to receipt of the first information* (e.g., HLR 202 and/or HSS 210 received a request for first receiving mobile phone’s MFCI that included the first receiving mobile phone’s telephone number), *sends a first response to the sending mobile phone* (e.g., HLR 202 and/or HSS 210 sending a response to the sending mobile phone with the first receiving mobile phone’s MFCI and service subscription information) *when the phone number of the first receiving mobile phone is not associated with a subscriber of the PSMS* (e.g., a response is sent and received for every request, including when the first receiving mobile phone has

“limited capabilities” and is not subscribed to the IM service, and the response indicates these limited capabilities). APPLE-1004, [0031]; APPLE-1003, ¶82.

[1e]

For context, it was well known that “various bearers in the mobile network technology” include, for example, “SMS, USSD (Unstructured Supplementary Services Data), CSD (Circuit Switched Data) and packet-switched bearers, such as e.g. GPRS (General Packet Radio Service) etc.” *See* APPLE-1055, [0014]; *see also* APPLE-1054, 4:42-46. The ’183 Patent describes that a “conventional SMS bearer” may be sent via a circuit-switched network (*e.g.*, GSM), whereas a “packet-switched bearer may be a HSDPA, WCDMA, CDMA2000, GPRS or similar data bearer.” APPLE-1001, 3:18-27. In general, messages sent over a circuit-switched network are sent via a circuit-switched bearer and messages sent over a packet-switched network are sent via a packet-switched bearer. APPLE-1003, ¶83. Thus, when an SMS message is sent over a circuit-switched network⁶,

⁶ Some packet-switched networks support SMS messages, and in those cases, an SMS bearer would also be a packet-switched bearer. *See, e.g.*, APPLE-1056, [0091]; APPLE-1003, ¶83. However, in other cases, SMS sent over a packet-switched network is encapsulated in a packet-switched bearer. *See, e.g.*, APPLE-

it is utilizing an SMS bearer, which is a type of circuit-switched bearer. *See* APPLE-1001, 3:18-27, APPLE-1054, 4:42-46. On the other hand, for messages sent over the packet-switched network, such as the SIP messages taught by Horvath, the bearer (*e.g.*, GPRS) is a packet-switched bearer. *See* APPLE-1004, [0024] (identifying GPRS as an example of its packet-switched network 102), [0040]-[0041], [0050] (describing the delivery of an SIP message over a packet-switched network); APPLE-1003, ¶ 83.

Horvath-Tsampalis-Kansal-Dorenbosch renders obvious [1e]. APPLE-1003, ¶84.

For example, Tsampalis describes “sending of a message in a message format compatible with at least one of the messaging formats identified in the second mobile wireless communication device [MFCI].” APPLE-1005, [0041]. That is, after the HLR 202 and/or HSS 210 sends the receiving mobile phone’s MFCI and service subscription information to the sending mobile phone, the sending mobile phone utilizes the information to determine how to send the message to the receiving mobile phone. *See id.*; APPLE-1003, ¶84. Tsampalis

1004, [0050] (describing encoding SMS content as the payload of an SIP message); APPLE-1056, [0166] (describing encapsulating SMS data “in IP format before delivery to the WLAN”).

describes that, where “the default messaging format” of the sending mobile phone “is not found in the” receiving mobile phone’s “messaging format capabilities list,” the sender mobile phone performs a “transformation of the message into a compatible format as found in the recipient list messaging format capabilities.” APPLE-1005, [0049], [0052]-[0054]. For example, where a receiving mobile device “does not indicate MMS compatibility,” the sending mobile phone “informs the associated user that the recipient (or recipients) have limited messaging capabilities, and suggests to the user to transform (format) the message to an SMS formatted message and send it.” APPLE-1005, [0062].

As discussed in §IV.A.2(a), *supra*, Horvath describes that the sending mobile phone will send its message over the packet-switched network whenever it (the sending mobile device) is registered on the packet-switched network. *See* APPLE-1004, [0021], [0039]-[0042], [0078]; APPLE-1003, ¶85. Only when “delivery of the SMS message is not possible on the packet data network” (*e.g.*, the sending mobile phone is not registered) will the sending mobile phone “select the circuit services network for SMS delivery.” *Id.*

Taken together and as described in IV.A.1(e), *supra*, Horvath-Tsampalis-Kansal-Dorenbosch’s sending mobile phone utilizes both sets of information when determining how to format and deliver a message to a receiving mobile phone. APPLE-1003, ¶86. First, the sending mobile phone checks if it is registered on the

packet-switched network. *See* APPLE-1004, [0021], [0039]-[0042], [0078]; APPLE-1003, ¶86. If it is, it will utilize the packet-switched network, and otherwise it will utilize the circuit-switched network. *Id.* Second, the sending mobile phone will check the receiving mobile phone's format capability 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 phone. APPLE-1005, [0041], [0049], [0052]-[0054], [0062]; APPLE-1003, ¶86. 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-1052, [0078].

Where, for example, both the sending mobile phone is not currently registered with the packet-switched network and the receiving mobile phone's MFCI and service subscription information indicates that the receiving mobile phone can only receive SMS messages (*e.g.*, because one or both lost their connection "due to roaming or the like"), Horvath-Tsampalis-Kansal-Dorenbosch's sending mobile phone will send an SMS over the circuit-switched

network and it will be received as an SMS at the receiving mobile phone.⁷ See APPLE-1006, [0020] (describing a wireless device losing connection), [0028], [0030]; APPLE-1003, ¶87. Even where the sending mobile phone is registered with the packet-switched network, the receiving mobile phone's MFCI and service subscription information may indicate it is only capable of receiving SMS, so the sending mobile phone would provide the user an option to send just an SMS message to the receiving mobile phone, given its limited capabilities. See APPLE-1005, [0062]; APPLE-1056, [0091] (describing use of an SMS bearer over certain packet-switched networks, e.g., GPRS, that support SMS).

In either of these examples, *after the first response is received by the sending mobile phone* (e.g., a response indicates that the first receiving mobile phone has "limited capabilities" and is not subscribed to the IM service), *the sending mobile phone sends the first message via an SMS bearer to the first receiving mobile phone* (e.g., the sending mobile phone "informs the associated

⁷ The sending mobile phone could lose connection at any time, including between when it requested the receiving mobile phone's MFCI and service subscription information and when it sends a message, which would limit how the sending mobile phone would be able to communicate. See APPLE-1006, [0020], [0028], [0030]; APPLE-1003, ¶87.

user that the recipient (or recipients) have limited messaging capabilities, and suggests to the user to transform (format) the message to an SMS formatted message and send it,” per Tsampalis). APPLE-1005, [0062]; APPLE-1003, ¶88.

[1f1]

The Horvath-Tsampalis-Kansal-Dorenbosch sending mobile phone would follow the procedures described with respect to [1c1], *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, ¶89. 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 a second mobile wireless communication device MFCI request 226.” 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, Horvath-Tsampalis-Kansal-Dorenbosch’s *sending mobile phone* (e.g., wireless device 106) *retrieves second information representing a phone number of a second receiving mobile phone* (e.g., the send message circuitry 106 retrieving a “destination address” or “recipient ID” phone number of a second receiving mobile phone entered by the user) *from a first message* (e.g., a

new active message being composed by the user of the sending mobile phone).

APPLE-1003, ¶90.

[1f2]

The Horvath-Tsampalis-Kansal-Dorenbosch sending mobile phone would follow the procedures described with respect to [1c2], *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]. Accordingly, Horvath-Tsampalis-Kansal-Dorenbosch's sending mobile phone *sends the second information* (e.g., the second receiving mobile phone's telephone number) *to the server* (e.g., the network element within the network 108, such as HLR 202 and/or HSS 210, that contains the MFCI). APPLE-1003, ¶91.

As discussed for [1a], *supra*, when device 106 “[is] registered with the [SIP] registrar,” device 106 sends SIP messages in SIP packets “through the [SIP] network communicating over the packet data network.” APPLE-1004, Abstract, [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 (*a PSMS*). APPLE-1004, [0033]; APPLE-1003, ¶92. Kansal describes an example in which one of the conversations displayed in the unified messaging UI is an instant messaging conversation. *See* APPLE-1042, [0062] (“The 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”), FIG. 3. And Dorenbosch describes the capability of “supporting plural IM sessions among numerous mobile and/or conventional subscribers.” APPLE-1006, [0017].

Accordingly, the Horvath-Tsampalis-Kansal-Dorenbosch *second receiving mobile phone [is] associated with a subscriber of the PSMS* (e.g., the second mobile device is registered with the IM service described by Horvath). APPLE-1003, ¶93.

[1g]

The Horvath-Tsampalis-Kansal-Dorenbosch sending mobile phone 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, ¶94.

When the second receiving mobile phone is registered with the IM service and is thus capable of communicating via IM, the second response communicates to the sending mobile phone that the second receiving mobile phone has IM capabilities, which is *a different query result* than the first response (which indicated that the first receiving mobile phone does not have IM capabilities). *Supra*, Analysis of [1d]; APPLE-1003, ¶95.

[1h]

As discussed for [1d], *supra*, the response from the HLR 202 and/or HSS 210 with the MFCI would also include information about the services to which the wireless device 106 is subscribed (*e.g.*, IM). APPLE-1003, ¶96. Accordingly, where the sending mobile phone and the second receiving mobile phone are both registered with the Horvath-Tsampalis-Kansal-Dorenbosch IM service, ***the sending mobile phone sends the second message via the PSMS*** (*e.g.*, the IM service). *See* APPLE-1004, [0033]; APPLE-1042, [0041]-[0042], [0062], [0077]-[0078]; APPLE-1006, [0017], [0022] (“communicating with the IM proxy 24, it should be understood that multiple source buddies (either mobile or conventional subscribers) are capable of communicating with multiple target buddies (either mobile or conventional subscribers) via the functionality implemented at the IM proxy 24”).

Further, Horvath-Tsampalis-Kansal-Dorenbosch’s packet-data network 102 would have been ***a wireless local area network (WLAN)***. APPLE-1003, ¶97. Horvath teaches that “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,” and can comprise “an 802.11 network.” APPLE-1004, [0024]. An 802.11 network is a type of wireless LAN. APPLE-1003, ¶97 (citing APPLE-1011, 5:1-33 (“WLAN capabilities

including...technology version (such as 802.11[]”), 6:27-32, FIG. 5B; APPLE-1009, 1, 3, 4; APPLE-1037).

In the combination, Dorenbosch’s IM proxy—either integrated into the information processing system 108 or implemented as an application server of the IMS system—“functions to set up a connection, such as an IP connection, with the IM login server 16 for the mobile subscriber 12 and for facilitating information flow between the IM login server 16 and the mobile subscriber 12 once the connection is established.” APPLE-1004, [0038]-[0039] (“[a]n IMS system also includes application servers that host and execute services for the wireless device 106”); APPLE-1006, [0019] (“IM proxy 24 is preferably housed within a mobile services switching center (MSC) 28” or “in proximity to...known mobile network entities” like “the MSC 28”). APPLE-1003, ¶98.

As explained in §IV.A.2(d), *supra*, the two aspects of Dorenbosch’s IM proxy bundle messages in a message buffer until “more than a predetermined number of messages are stored,” at which point it will attempt to forward the bundled messages to the mobile subscriber (*e.g.*, the combination’s sending and receiving mobile phones). APPLE-1006, [0038]-[0040]; APPLE-1003, ¶99. The IM proxy will maintain a connection with the IM login server even when the mobile subscriber temporarily loses network coverage, and other IM subscribers will continue to see the mobile subscriber as having an “available” presence and be

able to send the mobile subscriber messages. APPLE-1006, [0024], [0030]; APPLE-1003, ¶99. If the IM proxy attempts to forward the bundle of messages to the mobile subscriber and is unable, the IM proxy will retry sending the bundle a certain number of times within a certain period, after which it will drop the message(s) and indicate to the IM login server that the mobile subscriber is unavailable. APPLE-1006, [0020], [0024], [0029]; APPLE-1003, ¶99. In other words, when the number of messages cached by the IM proxy reaches the threshold number and the IM proxy tries but fails to send the bundle of messages to the IM subscriber, any sending mobile phones will no longer be able to send the IM subscriber messages, because the IM login server will list the IM subscriber as unavailable. APPLE-1003, ¶99.

Accordingly, in the Horvath-Tsampalis-Kansal-Dorenbosch system, *the sending mobile phone sends the second message to the second receiving mobile phone* (e.g., the sending mobile phone sends an IM to the second receiving mobile phone) *on a condition that a maximum number of undelivered messages corresponding to the second receiving mobile phone has not been exceeded* (e.g., on a condition that the IM proxy is able to continue to receive an acknowledgement that the second receiving mobile phone is receiving the bundled messages, the IM proxy caches IMs for the second receiving mobile phone until a threshold number of messages have been stored, at which point the IM proxy will

attempt to deliver the messages to the second receiving mobile phone). APPLE-1003, ¶100.

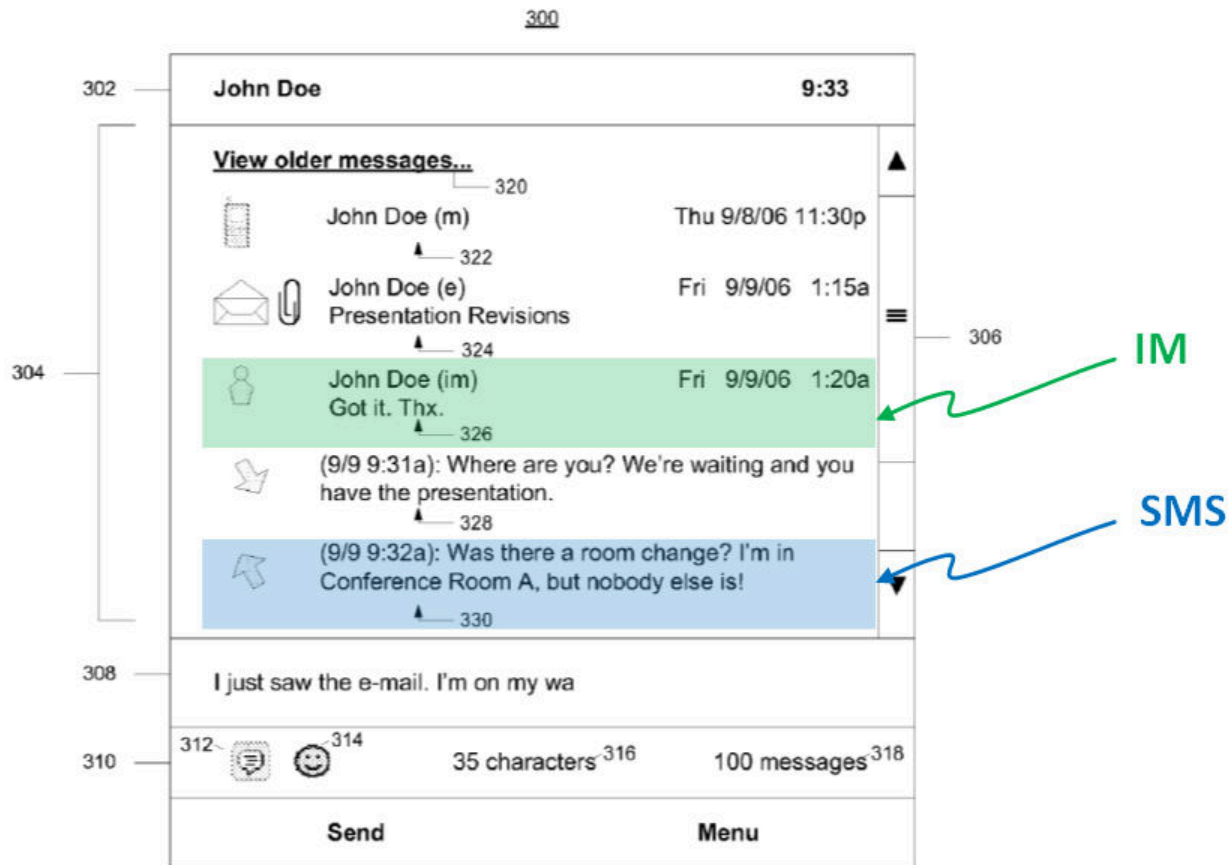
[1i]

Horvath-Tsampalis-Kansal-Dorenbosch’s IM service is a packet-switched message service (*the PSMS*) 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”). APPLE-1004, [0033] (“The SIP network is used for establishing instant messaging...”). It was well known that IM messages were formatted using, among others, the SIP/SIMPLE or Jabber/XXMP standards. APPLE-1007, 8. Each of SIP/SIMPLE and Jabber/XXMP are different formats from the SMS/MMS/EMS message formats. Accordingly, the IM service (*PSMS*) implemented by Horvath’s SIP network would have been *for sending and receiving packet switched messages other than SMS, EMS and MMS messages*. APPLE-1003, ¶101.

[1j]

As discussed in §IV.A.2(e), *supra*, the combination implements Kansal’s unified messaging user interface, which displays a message thread of various types including “SMS messages” (e.g., *the first message*) and “IM messages” (e.g., *second message*) within a single messaging client interface at the mobile wireless device. APPLE-1042, [0046]; *see also id.*, [0009]; [0045]-[0046]; [0054]-[0056];

[0062]-[0064]; [0070]; [0077]-[0078]. FIGs. 2, 3 (shown below); APPLE-1003,
¶102.



APPLE-1042, FIG. 3 (annotated)

4. Claim 2

[2a]

As discussed for [1h], *supra*, Horvath-Tsampalis-Kansal-Dorenbosch's IM proxy queues one or more undelivered messages for later delivery to the second receiving mobile phone, *e.g.*, when the IM proxy bundles IMs and/or the second

receiving mobile phone “becomes temporarily unavailable due to roaming or the like.” *See* APPLE-1042, [0020], [0036]-[0040]; APPLE-1003, ¶103.

[2b]

Horvath describes authenticating its wireless devices 106 (sending and receiving) both during registration with the SIP/IMS network and for transmitting subsequent messages, through the S-CSCF and HSS. APPLE-1004, FIG. 5 (“S-CSCF authenticates and registers the wireless device” at step 508), [0035] (“The HSS 210 also performs authentication and authorization of the wireless device 106”), [0036], [0040]; APPLE-1003, ¶104.

Horvath explains the SIP registration process for the wireless device 106 with the S-CSCF component of the remote server(s), 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. Once registration is complete, the P-CSCF of the information processing system “authenticate[s] subsequent messages allowing the other network entities such as the I, S-CSCF 208 to trust the messages.” APPLE-1004, [0036]; APPLE-1003, ¶105.

A known part of authentication through a S-CSCF and HSS included authentication with the International Mobile Equipment Identity (IMEI) of the

mobile phone seeking authentication. *See, e.g.*, APPLE-1073, [0005]-[0017] (“Existing mobile networks provide a security service according to a three-step process,” which includes “checking whether mobile equipment of the user is illegal mobile equipment through an Equipment Identity Register (EIR)” based on whether the mobile equipment’s IMEI is “include[d on] a white list, a black list, and a gray list”); APPLE-1003, ¶106. Accordingly, part of authentication through a S-CSCF and HSS included *the sending mobile phone and the second receiving mobile phone [being] authenticated based on hardware identification*. *See id.*

Through authentication with the S-CSCF and HSS, wireless device 106 is also authenticated to the IM service (*authenticated to the PSMS*). 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. ... The SMSC 114 does not have to authenticate the wireless device 106 because the S-CSCF 206 has already done so.”), [0073]; APPLE-1003, ¶107.

Accordingly, it would have obvious in the Horvath-Tsampalis-Kansal-Dorenbosch combination that *the sending mobile phone and the second receiving*

mobile phone are authenticated to the PSMS (e.g., the IM service provided by Horvath's packet-switched network) *based on hardware identification* (e.g., the IMEI of each mobile phone). APPLE-1003, ¶108.

5. Claim 3

Notably, Claim [3] uses the word “when,” which is a temporal and not causal word. For example, Claim [3] does not say “only when the phone number of the second receiving mobile phone has an active status” or “as a result of the phone number of the second receiving mobile phone has an active status.”

Accordingly, Horvath-Tsampalis-Kansal-Dorenbosch renders Claim [3] obvious for the same reasons discussed for [1d] and [1h], *supra*, at least because the IM proxy maintains a mobile subscriber's presence as “available” as long as it can deliver messages within the limited number of retries, which is not otherwise temporally limited. *See* APPLE-1006, [0018], [0020], [0023]-[0024], [0028]; APPLE-1003, ¶109. And, in at least some IM services, an “available” presence status is interchangeable with an “active” presence status. *See, e.g.*, APPLE-1059, [0031]; APPLE-1060, [0044]; APPLE-1003, ¶109.

6. Claim 4

As explained for [1h], *supra*, the IM proxy will maintain a connection with the IM login server even when the mobile subscriber temporarily loses network coverage, and other IM subscribers will continue to see the mobile subscriber as

having an “available” presence and be able to send the mobile subscriber messages. APPLE-1006, [0024], [0030]. If the IM proxy attempts to forward a bundle of messages to the mobile subscriber (*e.g.*, as a result of the message cache reaching a threshold number) and is unable, the IM proxy will retry sending the bundle a certain number of times within a certain period, after which it will drop the message(s) and indicate to the IM login server that the mobile subscriber is unavailable. APPLE-1006, [0020], [0024], [0029]. As a result, ***the second receiving mobile phone has an active status when the one or more undelivered messages queued for later delivery do not exceed the maximum number of undelivered messages.*** APPLE-1003, ¶110.

7. Claim 5

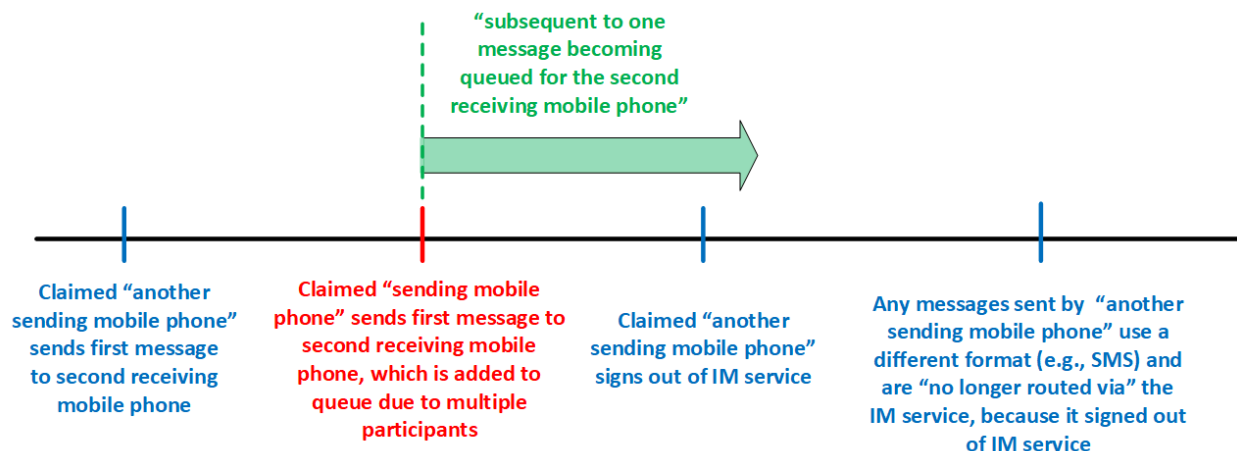
Similar to Claim [3], Claim [5] uses the word “subsequent to,” which is a temporal and not causal phrase. APPLE-1003, ¶111.

With respect to FIG. 9, Dorenbosch describes “an exemplary IM session between the mobile subscriber 12 and multiple buddies...in which the IM proxy 24’ monitors the number of participants in an IM session, the message rate and the number of stored messages in its buffer from each participant, and bundles instant messages sent to the mobile subscriber 12 based on certain predetermined participant parameters.” APPLE-1006, [0038]. “The IM proxy 24’ begins to bundle instant messages intended for the mobile subscriber in the buffer 36 when

the IM proxy 24 detects that multiple participants are sending messages...to the mobile subscriber 12.” APPLE-1006, [0039]; APPLE-1003, ¶112.

At any point, a sending mobile phone may sign out of the IM service. *See, e.g.,* APPLE-1061, [0034] (“various communication media require that a message recipient...log in, sign in, or the like, in order to access a message,” and a user may be “not signed onto” a service); APPLE-1003, ¶113. Once signed out, the sending mobile phone would no longer be able to send messages via the IM service, but would still be able to send messages via other message bearers and formats (*e.g.,* SMS or MMS), consistent with the teachings of Horvath and Tsampalis. *See* APPLE-1004, [0025]; APPLE-1005, [0024], [0060]; APPLE-1061, [0034] (describing a user signed out of a “preferred communication media” and being signed into an alternative “communication media”).

An example of this is shown in the below timeline.



APPLE-1003, ¶114.

Accordingly, it would have been obvious that, *subsequent to one message becoming queued for the second receiving mobile phone* (e.g., the IM proxy begins to queue after multiple mobile phones are communicating with the second receiving mobile phone at the same time), *messages from another sending mobile phone to the second receiving phone are no longer routed via the PSMS* (e.g., another sending mobile phone signs out of the IM service and sends a message to the second receiving mobile phone via a format other than IM, such as SMS or MMS). APPLE-1003, ¶115.

8. Claim 6

As discussed for [1h], *supra*, Dorenbosch's IM proxy bundle messages in a message buffer until "more than a predetermined number of messages are stored" (*the maximum number of undelivered messages has been exceeded*), at which point it will attempt to forward the bundled messages to the mobile subscriber (e.g., the combination's second receiving mobile phone). APPLE-1006, [0038]-[0040]. If the IM proxy attempts to forward a bundle of messages to the second receiving mobile phone and is unable, the IM proxy will retry sending the bundle a certain number of times within a certain period, after which it will drop the message(s) and indicate to the IM login server that the second receiving mobile phone is unavailable. APPLE-1006, [0020], [0024], [0029]. As discussed for Claim [5], *supra*, once a receiving mobile phone is signed out of IM, the receiving

mobile phone would no longer be able to send or receive messages via the IM service, but would still be able to send and receive messages via other message bearers and formats (*e.g.*, SMS or MMS), consistent with the teachings of Horvath and Tsampalis. *See* APPLE-1004, [0025]; APPLE-1005, [0024], [0060]; APPLE-1061, [0034]; APPLE-1003, ¶116.

Accordingly, it would have been obvious that *a third message is sent to the second receiving mobile phone, via an SMS bearer, on a condition that the maximum number of undelivered messages has been exceeded* (*e.g.*, a threshold number of messages is received in the second receiving mobile phone causing IM proxy to try to send the bundle of queued messages to the second receiving mobile phone, IM proxy signs out the second receiving mobile phone when it is not able to receive the bundle after a certain number of attempts, and the second receiving mobile phone must receive further messages in a different format, such as via an SMS bearer). APPLE-1003, ¶117.

9. Claim 7

[7pre1]

Supra, [1pre].

[7pre2]

Supra, [1a].

[7a1]

Supra, [1c1].

[7a2]

Supra, [1b], [1c2].

[7b]

Supra, [1d].

[7c]

Supra, [1e].

[7d1]

Supra, [1f1].

[7d2]

Supra, [1f2].

[7e]

Supra, [1g].

[7f]

Supra, [1h].

[7g]

Supra, [1i].

[7h]

Supra, [1j].

10. Claim 8

As discussed for [2a], *supra*, ***one or more undelivered messages are queued for later delivery to the second receiving mobile phone.*** *Supra*, [1h], [2a]; APPLE-1003, ¶130.

Furthermore, the MFCI and service subscription information for the second receiving mobile phone would have included any necessary contact addresses for the services to which the second receiving mobile phone subscribes (*e.g.*, the IM service). *See* APPLE-1004, [0075]; APPLE-1005, [0029], [0031] (wireless-communication devices include a phonebook including recipient IDs); APPLE-1042, [0037] (mobile devices include a contacts database “to store contact records for individuals,” which “comprise identifying information such as...IM screen names...”); APPLE-1003, ¶131. And it was well known that users often utilized their e-mail addresses as their “IM screen name,” resulting in the e-mail address being used to address IMs. *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, ¶131. Accordingly, ***the second message is sent according to an email address*** (*e.g.*, the message is sent to the “IM screen name” included in the

MFCI and service subscription information for the second receiving mobile phone, and it was well known that some users used their e-mail address for their “IM screen name”).

11. Claim 9

As discussed for [3], *supra*, ***the server, in response to receipt of the second information, sends the second response to the sending mobile phone when the phone number of the second receiving mobile phone has an active status.*** *Supra*, [3]; APPLE-1003, ¶132.

As discussed for [8], *supra*, it would have been obvious that the MFCI and service subscription information for the second receiving mobile phone would have included any necessary contact addresses for the services to which the second receiving mobile phone subscribes (*e.g.*, the IM service). *See* APPLE-1004, [0075]; APPLE-1005, [0029], [0031]; APPLE-1042, [0037]. The contact address of an IM service was an IM screen name, which was often a user’s e-mail address—both of which are types of ***user identifier***. APPLE-1003, ¶133.

12. Claim 10

Supra, [4], [9].

13. Claim 11

Supra, [5], [7].

14. Claim 12

Supra, [6].

15. Claim 13

As discussed for [2b], *supra*, ***the sending mobile phone is authenticated to the PSMS via a hardware identification.*** *Supra*, [2b]. APPLE-1003, ¶137.

As discussed for [5], *supra*, ***the sending mobile phone is authenticated to the PSMS via SMS).*** APPLE-1003, ¶XX.

16. Claim 14

[14pre]

Supra, [1pre].

[14a]

Supra, [1a].

[14b]

Supra, [1b].

[14c1]

Supra, [1f1] (the “first information” of [14] corresponds to the “second information” of [1]).

[14c2]

Supra, [1f2] (the “first information” of [14] corresponds to the “second information” of [1]).

[14d]

Supra, [1f2]-[1g] (the “first response” of [14] corresponds to the “second response” of [1], and the “receiving mobile phone” of [14] corresponds to the “second receiving mobile phone” of [1]).

[14e]

Supra, [1h] (the “first message” of [14] corresponds to the “second message” of [1]).

[14f]

Supra, [1c1]-[1c2] (the “second information” of [14] corresponds to the “first information” of [1]).

[14g]

Supra, [1d] (the “second information” and “second response” of [14] correspond to the “first information” and “first response” of [1]). APPLE-1003, ¶147.

As discussed for [1h], *supra*, when the number of messages cached by the IM proxy reaches the threshold number and the IM proxy tries but fails to send the bundle of messages to the IM subscriber, any sending mobile phones will no longer be able to send the IM subscriber messages, because the IM login server will list the IM subscriber as unavailable. APPLE-1006, [0020], [0024], [0029]-

[0030]. In this circumstance, *a message being undelivered to the receiving mobile phone* will have resulted in the IM proxy dropping its connection to the IM login server 16 for the IM subscriber (*e.g.*, the second mobile phone) and the IM subscriber being listed as “unavailable.” *See* APPLE-1006, [0029]; APPLE-1003, ¶148.

As discussed for [1d], *supra*, the response to the sending mobile phone from the HLR 202 and/or HSS 210 includes the receiving mobile phone’s MFCI and service subscription information, and the sending mobile phone utilizes the information to determine how to send the message to the receiving mobile phone. APPLE-1003, ¶149.

In Horvath-Tsampalis-Kansal-Dorenbosch, the service subscription information would have included presence information. *See* APPLE-1004, [0053]; APPLE-1003, ¶150. Horvath teaches that the wireless device registration monitor 316 of the SMSC 114 “monitors if a wireless device 106 is registered/unregistered with the packet data network 102 or has become deregistered from the packet data network 102.” APPLE-1004, [0053]. For similar reasons, the wireless device registration monitor 316 and/or another part of the SMSC 114 would have similarly monitored presence status of the various wireless devices with respect to the services to which they are subscribed, and that this information would be stored in the profiles of the wireless devices. *See* APPLE-1004, [0039] (“An IMS system

also includes application servers that host and execute services for the wireless device 106”), [0041] (describing roll of SMSC in notifying application servers “that they are to provide services for the wireless device 106” based on profiles stored by HSS 210); APPLE-1042, [0064] (describing display of presence information); APPLE-1003, ¶150. Indeed, it was well known that wireless device profiles containing mobile phone’s MFCI and service subscription information, like those of the combination, also included information about the presence of the wireless device with respect to the services. *See, e.g.*, APPLE-1053, 8:1-30 (“[p]resence information is typically linked to the device’s telephone number and is published,” and a profile may combine presence information with “protocol, bearer, capability and security information relating to” the user); APPLE-1061, [0023], [0034], [0041], [0051]-[0052], APPLE-1064, 8:20-51, 10:27-32.

Because it would have been obvious for presence (*e.g.*, availability and/or unavailability) to be included in the response from the HLR 202 and/or HSS 210, the response would have been ***based at least in part on a message being undelivered to the receiving mobile phone*** where the undelivered message resulted in the IM subscriber (*e.g.*, the second mobile phone) being made “unavailable” on the IM service. APPLE-1003, ¶151.

[14h]

Supra, [1e] (the “second message” of [14] corresponds to the “first message” of [1]).

[14i]

Supra, [1i].

[14j]

Supra, [1j].

17. Claim 15

As discussed for [1h], *supra*, Dorenbosch’s IM proxy bundle messages in a message buffer until “more than a predetermined number of messages are stored,” at which point it will attempt to forward the bundled messages to the mobile subscriber (*e.g.*, the combination’s sending and receiving mobile phones).

APPLE-1006, [0038]-[0040]. As further discussed for [1h], *supra*, it would have been obvious to implement the IM proxy as an application server of the IMS system, which would make it ***at least one server of the PSMS***. APPLE-1004, [0034] (“IMS core” is part of information processing system); [0038]-[0039] (“[a]n IMS system also includes application servers that host and execute services for the wireless device 106”), [0052], FIGS. 1 and 2. Accordingly, ***the message undelivered to the receiving phone is delivered to the at least one server of the PSMS*** (*e.g.*, as part of the bundling process, the IM proxy, which is as a server of

the IM service in some implementations, queues messages before attempting to deliver them to a receiving phone). APPLE-1003, ¶155.

18. Claim 16

Supra, [1h].

19. Claim 17

Supra, [1h], [5], [14g]. As discussed for [5], *supra*, Dorenbosch describes “an exemplary IM session between the mobile subscriber 12 and multiple buddies...in which the IM proxy 24’ monitors the number of participants in an IM session, the message rate and the number of stored messages in its buffer from each participant, and bundles instant messages sent to the mobile subscriber 12 based on certain predetermined participant parameters.” APPLE-1006, [0038]. That is, any number of mobile phones may be sending messages to a given receiving mobile phone. APPLE-1003, ¶157. As discussed for [14g], *supra*, when the number of messages in a receiving mobile phone’s queue in the IM proxy reaches a threshold number, the IM proxy will attempt to deliver the bundle of queued messages, and if unable to do so, will log the receiving mobile phone out of the IM service. *See* APPLE-1006, [0028]-[0029], [0036]-[0040]; APPLE-1003, ¶157. The undelivered message(s) of any of the mobile phones communicating with the receiving mobile phone—*e.g.*, the ***sending mobile phone*** or ***another mobile phone***—may trigger the IM proxy’s attempt to deliver the queued messages

and ultimately log the receiving mobile phone out when delivery is unsuccessful.

See id. Accordingly, it would have been obvious that ***the message undelivered to the receiving phone is sent by another mobile phone.*** APPLE-1003, ¶157.

20. Claim 18

In Horvath-Tsampalis-Kansal-Dorenbosch, the profiles stored by the HLR 202 and/or HSS 210 would have included information about all of a user's devices, because this would have helped in identifying the best way to send a message to the user. APPLE-1003, ¶158. 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 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.

When a user begins using a new mobile phone, information about the new mobile phone would have been received from the new mobile phone. *See, e.g.*, APPLE-1053, 5:64-6:5 (“once the resource file has been created, the devices

themselves are responsible for providing the information stored therein”). As explained above, Kansal teaches the “contact record for an individual may comprise identifying information such as first name, last name...telephone numbers (e.g., home, work, mobile, fax, pager), e-mail address (e.g., home, work, primary, alternative), IM screen names,... and so forth.” APPLE-1042, [0037]. The combination’s information processing system (*the at least one server*) would update an existing profile for a user with the information of a new mobile phone when the information processing system (e.g., its HSS 210) receives information from the new mobile phone indicating that it is related to the existing profile (e.g., when the user enters the same name or other shared information during registration with the S-CSCF or signs into the IM service with the same IM screen name). APPLE-1003, ¶159. This would have facilitated the more robust contact records described by Kansal and helped better facilitate decisions regarding to which device and in which format to send the user communications. *Id.*

Accordingly, it would have been obvious that *the at least one server receives information from another mobile phone, the information indicating alternative capabilities* (e.g., the combination’s information processing system receives information from a user’s new mobile phone, which indicates an alternative capability of the user receiving communications at the new mobile phone). APPLE-1003, ¶160.

21. Claim 19

As discussed for [18], *supra*, it would have been obvious that the combination's information processing system would update an existing profile for a user with the information of a new mobile phone when the information processing system (*e.g.*, its HSS 210) receives information from the new mobile phone indicating that it is related to the existing profile (*e.g.*, when the user enters an existing name during registration or signs into the IM service with the same IM screen name). APPLE-1003, ¶161.

22. Claim 20

[20pre1]

Supra, [1pre].

[20pre2]

Supra, [1a].

[20a1]

Supra, [1f1] (the “a second receiving mobile phone” of [1] corresponds to “a receiving mobile phone” of [20], and the “second message” of [1] corresponds to the “first message” of [20]), [14c1].

[20a2]

Supra, [1f2] (the “second information” of [1] corresponds to the “first information” of [20]), [14c2].

[20b]

Supra, [1f2]-[1g] (the “second response” of [1] corresponds to the “first response” of [20], and the “second receiving mobile phone” of [1] corresponds to the “receiving mobile phone” of [20]), [14d].

[20c]

Supra, [1h] (the “second message” of [1] corresponds to the “first message” of [20]), [14e].

[20d]

Supra, [1d] (the “first message” of [1] corresponds to the “second message” of [20]), [14g]-[14h].

[20e]

Supra, [1i].

23. Claim 21

Supra, [15].

24. Claim 22

Supra, [13] (the sending mobile phone is authenticated to the IM service (*the PSMS*) via an “identifier” such as a phone number assigned to the sending mobile

phone (*via a hardware identification*) and the sending mobile phone is authenticated to the IM service via SMS protocol at least during SIP registration), [14g]-[14h] (the undelivered message is sent to the IM proxy for the receiving mobile phone, and the IM proxy changes the presence of the receiving mobile phone to “unavailable” when it is not able to forward the undelivered message from the queue). APPLE-1003, ¶171.

25. Claim 23

Supra, [1h] (the first message is queued, at least indirectly, *by the sending mobile phone*, because the sending mobile phone sends the first message to the IM proxy, which, in turn, queues the first message for delivery as part of a bundle). APPLE-1003, ¶172. Additionally or alternatively, sending mobile phones utilizing IEEE 802.11 queue messages before sending them when in power-save mode and to ensure of quality of service (QoS) based on message priority. *See, e.g.*, APPLE-1084, [0013]; APPLE-1085, [0002]-[0004]; APPLE-1086, [0008]-[0014]; APPLE-1003, ¶172.

26. Claim 24

Supra, [18] (describing an example in which a mobile phone signs into the IM service with the same IM screen name, which is information that would be communicated to the IM service server(s) (*a server of the PSMS*) in addition to being used to update the profile). APPLE-1003, ¶173.

27. Claim 25

Supra, [19], [24]

28. Claim 26

Supra, [14g] (an “unavailable” presence included in the response from the HLR 202 and/or HSS 210 is an *indicat[ion] that at least one message should not be sent via the PSMS*). APPLE-1003, ¶175 (citing APPLE-1064, 6:55-65 (describing prioritizing communication options based on presence information)).

29. Claim 27

Supra, [8] (describing how at least some IM screen names were based on users’ e-mail addresses). It was well known that IMs are sent with information identifying both the recipient and the sender, so an IM would have included the screen names of both the recipient and sender in cases where a screen name is used to address IMs. *See* APPLE-1042, [0066], FIG. 4; APPLE-1003, ¶176. Accordingly, it would have been obvious that such IMs are sent and received *based on an email address of the sending mobile phone* (e.g., the IM includes screen names for both the recipient and sender, and the screen names would have been an email address in at least some cases).

30. Claim 28

As discussed for [1f1], *supra*, 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 a second mobile wireless communication device MFCI request 226.” APPLE-1005, [0034]. “Upon detection of a request to send the message 112, a process begins which includes the looping through of the recipient IDs 402 in the active message recipient list 218 to send messages to each designated recipient.” APPLE-1005, [0036]. Thus, in the combination, a single message may be addressed and sent to multiple receiving mobile phone. APPLE-1003, ¶177.

And, as discussed for [18], *supra*, the profiles stored by the HLR 202 and/or HSS 210 would include information about all of a user’s devices, because this would have helped in identifying the best way to send a message to the user. *See* APPLE-1042, [0037]; *see also* APPLE-1053, 4:34-41, 5:24-43; APPLE-1063, [0110]. Horvath-Tsampalis-Kansal-Dorenbosch would have been capable of sending a message to multiple of a user’s devices. *See* APPLE-1005, [0035]-[0037] (describing sending a message to multiple devices); *see also* APPLE-1053, 4:34-55 (describing that a recipient may have multiple personal devices and “determin[ing]...to which of the intended recipient’s devices to send the content”), 11:58-64 (describing transmitting a content file to a recipient’s “device(s)”), APPLE-1063, [0115] (the “described process may be provided in a similar manner for several destination devices if the message from Subscriber A shall be delivered

to several destination devices assigned to the **same** or different receivers”);

APPLE-1003, ¶178.

Accordingly, in Horvath-Tsampalis-Kansal-Dorenbosch, either the third message is addressed to (and *received by*) *a plurality of recipients* and their devices, or alternatively, the third message is addressed to a single recipient having a plurality of devices having the same messaging service application supporting IM, *e.g.*, computer, smartphone, tablet, smartwatch, laptop/portable computer, etc., that are associated with the same identifier(s) (*e.g.*, a phone number, email address, and/or user name). APPLE-1003, ¶179.

31. Claim 29

Supra, [8], [27].

32. Claim 30

As discussed above, the first message (of [20]) is undelivered to the receiving mobile phone (due to disconnection to the remote server). *Supra*, [20]; APPLE-1003, ¶181.

In at least some instances, the first message would have been composed after the receiving mobile phone had disconnected from the remote server(s) but before the threshold (*e.g.*, a certain period of time or maximum number of undelivered messages) for status change from active to inactive had been exceeded, such that during the entire time between when the phone number of the receiving mobile

phone was retrieved and when the first response was received, the receiving mobile phone was not connected to any message server, while the receiving mobile phone remains an active status as described by Dorenbosch. *Id.*; *supra*, [1h]; APPLE-1003, ¶182.

V. CONCLUSION AND FEES

The Challenged Claims are unpatentable. Please charge fees to Deposit Account 06-1050.

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

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

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 '183 Patent. The '183 Patent is the subject of civil actions including: *HBCU Messaging US LP v. Apple, Inc. et al.*, 1-24-cv-01199 (WDTX).

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: IPR50095-0262IP1@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: IPR50095-0262IP1@fr.com

D. Service Information

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

Petitioner consents to electronic service by email at IPR50095-0262IP1@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. IPR2026-00104)

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 13,969 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. IPR2026-00104)

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