

Samsung Electronics Co., Ltd. (Petitioner)
v.
Headwater Research LLC (Patent Owner)

Petitioner's Demonstratives

Case No. IPR2024-00010
U.S. Patent No. 9,615,192 B2

Before Garth D. Baer, Stephen E. Belisle, Russell E. Cass
Administrative Patent Judges



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

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Issue 1

Independent Claims 1 and 15:
TS-23.140 Renders Obvious “A Plurality of Message
Delivery Triggers”

'192 Patent: Independent Claim 1

1. A message link server comprising:
a transport services stack to maintain a respective secure message link through an Internet network between the message link server and a respective device link agent on each of a plurality of wireless end-user devices, each of the wireless end-user devices comprising multiple software components authorized to receive and process data from secure message link messages received via a device link agent on that device;
an interface to a network to receive network element messages from a plurality of network elements, the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components; and
a message buffer system including a memory and logic, the memory to buffer content from the received network element messages for which delivery is requested to a given one of the wireless end-user devices,

the logic to determine when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred, wherein for at least some of the received network element messages, the receipt of such a message by the message buffer system is not a message delivery trigger, and for at least one of the message delivery triggers, the trigger is an occurrence of an asynchronous event with time-critical messaging needs, and
upon determining that one of the message delivery triggers has occurred, the logic further to supply one or more messages comprising the buffered content to the transport services stack for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices.

'192 Patent: Independent Claim 15

15. A method of operating a message link server, comprising:

maintaining a respective secure message link through an Internet network between the message link server and a respective device link agent on each of a plurality of wireless end-user devices, each of the wireless end-user devices comprising multiple software components authorized to receive and process data from secure message link messages received via a device link agent on that device;

receiving network element messages from a plurality of network elements, the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components;

buffering content from the received network element messages for which delivery is requested to a given one of the wireless end-user devices;

determining when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred, wherein for at least some of the received network element messages, the receipt of such

a message is not a message delivery trigger, and for at least one of the message delivery triggers, the trigger is an occurrence of an asynchronous event with time-critical messaging needs; and

upon determining that one of the message delivery triggers has occurred, supplying one or more messages comprising the buffered content for delivery on the secure message link maintained between the message link server and a device link agent on the given one of the wireless end-user devices.

'192 Patent: Example Conditions/Parameters For Message Delivery/Transmission

missions. As another example, the service control server link 1638 can determine when to transmit based potentially on several parameters, such as one or more of: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service agent message, responding to a service agent request, initiated by one or more servers, initiated by a verification error condition, and/or initiated by some other error condition. For

'192 Patent

EX-1001, 70:6-13;
70:17-30; POR, 5-6;
Pet. Reply, 3-4;
SAMSUNG-1039, ¶¶22-24

service control device link 1691 description. For example, the timing functions, such as asynchronous messages or polling for messages, constant frequency transmission, transmission based on how much service usage or data traffic usage has taken place, transmission in response to device side control link message, service verification error events, other error events, and/or other message transmission trigger criteria can be determined, controlled and/or initiated by either the device side or the network side depending on the embodiment.

'192 Patent: Example Conditions/Parameters For Message Delivery/Transmission

sions. In some embodiments, the service control device link 1691 determines when to transmit based potentially on several parameters including, for example, one or more of the following parameters: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service controller message, responding to a service controller request, initiated by one or more agents, initiated by a verification error condition, initiated by some other error or status condition. In some

used and network capacity. In some embodiments, the service usage or service activity trigger occurs based on some other measure than traffic usage, such as a number of messages transacted, one or more billing events, number of files downloaded, number of applications run or time that an application has been running, usage of one or more specified applications, GPS coordinate changes, roaming event, an event related to another network connection to the device and/or other service related measures.

'192 Patent

In some embodiments, the transmission trigger is based on waiting for an amount of service usage, and also including a minimum transmission rate that triggers a transmission according to one or more of the following parameters: a maximum time between transmissions clock to keep the service processor 115 in communication with the service controller 122 when little or no service usage is occurring, a polling request of some kind from the service controller 122, a response to a service controller heartbeat, a transmission generated by a service verification error event, or a transmission generated by some other asynchronous event with time critical service processor 115 (or service controller 122) messaging needs, such as a transaction or service billing event or a user request. For example, service control

EX-1001, 38:30-38; 38:50-63;
39:11-19; Pet Reply, 3-4;
SAMSUNG-1039, ¶¶25-27.

Headwater and its Expert Confirmed that Each of These Example Conditions/Parameters is a “Message Delivery Trigger”

condition.” A POSITA would understand that these constitute message delivery triggers because the specification refers to them as “transmission trigger[s].” *Id.* at 70:6-16. Transmission triggers further include “asynchronous messages or polling for messages, constant frequency transmission, transmission based on how much service usage or data usage has taken place, transmission in response to device side control link message, service verification error events, other error events, and/or other message transmission trigger criteria.” *Id.* 70:16-30; Ex. 2001 ¶31.

POR

POR, 5-6; EX-1044,
36:22-37:22;
SAMSUNG-1039, ¶28;
Pet. Reply, 3-4.

Deposition Transcript of Dr. Brogioli

Q. This description in Column 38 that you just read provides a similar list of transmission triggers that we discussed in the context of Column 70; right?

A. It looks like it's at least in part describing similar things that we talked about earlier.

Q. Lists some of the same or similar parameters that we were looking at on Column 70; right?

A. That looks right -- right. I haven't performed a word-to-word comparison, but, for example, we were talking about before the break traffic usage and service usage and things like that.

Q. Right.

And similar to what we saw in Column 70, at line 38, it says:

"In some embodiments, once a transmission trigger has occurred, the service control device link 1691 assembles all buffered agent communications and frames the communications."

Right?

A. I see that, yes.

TS-23.140 Teaches or Suggests “A Plurality of Message Delivery Triggers”

- TS-23.140’s Message Delivery Triggers
 - (1) Automated and manual message retrieval requests
 - (2) Specification of a message size restriction
 - (3) Recipient MMS User Agent becoming available/reachable
 - (4) Sending a notification to the recipient MMS User Agent
 - (5) Specification of the earliest desired time of delivery (Claim 9)

Petition, 21-23, 30-31; SAMSUNG-1003, ¶¶ 155, 195-199
Pet. Reply, 3; SAMSUNG-1039, ¶¶ 16, 63-73

Issue 1A

TS-23.140's automated and user-requested message retrieval requests are multiple message delivery triggers

TS-23.140's Message Retrieval Request Can Be Requested Manually (by the User) or Automatically (by the MMS User Agent)

TS-23.140

In a response to the notification the MMS User Agent shall be able to

- reject the MM or
- retrieve the MM, either immediately or at a later time (i.e. defer the MM retrieval), either manually or automatically, as possibly determined by the operator configuration and user profile.

The retrieval mode employed by the recipient MMS User Agent for a particular MM may be based either on the user settings in the terminal or on the recommendation carried in the MM notification. The recipient MMS User Agent may

MMS allows for the retrieval of MMs in a manual or automatic fashion. The retrieval mode is a terminal behavior and is based on different factors. These factors may include roaming conditions, message size, MMS User Agent configuration, recommendation from the MMS Relay/Server for retrieval, the originator of an MM, and transport of application data.

In automatic mode the retrieval of an MM and its storage to local memory is accomplished without any interaction with the end user. Depending on terminal implementation, the MM may be displayed to the end user with or without any pre-notice. In this mode the end user is probably not aware of the MM notification and whether it's stored on the device or not.

In manual mode the end user is made aware of the MM notification and is allowed to make a decision whether to download the MM or not. In this mode the end user is aware of an MM notification and where it's stored on the terminal.

SAMSUNG-1004, 19-20, 28-29; Pet., 21-23, Pet Reply, 4.

TS-23.140's Automated and Manual Message Retrieval Requests are a "Plurality of Message Delivery Triggers"

1st Declaration of Dr. Traynor

155. In more detail, TS-23.140 discloses multiple message delivery triggers for transmitting the stored message data to a MMS User Agent for a UE that includes the destination application. For example, the message is not delivered by the MMS Relay/Server to a destination MMS User Agent (resident on a user device) until one or more of the following triggers have occurred:

- The recipient MMS User Agent requests retrieval of the message upon receipt of the notification from the MMS Relay/Server—within a message expiry period. *See* SAMSUNG-1004, §7.1.2.1 (“In a response to the notification the MMS User Agent shall be able to ... retrieve the MM, either immediately or at a later time,” and either automatically or manually, where the “retrieval mode” is based on “the user settings in the terminal or the recommendation carried in the MM notification”).

SAMSUNG-1001, 38:50-63. Thus, a POSITA would have understood that in the context of the '192 Patent, a trigger that is “an occurrence of asynchronous event with time-critical messaging needs” encompasses a “user request” for message delivery. *See id.*

159. Consistent with this disclosure, a POSITA would have understood that TS-23.140 discloses that the MMS User Agent can request delivery of the message received and stored by the recipient MMS User Agent, and that such requested delivery can be manual—i.e., based on user request. *See, e.g.,* SAMSUNG-1004, §7.1.2.1, pp. 28-29 (“the MMS User Agent shall be able to ... retrieve the MM, either immediately or at a later time ..., *either manually or automatically*”); §8.1.5.1, p. 69 (“The recipient MMS User Agent shall issue an MM1_retrieve.REQ to the recipient MMS Relay/Server to initiate the retrieval process. The MMS

SAMSUNG-1003, ¶¶155-159;
Pet., 21-23

Headwater Acknowledges that TS-23.140's Retrieval Request is a "Message Delivery Trigger"

POR

has occurred"). However, as explained further below, TS-23.140 teaches the use of only a *single* message delivery trigger—the receipt of a valid retrieval request from the MMS User Agent. See Ex. 1004, 29 ("Upon retrieval request the recipient MMS

POR, 11

Headwater's New Argument: Manual and Automatic Retrieval Requests Cannot be Multiple Message Delivery Triggers

PO SUR-REPLY

Furthermore, Petitioner does not explain why the circumstances causing or surrounding a message retrieval request could constitute *a plurality* of message delivery triggers, even though the exact same “message retrieval request” could be received at the MMS Relay/Server regardless of whether the retrieval request was initiated automatically or manually. If the specific cause of a request constituted “a plurality of message delivery triggers,” then messages sent by two different applications or two different application servers (or even two different individuals) could constitute “a plurality of message delivery triggers.” This would be true under

could constitute “a plurality of message delivery triggers.” This would be true under Petitioner’s logic, *even though the triggers are exactly the same in substance* (i.e., two message delivery requests having identical content, but being sent under different conditions). Petitioner provides no support for such a broad interpretation

35. If “automatic retrieval request” is “one of a plurality of message delivery triggers,” and “manual retrieval request” is another “one of a plurality of message delivery triggers,” then Petitioner would need to show that the message link server has logic either to determine whether an “automatic retrieval request” has occurred, or logic to determine whether a “manual retrieval request” has occurred. But Petitioner, even in Reply, presents no evidence that the MMS Relay / Server (the alleged “message link server”) would be able to determine that either a “manual” or “automatic” retrieval request has occurred (as opposed to simply determining that “a retrieval request” has occurred).

Sur-Reply, 3-4

'192 Patent Confirms that User-Requested (Manual) and Agent-Requested (Automated) Requests—as in TS-23.140—are Separate Message Delivery Triggers

sions. In some embodiments, the service control device link **1691** determines when to transmit based potentially on several parameters including, for example, one or more of the following parameters: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service controller message, responding to a service controller request, initiated by one or more agents, initiated by a verification error condition, initiated by some other error or status condition. In some

'192 Patent

SAMSUNG-1001, 38:30-38, 38:50-62; Pet. Reply, 4-5; SAMSUNG-1039, ¶¶33-34; Pet. 22-23

In some embodiments, the transmission trigger is based on waiting for an amount of service usage, and also including a minimum transmission rate that triggers a transmission according to one or more of the following parameters: a maximum time between transmissions clock to keep the service processor **115** in communication with the service controller **122** when little or no service usage is occurring, a polling request of some kind from the service controller **122**, a response to a service controller heartbeat, a transmission generated by a service verification error event, or a transmission generated by some other asynchronous event with time critical service processor **115** (or service controller **122**) messaging needs, such as a transaction or service billing event or a user request. For example, service control

Issue 1B

TS-23.140's size restriction specification is a message delivery trigger

TS-23.140's Teaching of a Message Size Restriction in a Retrieval Request Constitutes a Message Delivery Trigger

TS-23.140

Within a retrieval request the recipient MMS User Agent may indicate a size restriction of the returned MM (i.e., maximum size) that the MMS Relay/Server is to use in processing the retrieval request.

Upon retrieval request the recipient MMS Relay/Server

should not deliver the MM (or any adaptation of the MM) to the recipient MMS User Agent unless the size restriction set by the MMS User Agent is met

Petition

nation application. SAMSUNG-1003, ¶¶153-160. For example, the message is not delivered by the MMS Relay/Server to a MMS User Agent/UE-terminal (resident on a UE/terminal) until one or more of the following triggers occur (SAMSUNG-1003, ¶¶155-156):

- The message conforms to the message retrieval request's "size restriction." *See id.*

Pet., 21-22; SAMSUNG-1003, ¶155; SAMSUNG-1004, 29

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Headwater Argues: Size Restriction is Not a “Separate” Message Delivery Trigger Because It is Part of a “Valid” Retrieval Request

21-22 (Petition’s second and fifth bullet points). While the Petition attempts to separate these into two distinct message delivery triggers, a POSITA would understand that whenever a “valid” retrieval request is received (i.e, a retrieval request conforming to the TS-23.140’s requirements, including being within the message expiry period and having an appropriate size restriction), message delivery is triggered. The Petition provides no basis for separating reception of a message retrieval request and the contents of that message retrieval request into two separate “message delivery triggers,” and a POSITA would not understand these to be two distinct message delivery triggers. Ex. 2001, ¶57.

POR

POR, 17

PO SUR-REPLY
Sur-Reply, 9-10

receipt *alone* would not trigger message delivery”). Instead, only a *valid* message retrieval request would be sufficient to trigger the message delivery process, and only the combination of a valid retrieval request in conjunction with receiving User Agent availability would be sufficient to trigger the actual completion of message delivery.

FISH.

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Headwater's Expert Confirmed that Specifying Size Restriction in a Message Retrieval Request is Optional

DEPOSITION TESTIMONY OF DR. BROGIOLI

4 Q. The next paragraph in Section 7.1.3 states, in
5 part, or states:

6 "Within a retrieval request, the
7 recipient MMS User Agent may indicate
8 a size restriction of the returned MM
9 (i.e., maximum size) that the MMS
10 Relay/Server is to use in processing
11 the retrieval request."

12 Do you see that?

13 A. Yes, I do.

14 Q. And because the sentence uses the word "may,"
15 it would not be mandatory for the MMS user agent to
16 indicate the size restriction within the retrieval
17 request; is that fair?

18 A. That looks like what this sentence or paragraph
19 is saying.

20 Q. So retrieval requests may include the size
21 request or it may not; is that right?

22 A. That looks like what this sentence is saying,
23 yes.

SAMSUNG-1044,
13:6-23;
SAMSUNG-1039,
¶¶ 38-40; Pet.
Reply, 6

A Request That Optionally Specifies a Size Restriction is a Message Delivery Trigger

2nd Declaration of Dr. Traynor

39. *Second*, and relatedly, PO improperly conflates the size restriction specification with a message retrieval request, even though these are separate conditions/criteria that trigger message delivery. SAMSUNG-1042, 4 (defining “trigger” as a condition that initiate an action); SAMSUNG-1001, 70:6-16, 70:27-30 (referring to message transmission triggers of ’192 Patent as “criteria,” or “parameters,” and “conditions”); SAMSUNG-1044, 18:3-13 (referring to transmission triggers in ’192 specification as “list of conditions”), 18:20-20:18. For example, a retrieval request that does not specify a size restriction would trigger delivery (subject to meeting other applicable conditions/triggers) of a message irrespective of its size. On the other hand, if the retrieval request *additionally* specifies the size restriction, the message delivery is triggered *only if* the message’s size is determined to be less than that specified by the size restriction. *See, e.g.,*

40. Thus, even if a retrieval request is received, the message is not delivered unless the MMS Relay/Server additionally determines that the message size is within the size restriction when the request specifies this optional condition. *See* SAMSUNG-1003, ¶155 (citing SAMSUNG-1004, §7.1.3, which states “the message should not be delivered ‘unless the size restriction set by the MMS User Agent is met.’”).

POR

21-22 (Petition’s second and fifth bullet points). While the Petition attempts to separate these into two distinct message delivery triggers, a POSITA would understand that whenever a “valid” retrieval request is received (i.e., a retrieval request conforming to the TS-23.140’s requirements, including being within the message expiry period and having an appropriate size restriction), message delivery is triggered. The Petition provides no basis for separating reception of a message retrieval request and the contents of that message retrieval request into two separate “message delivery triggers,” and a POSITA would not understand these to be two distinct message delivery triggers. Ex. 2001, ¶57.

SAMSUNG-1039, ¶¶ 38-40; Pet. Reply, 6; POR, 17

TS-23.140's Size Restriction Specification is a Message Delivery Trigger – Consistent with the '192 Specification

'192 Patent

missions. As another example, the service control server link 1638 can determine when to transmit based potentially on several parameters, such as one or more of: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service agent message, responding to a service agent request, initiated by one or more servers, initiated by a verification error condition, and/or initiated by some other error condition. For example, once a transmission trigger has occurred, the service control server link 1638 can take all buffered agent communications and frame the communications. In addi-

SAMSUNG-1039, ¶¶ 38-42; Pet. Reply, 6-7, 11;
SAMSUNG-1001, 70:6-16; SAMSUNG-1044,
26:11-27:21; 28:11-29:2

DEPOSITION TESTIMONY OF DR. BROGIOLI

Q. So then coming back to our example of that certain amount of service usage which we are just using as an example 500 bytes -- kilobytes, excuse me, if this traffic usage is less than 500 kilobytes, the service control server link does not transmit the message and it keeps it in storage; correct?

MR. MILKEY: Objection to form.

THE WITNESS: It looks like in this example what this portion of the specification is saying is that the service control server link will do this collection or buffering of messages between transmissions, and so when you were asking me about traffic usage, it sounds like if the traffic usage is -- has been below that 500-kilobyte example, let's say it's 200 kilobytes or something, that traffic will be perhaps sitting in a buffer somewhere.

context of our 500-kilobyte example. So what happens when 500 kilobytes of traffic usage is reached?

MR. MILKEY: Objection to form.

THE WITNESS: So in this example, if the traffic usage in the traffic usage example, if the certain amount is 500 kilobytes, then it sounds like if the 500 kilobytes is reached, that's one of the several parameters described at line 8 and that the service control link server at that time can determine when to transmit based on that parameter, the traffic usage.

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TS-23.140's Size Restriction Specification is a Message Delivery Trigger – Consistent with the '192 Specification

2nd Declaration of Dr. Traynor

41. *Third*, and relatedly, the '192 specification confirms that message delivery can be triggered upon occurrence of multiple conditions or parameters. See SAMSUNG-1001, 38:50-63 (“transmission trigger is based on waiting for an amount of service usage, *and also* including a minimum transmission rate”), 38:30-38, 70:6-16 (“determine[ing] *when to transmit based* potentially on *several parameters*, such as *one or more of the following parameters*,” including “waiting until a certain amount of service usage or traffic usage has occurred” and “initiat[ion] by a” particular “*condition*”); POR, 5; Ex. 2001, ¶31; SAMSUNG-1044, 34:16-36:7

42. Similarly, in TS-23.140, the receipt of the retrieval request and the additional (and optional) specification of the size restriction condition, constitute multiple message delivery triggers that operate together to “determine, control, and/or initiate” message delivery. See SAMSUNG-1001, 70:21-30.

SAMSUNG-1039, ¶¶ 40-42; Pet. Reply, 6-7

Issue 1C

MMS User Agent availability/reachability is a message delivery trigger

After Retrieval Request is Received, MMS Relay Server Delivers a Message Upon Checking and Confirming Availability of MMS User Agent/User Terminal

TS-23.140

Upon retrieval request the recipient MMS Relay/Server

- shall store messages in the network until the recipient MMS User Agent becomes reachable (e.g. user moves back into coverage, switches MMS User Agent on) or until the MM expires

The MMS Relay/Server can provide additional functionalities which are not further specified in this release such as:-

- enabling/disabling MMS function;
- personalising MMS based on user profile information;
- checking terminal availability;

DEPOSITION TESTIMONY OF DR. BROGIOLI

Q. That would be the user terminal being available or reachable over a network is what that "moves back into coverage" means?

A. I think that sounds fair, yeah. It reach -- I don't know that it's specifically saying -- I'll back up.

That's right. That it's now the user has moved back into an area where it's covered by the network and can be reached.

SAMSUNG-1003, ¶155;
Pet, 21-22; SAMSUNG-
1004, 29; Pet. Reply, 7-8;
SAMSUNG-1044, 52:23-
53:6

FISH.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

MMS User Agent Being Determined to be Available/Reachable is a Message Delivery Trigger

155. In more detail, TS-23.140 discloses multiple message delivery triggers for transmitting the stored message data to a MMS User Agent for a UE that includes the destination application. For example, the message is not delivered by the MMS

- Recipient MMS User Agent is available (i.e., in network coverage).

See SAMSUNG-1004, §7.1.3 (“Upon retrieval request the recipient MMS Relay/Server shall ... store messages in the network until the recipient MMS User Agent becomes reachable (e.g. user moves back into coverage, switches MMS User Agent on) or until the MM expires.”).

1st Declaration of Dr. Traynor

Petitioner Reply

SAMSUNG-1003, ¶155; Pet., 21-22;
SAMSUNG-1004, 29; Pet. Reply, 7-8;
SAMSUNG-1039, ¶45

Second, for message delivery triggers, it is typical for the message to be stored and for delivery to be triggered when the condition specified by the trigger(s) occur(s). SAMSUNG-1039, ¶45; SAMSUNG-1044, 26:11-27:21, 19:20-25, 21:3-18; SAMSUNG-1001, 70:8-30. Similarly, the message remains stored at the MMS Relay/Server while the device is unreachable, and when it is determined as reachable/available over a network, message delivery is triggered. SAMSUNG-1039, ¶45; SAMSUNG-1004, §7.1.3 (Relay/Server checking for “terminal availability” and “[u]pon retrieval request,” “stor[ing] messages... until the recipient MMS User Agent becomes reachable (e.g., user moves back into coverage)”), Petition, 22; SAMSUNG-1044, 52:4-53:6 (confirming that user

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MMS User Agent Being Determined to be Available/Reachable is a Message Delivery Trigger – Consistent with the '192 Specification

47. *Third*, PO ignores that the determination of device reachability constituting a message delivery trigger is similar to the '192 specification's description of "service usage" as a delivery trigger. In particular, to describe a "service usage or service activity trigger," the '192 specification explains that this trigger can be based on a "measure other than traffic usage," such as, e.g., a "roaming event" or "an event related to another network connection to the device." SAMSUNG-1001, 39:11-19; *see also id.*, 70:1-30 (which relates generally to

2nd Declaration of Dr. Traynor

SAMSUNG-1039, ¶¶ 47-49; Pet. Reply, 8-9

49. Thus, in the context of the '192 specification, a POSITA would have understood that a device becoming unavailable and then joining another network (e.g., while traveling) serves as a message delivery trigger. Consistent with this disclosure, TS-23.140 teaches storing a message at the Relay/Server while the recipient's user device does not have network access/coverage—even after the retrieval request is retrieved—and then triggering delivery when the MMS Relay/Server determines that the user device moves back into network coverage—*i.e.*, user's device is available or reachable over a network (as may have happen when a user connects to a different network or a roaming network).

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Headwater's New Argument Treats MMS User Agent Availability and Retrieval Request as a Single "Condition ... To Cause Message Delivery"

PO Sur-Reply

For the same reason, the "MMS User Agent becoming available/reachable" (Reply at 7-9) is not itself a message delivery trigger. While Patent Owner believes that this is part of the message delivery *process*, to the extent it is not, then both the combination of User Agent availability *and* valid message retrieval request reception would be the only condition sufficient to cause message delivery for any particular message.

Sur-Reply, 10

MMS User Agent Availability/Reachability is a Message Delivery Trigger Separate from a Message Retrieval Request

2nd Declaration of Dr. Traynor

45. *Second*, for message delivery triggers, it is typical for the message to be stored and for delivery to be triggered when the condition specified by the trigger(s) occur(s). See SAMSUNG-1044, 26:11-27:21, 19:20-25, 21:3-18 (confirming the same); SAMSUNG-1001, 70:8-30. Similarly, the message continues to be stored at the MMS Relay/Server while the device is unreachable, and when MMS Relay/Server determines that device is reachable/available over a network, message delivery is triggered. Specifically, TS-23.140 discloses that MMS Relay/Server checks for “terminal availability” and “[u]pon retrieval request the recipient MMS Relay/Server ... shall store messages in the network *until the recipient MMS User Agent becomes reachable* (e.g., user moves back into coverage, switches MMS User Agent on).” SAMSUNG-1004, §7.1.3; SAMSUNG-1003, ¶155; *see also* SAMSUNG-1044, 52:4-53:6 (Dr. Brogioli confirming that user moving back into coverage refers to user’s terminal or device being available or reachable over a network).

SAMSUNG-1039,
¶¶ 45-46; Pet.
Reply, 7-8

Issue 1D

Message notification to the MMS User Agent is
a message delivery trigger

TS-23.140's Message Notification to the MMS User Agent is Another Message Delivery Trigger

TS-23.140

Upon reception of an MM the recipient MMS Relay/Server

- shall generate a notification to the recipient MMS User Agent.

1st Declaration of Dr. Traynor

155. In more detail, TS-23.140 discloses multiple message delivery triggers for transmitting the stored message data to a MMS User Agent for a UE that includes the destination application. For example, the message is not delivered by the MMS Relay/Server to a destination MMS User Agent (resident on a user device) until one or more of the following triggers have occurred:

- The MMS Relay/Server has sent a notification to the recipient User Agent (TS-23.140, §7.1.2 (“Upon reception of an MM the recipient MMS Relay/Server ... shall generate a notification to the recipient MMS User Agent.”)).

SAMSUNG-1039, ¶19;
SAMSUNG-1003, ¶155; Pet.
Reply, 3-4; SAMSUNG-1004,
§7.1.2

TS-23.140's Message Notification Initiates a Message Delivery Sequence Culminating with Message Delivery

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SAMSUNG-1039, ¶¶ 51-54; Pet. Reply, 9-10

51. PO appears to contend that the MMS Relay/Server sending a notification message (i.e., MM notification) is not a message delivery trigger. POR, 16-17; Ex. 2001, ¶56. This, however, ignores that a notification message sent by the Relay/Server initiates a message delivery sequence culminating with the delivery of the message—and therefore, constitutes a message delivery trigger.

52. Specifically, when the MMS Relay/Server receives a message, it generates and sends a notification message to a MMS User Agent that includes a message reference corresponding to the message. SAMSUNG-1004, 28. The message notification is only sent when the message is ready for delivery, as illustrated by the below discussion of earliest desired time of delivery where the Relay/Server guarantees delivery at the desired time by holding the MM notification until the desired delivery time. See §VII.A *infra*. Thereafter, the Relay/Server delivers the message when a retrieval request includes the message reference identified in the MM notification. SAMSUNG-1004, 28-29.

Headwater Contends that the Message Notification is Not a Message Delivery Trigger

Likewise, “the MMS Relay/Server sending a notification message (MM notification)” (Reply at 9-10) is not a message delivery trigger because the MMS Relay/Server sending a notification message “*alone* would not trigger message delivery” and thus cannot be a message delivery trigger under the Petition’s own logic. *See* Pet. 23. Petitioner does not (and cannot) contend that a notification message is sufficient to trigger message delivery.

PO SUR-REPLY

Sur-Reply, 10

PETITION

Pet., 23

Given the above-described message delivery triggers, a POSITA would have found obvious that message receipt alone would not trigger message delivery, particularly considering the other condition(s)/trigger(s) that would be implemented (per above) and would be satisfied before message(s) is/are delivered. SAM-SUNG-1003, ¶157.

'192 Specification Confirms that Multiple Parameters/Conditions Can Operate as a Sequence of Delivery Triggers

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55. Moreover, the MM notification is a message delivery trigger even if it is not immediately followed by message delivery. In fact, the '192 Patent's specification identifies parameters/conditions that operate as a sequence of triggers that must occur before message delivery is initiated. For example, the specification described an embodiment in which the transmission trigger is based on waiting for an amount of service usage, and *"also including a minimum transmission rate that triggers a transmission according to one or more of the following parameters: a maximum time between transmissions clock to keep the service processor 115 in communication with the service controller 122 when little or no service usage is occurring, a polling request of some kind from the service controller 122, a response to a service controller heartbeat, a transmission generated by a service verification error event, or a transmission generated by some other asynchronous event with time critical service processor 115 (or service controller 122) messaging needs, such as a transaction or service billing event or a user request."* SAMSUNG-1001, 38:50-63.

56. Given this description, a POSITA would have understood that a transmission generated based on a user request and waiting for a certain service usage are separate parameters/triggers. In a system configured to trigger message delivery when both these parameters occur, a POSITA would have understood that one of these triggers/parameters could occur first (e.g., the user request) followed by the occurrence of the other trigger/parameter (e.g., certain amount of service usage) at a later time.

58. Based on the foregoing, like the delivery triggers in the '192 Patent, message/MM notifications and retrieval requests are separate triggers, such that the occurrence of both triggers message delivery—even if the message notifications occurs before the message retrieval requests. For similar reasons, and as further explained below with reference to claim 9, the specification of the earliest desired time of delivery is a message delivery trigger.

SAMSUNG-1039, ¶¶ 55-56, 58;
Pet. Reply, 10

Issue 1E

PO's narrow interpretation of a "message delivery trigger" is refuted by the record

Per Headwater: A Message Delivery Trigger is a Sufficient—Not Necessary—Condition For Message Delivery

The Petition's only explanation as to how any of the above scenarios (other than reception of a valid retrieval request) supposedly constitute a "message delivery trigger" is an explicit conflation of a "message delivery trigger" with a "condition[]" that must be met before a message can be delivered. Pet. 22 ("MMS Relay/Server does not deliver the message to the recipient MMS User Agent (for a particular user terminal) until the above *condition(s)/trigger(s)* are met...."). This theory cannot

POR

POR, 21

PO SUR-REPLY

Specifically, the plain meaning of a "message delivery trigger" is something that *triggers* message delivery, not something *necessary* for message delivery (i.e., not something that "must occur" before message delivery as Petitioner argues). Petitioner does not provide any logical reason why "message delivery trigger" applies to things that "must occur" rather than things that are sufficient to trigger a message delivery process.

With the *correct* understanding of "message delivery trigger" in mind (i.e., a condition *sufficient* to cause message delivery), Petitioner does not dispute that a valid¹ message retrieval request (which the Petition alleges would be in combination with device availability)² is the *only* thing that is a sufficient condition for the message delivery process to be triggered. Petitioner identifies *no other conditions* that could even arguably be sufficient for message delivery, because Petitioner identifies no possible way for a message to be delivered *without* a message retrieval request.

FISH.

Sur-Reply, 4-10

35

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Headwater's Narrow Interpretation is Refuted by the Record Evidence

2nd Declaration of Dr. Traynor

60. As a starting point, the '192 patent refutes PO's suggestion that a message delivery trigger is not a condition that must occur before a message delivery is initiated. While the '192 specification does not define the term "message delivery trigger," it provides multiple examples of parameters or conditions—which PO confirms are message delivery triggers—and which must be satisfied or must occur before a message is delivered. See, e.g., SAMSUNG-1001, 70:8-30 ("the service control server link 1638 *can determine when to transmit based potentially on several parameters*, such as one or more of: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service agent message, responding to a service agent request, initiated by one or more servers, initiated by a verification error *condition*, *and/or initiated* by some other error *condition*."); POR, 5; Ex. 2001, ¶31 (acknowledging that the identified parameters and conditions in the '192 specification are message delivery triggers); SAMSUNG-1044, 18:3-13, 19:20-25, 21:3-18, 26:11-27:21; 28:11-29:2, 22:4-16 (confirming list of parameters in specification are "list of conditions").

61. This disclosure in the specification is aligned with how a POSITA would have understood this term—that a message delivery trigger includes conditions/parameters that must be satisfied/must occur before a certain action (message delivery) is initiated. See, e.g., SAMSUNG-1042 (dictionary definition of trigger: "specifies a *condition* and an associated action. *If the condition is satisfied, the rule is triggered*").

'192 Patent

missions. As another example, the service control server link 1638 *can determine when to transmit* based potentially on *several parameters, such as one or more of*: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service agent message, responding to a service agent request, initiated by one or more servers, initiated by a verification error condition, and/or initiated by some other error condition. For

Headwater's Narrow Interpretation that a Message Delivery Trigger is a Sufficient—Not Necessary—Condition For Message Delivery Fails Under Its Own Logic

In light of TS-23.140's explicit teaching that a valid retrieval request (and *only* a valid retrieval request) triggers the MMS Relay/Server to deliver a MM to the MMS User Agent, a POSITA would understand that TS-23.140 discloses only a *single* message delivery trigger, not “a plurality of message delivery triggers” as all challenged claims require. Ex. 2003, ¶65.

POR

7.1.3 Retrieval of a Multimedia Message in the recipient MMSE

The recipient MMS User Agent shall be able to request retrieval of an MM from the recipient MMS Relay/Server based on the Message Reference received in a notification. If MMBoxes are supported, the MMS User Agent shall be able to request retrieval of an MM from the user's MMBox, based on a Message Reference received from a previous MMBox operation.

Within a retrieval request the recipient MMS User Agent may indicate a size restriction of the returned MM (i.e., maximum size) that the MMS Relay/Server is to use in processing the retrieval request.

Upon retrieval request the recipient MMS Relay/Server

- shall deliver the MM to the recipient MMS User Agent

TS-23.140

For example, an appropriate size restriction (Reply at 5-7) is not sufficient for message delivery, because as Dr. Brogioli explains, a message retrieval request (even with an appropriate size restriction) could be received, but if the message has expired the message will not be delivered, such that an “appropriate size restriction” is insufficient to trigger message delivery. Ex. 2001, ¶57. Petitioner, in fact,

**PO
Sur-
Reply**

Sur-reply, 9; POR, 22; SAMSUNG-1004, 29; Petition, 22

FISH.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

37

Headwater's New Requirement that a Message Delivery Trigger "Alone" Must Trigger Delivery (Sur-reply, 8-10) is Refuted by the Record

'192 Patent

missions. As another example, the service control server link **1638** can determine when to transmit based potentially on several parameters, such as one or more of: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service agent message, responding to a service agent request, initiated by one or more servers, initiated by a verification error condition, and/or initiated by some other error condition. For

In some embodiments, the transmission trigger is based on waiting for an amount of service usage, and also including a minimum transmission rate that triggers a transmission according to one or more of the following parameters: a maximum time between transmissions clock to keep the service processor **115** in communication with the service controller **122** when little or no service usage is occurring, a polling request of some kind from the service controller **122**, a response to a service controller heartbeat, a transmission generated by a service verification error event, or a transmission generated by some other asynchronous event with time critical service processor **115** (or service controller **122**) messaging needs, such as a transaction or service billing event or a user request. For example, service control

sions. In some embodiments, the service control device link **1691** determines when to transmit based potentially on several parameters including, for example, one or more of the following parameters: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service controller message, responding to a service controller request, initiated by one or more agents, initiated by a verification error condition, initiated by some other error or status condition. In some embodiments, once a transmission trigger has occurred, the service control device link **1691** assembles all buffered agent communications and frames the communications.

SAMSUNG-1001, 70:6-13; 28:30-38, 38:50-63;
SAMSUNG-1039, ¶¶ 21-30 and Pet. Reply, 3-4

Dr. Traynor's Testimony Does Not Support Headwater's New Argument that a Condition "Alone" Must Trigger Delivery (Sur-reply, 8-10)

needs, and / [15d2]: determining when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred, wherein for at least some of the received network element messages, the receipt of such a message is not a message delivery trigger, and for at least one of the message delivery triggers, the trigger is an occurrence of an asynchronous event with time-critical messaging needs; and

156. Because the MMS Relay/Server does not deliver the message to the recipient MMS User Agent (corresponding to a particular user terminal) until the above conditions/triggers are met, a POSITA would have understood or found obvious that the MMS Relay/Server includes logic that is configured to determine

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when one (or more) of these multiple message delivery triggers for the particular terminal (given one of the wireless end-user devices) has occurred. For example, a POSITA would have recognized that the MMS Relay/Server would be programmed with logic that would monitor the occurrence of these conditions and upon detecting the occurrence of one or more such conditions, prepare and send the stored messages.

157. Moreover, given the above disclosures of the different message delivery triggers, a POSITA would have found obvious that the receipt of a message alone would not trigger message delivery, particularly considering the other conditions/triggers that can be implemented and which would then need to be satisfied before the message is deliver.

Headwater Incorrectly Asserts that a Device with a Working Power Source Would be a Message Delivery Trigger under Petitioner's Interpretation

2nd Declaration of Dr. Traynor

62. Moreover, in my original Declaration, I did not call “any” condition³ a message delivery trigger, as PO incorrectly argues. Rather—and consistent with the specification and the plain and ordinary meaning of trigger—my Declaration explained that message delivery is triggered when one or more of the above-described conditions (in addition to the receipt of a retrieval request) occur, including: the message size satisfying a message size restriction, determining that the User Agent is available/reachable, earliest desired time of delivery, and a notification message being generated and transmitted by the MMS Relay/Server. SAMSUNG-1003, ¶¶155-156. Indeed, a system configured with a message delivery trigger would condition delivery of the message upon the occurrence of that/those message delivery triggers.

³ My original Declaration did not state that a device having a working power source is a message delivery trigger, as PO appears to suggest. *See* POR, 21-22; Ex. 2001, ¶64.

SAMSUNG-1039,
¶62; Pet. Reply,
11-12

Issue 2

Dependent Claim 9:
TS-23.140 Renders Obvious “Expiration of a Periodic
Timer” as a Message Delivery Trigger

'192 Patent: Challenged Dep. Claim 9

9. The message link server of claim 1, wherein one of the message delivery triggers is the expiration of a periodic timer.

Headwater's Seeks to Limit the Term "Periodic Timer" as a Timer that Recurs Regularly

POR

received, the timer is triggered and continues for a particular period.” Pet. 31. But as discussed above in Section IV, a “periodic timer” is a timer that recurs at regular intervals, rather than just a timer “that continues for a particular period” as the Petition asserts. *See* Ex. 2001, ¶82.

POR, 32

PO SUR-REPLY

Furthermore, an earliest desired time of delivery is not a “periodic timer.” Patent Owner believes that “periodic timer” should be interpreted according to its plain meaning of a timer that is “periodic,” like the TS-23.140’s disclosure of “periodic polling” which occurs at regular intervals. Even Petitioner’s *own extrinsic*

Sur-reply, 13

43

Intrinsic Record Confirms that “Periodic Timer” Encompasses a Timer That Recurs Regularly *or Irregularly*

IT manager using VSP functions). For example, roaming tables can be updated periodically in the background while on a home network and cached. In some embodiments, cache updates occur based on a fixed time period. In some embodiments, the roaming partner cost table cache updates are done whenever the device is connected to a desirable network that is not as expensive or bandwidth constrained (e.g., at home, work and/or off the WWAN). In some embodiments, updates occur at time of day that network is not busy. In some embodiments, updates occur based on a

'192 Patent

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14. Even the '192 specification describes embodiments where the term “periodic” is used to encompass irregular recurrence. Specifically, the specification discloses embodiments where periodic updates can recur regularly or irregularly. See SAMSUNG-1001, 63:5-16 (“In some embodiments, the roaming service center

Dictionary Definitions Similarly Confirm that “Periodic Timer” is Not Limited to a Timer That Recurs Regularly

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13. Indeed, other dictionaries—including an English-language dictionary and one from a more relevant technical field—define “periodic” as occurring on regular or irregular intervals. See SAMSUNG-1040, 3 (defining “periodic” as “[o]ccurring, appearing, or characterized by regular *and repetitive intervals [or] by irregular intervals.*”); SAMSUNG-1041, 3 (defining “periodic” as “recurring or reappearing at *regular or any* intervals (of time or space).”).

SAMSUNG-1040

periodic 1. Occurring, appearing, or characterized by regular and repetitive intervals or cycles. For instance, AC, the chopping of a signal, or the oscillation of a crystal. 2. Occurring, appearing, or characterized by irregular intervals. For example, the backing up of data occasionally. 3. Char-

SAMSUNG-1041

periodic /pɪərɪˈɒdɪk/ *adjective*¹. M17.
[ORIGIN French *périodique* or Latin *periodicus* from Greek *periodikos* coming round at certain intervals, from *peridos*: see **PERIOD** *noun & adjective*, -ic.]
1 Of or pertaining to the revolution of a celestial object in its orbit. M17.
2 Characterized by periods; recurring or reappearing at regular or any intervals (of time or space); intermittent;

Petition Advanced Two Theories to Show that Claim 9 is Obvious Over TS-23.140

- TS-23.140's periodic timers as message delivery triggers
 - (1) Earliest desired time of delivery
 - (2) Periodic polling

Petition 30-31; SAMSUNG-1003, ¶¶ 195-199
Pet. Reply, 3, 12-15; SAMSUNG-1039, ¶¶ 63-73

Issue 2A

Dependent Claim 9:

TS-23.140's disclosure of "earliest time of delivery" renders obvious the "expiration of a periodic timer" trigger as recited in claim 9

Theory 1: Earliest Desired Time of Delivery

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197. A POSITA would have understood or found obvious that specifying the desired time of delivery triggers a periodic timer upon the receipt of a message that expires when the delivery time is reached, which then triggers the delivery of the message. Such a timer would be periodic in that each time a message is received, the timer is triggered and continues for a particular period at the expiration of which, the message is delivered to the intended recipient.

TS-23.140

Upon reception of an MM from an originator MMS User Agent the originator MMS Relay/Server

- shall retain the MM until the earliest desired time of delivery, if the optional feature of earliest time of delivery is supported by the originator MMS Relay/Server. If this feature is not supported then the MM is immediately routed forward;

Earliest Desired Time of Delivery is a Message Delivery Trigger, Contrary to Headwater's Assertions

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66. In particular, TS-23.140 explains that a sending MMS User Agent can “set the [message’s] earliest desired time of delivery for the message” and MMS Relay/Server “shall retain the MM until the earliest desired time of delivery, if the optional feature of earliest time of delivery is supported by the originator MMS Relay/Server” or “[i]f this feature is not supported then the MM is immediately routed forward.” SAMSUNG-1004, 27-28.

67. From this disclosure, a POSITA would have recognized that the message is retained by the MMS Relay/Server and thus, not delivered until the “earliest desired time of delivery.” SAMSUNG-1003, ¶¶ 196-197. Indeed, a

68. A POSITA would have further understood that, when the earliest time of delivery is reached, the MMS Relay/Server routes the message forward. If the

Headwater's POR Failed To Address the "Periodic" Aspect of the Petition's and Dr. Traynor's Analysis

Furthermore, the reaching of an "earliest desired time of delivery" is not an "expiration of a *periodic* timer." The Petition's sole explanation as to why an earliest delivery time satisfies a "periodic timer" is because "whenever a message is received, the timer is triggered and continues for a particular period." Pet. 31. But as discussed above in Section IV, a "periodic timer" is a timer that recurs at regular intervals, rather than just a timer "that continues for a particular period" as the Petition asserts. *See* Ex. 2001, ¶82.

POR

2nd Declaration of Dr. Traynor

72. Contrary to PO's assertion, my original Declaration did not contend that the "periodic" aspect of the claim is satisfied merely because a timer for a certain period is initiated. *See* SAMSUNG-1003, ¶¶195-197; POR, 32-33; Ex. 2001, ¶¶82-84. Rather, I explained there that the identified "timer is periodic" because it refers to a timer that recurs "each time a message is received" and at "the expiration of [this timer] the message is delivered to the intended recipient." *Id.* ("A POSITA

POR, 32; SAMSUNG-1039, ¶72; Pet. Reply, 14-15.

50

TS-23.140 Renders Obvious “Expiration of a Periodic Timer” Under This Term’s Proper Interpretation

73. More specifically, a POSITA would have recognized or found obvious that the MMS Relay/Server would have *a timer that is triggered each time it receives a message with an earliest desired time of delivery*. The recurrence of such trigger is a periodic event that makes the timer (on the Relay/Server), a “periodic” timer. As explained in §V *supra*, a “periodic” event can recur irregularly, such as “whenever a new message is received.” Petition, 30-31; SAMSUNG-1003, ¶¶195-197.

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Declaration of
Dr. Traynor**

74. Further, the triggered timer runs for a certain period—i.e., until the desired earliest time of delivery—the expiration of which results in the message delivery sequence being initiated. SAMSUNG-1044, 50:20-51:17, 47:1-24. As discussed above, since such delivery sequence would not start until this (periodic) timer reaches the earliest desired time of delivery, the expiration of the timer constitutes a message delivery trigger. SAMSUNG-1003, ¶¶196-197.

Headwater's New Theory that "Separate" and "Independent" Timers Would be Used in TS-23.140 Should be Rejected

Sur-Reply

desired time of delivery" constitutes even an *irregularly recurring* timer. Instead, an "earliest desired time of delivery" at most constitutes one independent timer per message which timer would never *recur* at all, but would simply expire at the end of the timer. The receipt of a new message would trigger a *separate* timer, and Petitioner does not explain numerous separate timers constitutes a timer that is recurring, periodically (i.e., regularly) or otherwise. For example, the MMS/Relay

Sur-Reply, 14

Issue 2B

Dependent Claim 9:

TS-23.140's teaching of "periodic polling" renders obvious the "expiration of a periodic timer" trigger as recited in claim 9

Theory 2: Periodic Polling

198. Additionally, or alternatively, MMS User Agent uses periodic polling to identify new messages on an external server, and subsequently retrieves those messages—which also demonstrates another example a message delivery trigger that is the expiration of a periodic timer (as indicated by periodic polling). See SAMSUNG-1004, §8.3.3, pp. 90-91 (explaining that discovery of new messages on external servers can be done by “periodic polling for messages on External Server, followed by retrieval by the MMS User Agent via the MMS/Relay Server”); §3.1, p.

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SAMSUNG-1003, ¶¶198-199; Pet. 31; SAMSUNG-1004, 90-91

TS-23.140

199. A POSITA would have understood that (1) the above-described periodic polling for messages is akin to the claimed feature of a periodic timer expiring because the periodic polling would be done at periodic intervals (i.e., after a certain time period has elapsed/expired) and (2) this periodic polling is a message delivery trigger because, in response to receipt of such polling, messages from the respective servers would be provided/delivered to the MMS User Agent via the MMS Relay/Server.

For discovery of incoming messages from external messaging systems different mechanisms may be utilised, e.g.:

- periodic polling for messages on External Server, followed by retrieval by the MMS User Agent via the MMS Relay/Server.

Record Demonstrates that MMS Relay/Server Does the Periodic Polling, Contrary to Headwater's Assertions

Petitioner Reply

Further, as Dr. Traynor explained, periodic polling is performed by MMS Relay/Server and results in messages being delivered to the MMS User Agent from one or more servers. See SAMSUNG-1003, ¶¶198-199 (“periodic polling is a message delivery trigger because, *in response to receipt of such polling, messages from the respective servers would be provided/delivered to the MMS User Agent via the MMS Relay/Server*”); SAMSUNG-1039, ¶77⁸.

Pet. Reply, 16-17
(citing to 1st and 2nd declarations of Dr. Traynor)

It is Immaterial Where the Trigger Occurs, Given Record Evidence That Triggers are Either Device- or Server-Side

2nd Declaration of Dr. Traynor

where the claimed trigger occurs and the specification suggests that the trigger can occur at the user device or at the server. See SAMSUNG-1001, 70:5-30 (suggesting that the trigger can happen at any of the server or the user device) (“As another example, the service control server link 1638 can determine when to transmit based potentially on several parameters, such as one or more of: periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service agent message, responding to a service agent request, *initiated by one or more servers, initiated by a verification error condition, and/or initiated by some other error condition.* For example, once a transmission trigger has occurred, the service control server link 1638 can take all buffered agent communications and frame the communications. In addition, the service control server link 1638 can provide for an efficient communication link based on various embodiments related to the timing of transmissions over the service control link, as

similarly discussed above with respect to the service control device link 1691 description. For example, the timing functions, such as asynchronous messages or polling for messages, constant frequency transmission, transmission based on how much service usage or data traffic usage has taken place, *transmission in response to device side control link message*, service verification error events, other error events, and/or *other message transmission trigger criteria can be determined, controlled and/or initiated by either the device side or the network side depending on the embodiment.*); SAMSUNG-1044, 29:12-30:10, 31:14-32:6 (confirming that “network side,” as used in the preceding quoted portion of the specification, could refer to an element such as “a server” “in the network”).

SAMSUNG-1039, ¶78; Pet.
Reply, 16

Issue 3

Independent Claims 1 and 15:

Houghton-Munson Renders Obvious That “The Received Network Element Messages” Include “an Identification of, a Respective One of the Authorized Software Components”

'192 Patent: Challenged Indep. Claim 1

1. A message link server comprising:
a transport services stack to maintain a respective secure message link through an Internet network between the message link server and a respective device link agent on each of a plurality of wireless end-user devices, each of the wireless end-user devices comprising multiple software components authorized to receive and process data from secure message link messages received via a device link agent on that device;
an interface to a network to receive network element messages from a plurality of network elements, the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components; and

a message buffer system including a memory and logic, the memory to buffer content from the received network element messages for which delivery is requested to a given one of the wireless end-user devices,
the logic to determine when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred, wherein for at least some of the received network element messages, the receipt of such a message by the message buffer system is not a message delivery trigger, and for at least one of the message delivery triggers, the trigger is an occurrence of an asynchronous event with time-critical messaging needs, and
upon determining that one of the message delivery triggers has occurred, the logic further to supply one or more messages comprising the buffered content to the transport services stack for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices.

'192 Patent: Challenged Indep. Claim 15

15. A method of operating a message link server, comprising:

maintaining a respective secure message link through an Internet network between the message link server and a respective device link agent on each of a plurality of wireless end-user devices, each of the wireless end-user devices comprising multiple software components authorized to receive and process data from secure message link messages received via a device link agent on that device;

receiving network element messages from a plurality of network elements, the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components;

buffering content from the received network element messages for which delivery is requested to a given one of the wireless end-user devices;

determining when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred, wherein for at least some of the received network element messages, the receipt of such

a message is not a message delivery trigger, and for at least one of the message delivery triggers, the trigger is an occurrence of an asynchronous event with time-critical messaging needs; and

upon determining that one of the message delivery triggers has occurred, supplying one or more messages comprising the buffered content for delivery on the secure message link maintained between the message link server and a device link agent on the given one of the wireless end-user devices.

Dr. Traynor's Analysis for This Limitation

[1c1]: an interface to a network to receive network element messages from a plurality of network elements, [15c1]: receiving network element messages from a plurality of network elements,

SAMSUNG-1003, ¶¶ 319-329 (citing Houghton (SAMSUNG-1007), FIGS. 4, 7-9 and associated descriptions)

[1c2]: the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components; / [15c2]: the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components;

SAMSUNG-1003, ¶¶ 330-340 (citing Houghton (SAMSUNG-1007), FIG. 4, 7-9 and associated descriptions)

Undisputed: In Houghton, Push Server Facilitates Communications Between Multiple Application Servers and Multiple Devices/Applications

326. Additionally, a POSITA would have understood or found obvious that the push environment contemplated by Houghton would include multiple different application servers, each separately communicating with the push server to exchange data/messages with one or more mobile terminals that are connected to push server 401.

327. This further corroborated by Houghton's following disclosure: "The push client 405 may in turn at any time accept data D from each of a plurality of mobile applications 406 and direct such to the push server 401, possibly *for redirection through push server API to other servers*, mobile terminals, push clients and *computing devices*." SAMSUNG-1007, 21.

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SAMSUNG-1003, ¶¶326-327;
Pet., 69

2nd Declaration of Dr. Traynor

SAMSUNG-1039, ¶99; Pet. Reply, 24

99. Houghton discloses an environment—which Dr. Brogioli does not dispute—where the push server is in communication with multiple application servers and multiple terminals with their respective applications, and where a particular application server is sending messages to a particular application from among multiple applications. See, e.g., SAMSUNG-1007, 21-22, FIG. 7; SAMSUNG-1003, ¶¶320-342.

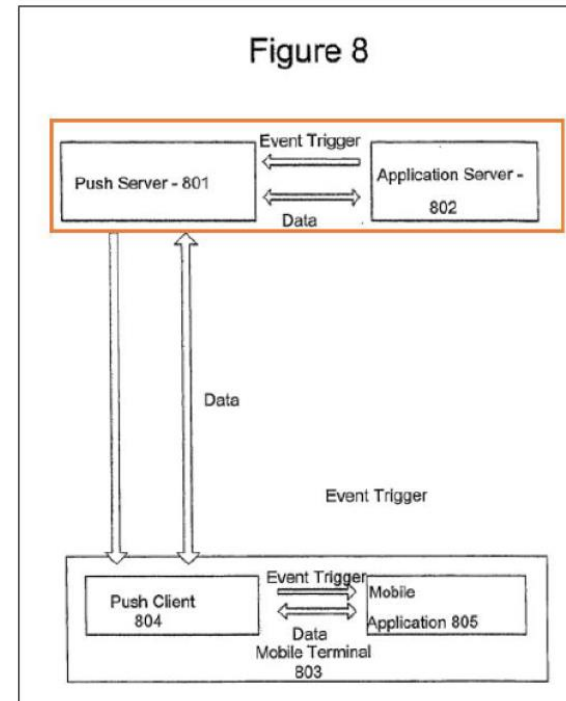
61

Undisputed: Houghton's Application Server Sends Application Commands as a Push Message to a Mobile Application

1st Declaration of Dr. Traynor

320. In more detail, Houghton's Figure 8 (reproduced below) illustrates an example of a "COMMAND PUSH" procedure where the push server 701 is triggered by a trigger event "from an application server 702" to "push an application command message to the push client 704 and thereby initiate a mobile terminal client trigger event in a mobile application 705 from a plurality of such applications, program modules and user interface features on the terminal 705." SAMSUNG-1007, 21-22.

328. Therefore, a POSITA would have understood or found obvious that Houghton's push server includes an interface to a network in the form of one or more APIs via which application-specific messages and data are received, from one or more network elements such as application servers. Moreover, a POSITA would have understood that application servers are network elements and hence messages received from such servers would constitute network element messages.



Undisputed: The Push Message Includes Data for and Identification of the Recipient Mobile Application

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333. Houghton further explains that the message pushed from push server 401/801 to push client 405/805 includes “a data packet” along with “[a]dditional binary or text information specifying which mobile application 406 from a plurality of such applications may optionally be included” as well as “binary or text information to be passed to the default or specified mobile application” and “additional binary or text information specifying how upon receiving such a message the client 405 will notify and optionally ask the user if the action should be performed may optionally be included.” *Id.*, 21; see *id.*, claim 1 (“pushing

334. In view of the above disclosures, a POSITA would have understood that Houghton discloses or suggest that the received network element messages (push messages from application server(s) 702/802) include message content with data for the destination mobile application, as well as an identification of this application (based on the information “specifying which mobile application 407 from a plurality of such applications”).

SAMSUNG-1003, ¶¶333-334; SAMSUNG-1007, FIGS. 4, 8; Pet. Reply, 17-25; Pet., 69-70

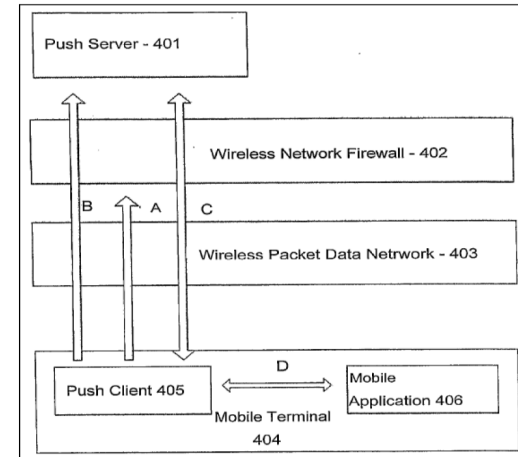
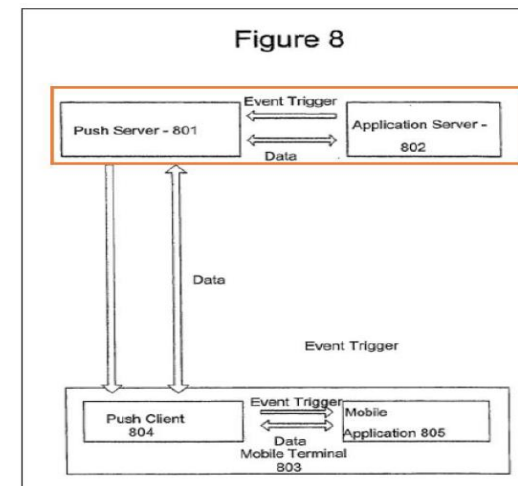


Figure 8



Houghton Teaches that a Push Message Sent from the Push Server is Triggered by Another Device, such as the Application Server

Houghton

Figure 4 is a block diagram illustrating an exemplary implementation of the system for pushing mobile application launch commands to a mobile terminal based on server side events in accordance with one embodiment of the present invention;

The push message from the push server 401 may be triggered by any trigger event, local or remote, defined at the server. The trigger may, among others, include an alarm, notification, or measurement result received to the push server 401 from another device or system. With a push message, the server 401 may direct the mobile application 406 to make use of additional

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SAMSUNG-1039, ¶¶ 91-93;
SAMSUNG-1003, ¶¶ 319-339; Pet.
Reply, 22-24; Pet., 67-71;
SAMSUNG-1006, 21-23

93. Houghton subsequently provides Figures 7-9 and their associated description, which provide a “command push procedure” and describe (as explained in §VIII.A.1 *supra*) (1) an application server communicating with an application on the mobile terminal via the push server and (2) the push server being “triggered by” a trigger event (which Houghton refers to and shows as an “event trigger” message) to send a “push message” from “application server to the mobile terminal 905” thereby “pushing application launch commands, lazy application updates, and

Application Server Sends an “Event Trigger” Message With Commands for a Particular Mobile Application

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85. As shown above, the application server sends an “event trigger” message to the push server. An “event trigger” message, as Houghton explains, is a message that includes data for “launch[ing] or command[ing] a mobile application” (SAMSUNG-1007, 9) and can include “application launch commands, lazy application updates, and lazy application data updates.” *Id.*, 24; SAMSUNG-1003,

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320. In more detail, Houghton’s Figure 8 (reproduced below) illustrates an example of a “COMMAND PUSH” procedure where the push server 701 is triggered by a trigger event “from an application server 702” to “push an application command message to the push client 704 and thereby initiate a mobile terminal client trigger event in a mobile application 705 from a plurality of such applications, program modules and user interface features on the terminal 705.” SAMSUNG-1007, 21-22.

SAMSUNG-1039, ¶85 (citing SAMSUNG-1003 ¶¶ 91, 320-322, 333, 340); Pet. Reply, 19-20

Figure 7

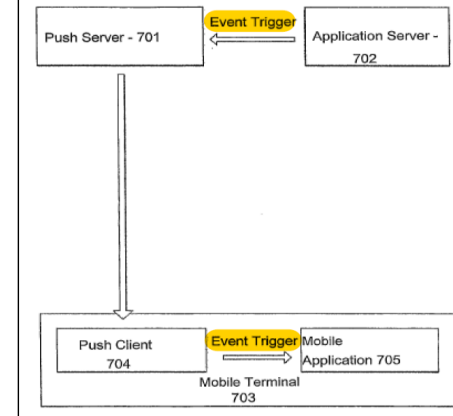
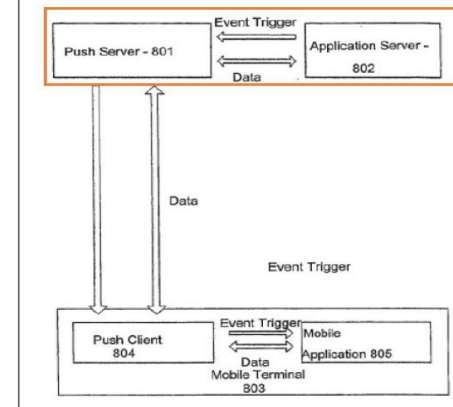


Figure 8



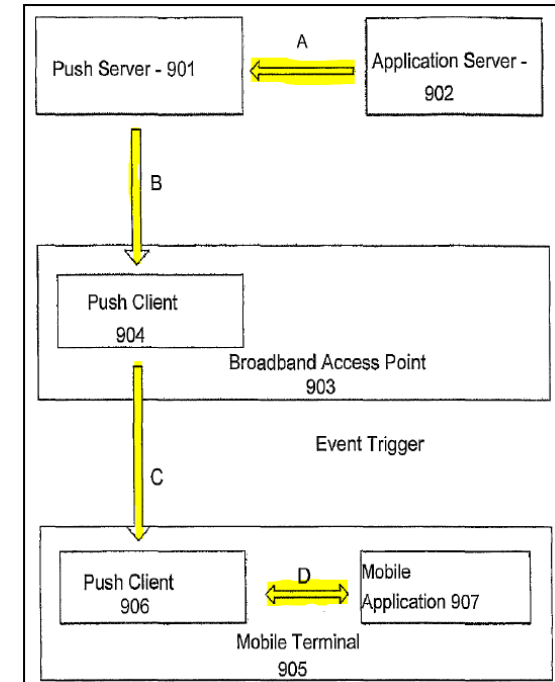
Application Server's "Event Trigger" is the Push Message That Includes Application Commands for the Particular Mobile Application

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87. Similarly, in the context of Houghton's Figure 9 (above, right), Houghton shows transmission of an "event trigger," and in the associated description, states that "the push server 901 is triggered by a trigger event of which the application server 902 is aware *to send push message* to the mobile terminal 905, and *procedure steps A, B, C are traversed thereby pushing application launch commands, lazy application updates, and lazy application data updates through push clients ... to mobile application 907.*" SAMSUNG-1007, 24; SAMSUNG-1003, ¶340. Because this application command message is a "push message" that is pushed to the mobile terminal and it traverses steps ("steps A, B, C") that begin at the Application Server, these push messages are pushed from the application server.

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340. "The trigger mechanism may be between separate parts of a larger application or application suite, or may be an IP-triggered application launch and data transfer as in the case of mobile application launched by contact to a specified IP port." *Id.* The "push server 901 is triggered by a trigger event of which the application server 902 is aware to send push message to the mobile terminal 905," which causes "pushing application launch commands, lazy application updates, and



SAMSUNG-1039, ¶87; SAMSUNG-1003, ¶340; Pet., 71; Pet. Reply, 20-21

Well-Known For Application Servers to Include Identification of the Particular Mobile Application to Which the Message is Sent

Lee

and a mobile terminal 200 including an integrated push service agent 250. The plurality of push application servers 10, 12 and 14 provides a push data to a push service application stored in the mobile terminal 200. The plurality of push application servers 10, 12 and 14 generate the push data push_data such as a real time news data for a news application, a chatting message for a peer-to-peer messenger application and an e-mail message for an e-mail application. A push information push_info including a receiving mobile terminal information specifying the mobile terminal that receives the push data, and an associated application ID app_ID specifying the application for invoking the push data along with the push data is also generated.

In accordance with a conventional push application server, the associated application ID app_ID is not required because the conventional push application server is built for a single push application and a communication session and a protocol are maintained for each of the servers. However, in accordance with the present invention, various push services provided to each of applications are managed in an integrated fashion through the integrated push service server 100 and the integrated push service agent 250. Therefore, the associated application ID app_ID specifying the application for invoking the push data is required.

SAMSUNG-1006, 22-23, FIG. 1; Pet., 70;
Pet. Reply, 22-25

TS-23.140

The application identifier of the destination application shall be present in an abstract message.

Abstract messages that are sent by an MMS User Agent or an MMS VAS Application on behalf of an originating application shall contain a destination application identifier. They may, in addition, contain an application identifier which is to be used in reply-MMs and they may contain additional application/implementation specific control information.

SAMSUNG-1004, 54-56; Pet., 70; Pet. Reply, 22

POSITA Understood or Found Obvious that Houghton's Application Server Would Include Identification of the Particular Mobile Application

104. In summary, given that

- a) Houghton teaches that the push server interfaces and relays messages from multiple application servers to multiple applications,
- b) Houghton contemplates application commands being sent as push messages to a particular mobile application from an application server (as explained in §VIII.A.1 supra) and the push message including information identifying the destination application, and
- c) it was conventional and well known (as corroborated by Lee and TS-23.140) for an application server sending a push message to include the application identifier for the intended application,

a POSITA would have understood or found obvious for Houghton's similar push messaging environment to be implemented so that the push message from the application server includes an application identifier that specifies or identifies the destination application. SAMSUNG-1003, ¶¶333-341. This would therefore have

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SAMSUNG-1039,
¶104; SAMSUNG-
1003, ¶¶333-341; Pet.
Reply, 24-25; Pet.,
67-71

Contrary to PO's New Assertion, Application Server is Better Equipped to Include Application Identification in the Message it Sends for Delivery to an Application

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99. Houghton discloses an environment—which Dr. Brogioli does not dispute—where the push server is in communication with multiple application servers and multiple terminals with their respective applications, and where a particular application server is sending messages to a particular application from among multiple applications. See, e.g., SAMSUNG-1007, 21-22, FIG. 7; SAMSUNG-1003, ¶¶320-342.

100. In such an environment, a POSITA would have recognized or found obvious that the application server, which is sending messages to a particular application, would include the identifier for the destination application so that the push server knows the appropriate application to direct the message. (relative to the push server). SAMSUNG-1003, ¶¶331-343. A POSITA would have recognized that the application server is better equipped, relative to the push server, to provide the application identifier because the application server originates the message and knows the intended application. See *id.* This is further corroborated by Lee, as explained below.

SAMSUNG-1039, ¶¶ 99-103; SAMSUNG-1003, ¶¶320-342; Pet. Reply, 24-25

101. As discussed in Lee, “with a conventional push application server, the associated application ID app_ID is not required because the conventional push application server is built for a single push application.” SAMSUNG-1006, ¶23. But when—like in Houghton’s environment—“various push services provided to each of applications are managed in an integrated fashion through the integrated push service server 100 and the integrated push service agent 250,” “the associated application ID app_ID specifying the application for invoking the push data is required.” *Id.*

103. On the other hand, adding the responsibility of including the application identifier for the destination application on the push server, would add undue overhead and burden to the push server. That’s because, under this construct, the push server would need to (i) receive a message, (ii) determine the source of the message, (iii) determine the intended application for the message, (iv) determine the application identifier for the intended application, and (v) add that information to the message. In this regard, the push server would have to do this for every message it encounters from multiple application servers directed to multiple applications resident on multiple mobile devices/terminal. Thus, in the context of the push

Headwater's Continued Reliance on IPR2024-00003's Institution Decision Ignores Critical Distinctions Between The Proceedings

Petitioner Reply

In contrast, the present record provides different art mappings and different evidence demonstrating that a POSITA would have understood or found obvious that the push messages from the application server includes an application identifier for a destination application. As a first point of distinction, the present petition mapped the claimed “identification of the authorized software component” to an application identifier (unlike in the '117 Patent's petition where the information indicating an application was mapped to IP port numbers/addresses). SAMSUNG-1003, ¶330; Petition, 69.

Pet. Reply, 26-27

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Additionally, the present petition leveraged evidence—not relied upon in the

'117 Petition—explaining:

(1) the well-known use of an application identifier for a destination mobile application being included in the push message sent from an application server to that application (as corroborated by Lee and TS-23.140). Petition, 70; SAMSUNG-1003, ¶336.

(2) Push messages, in the context of Houghton's Figure 4 and its associated "command push" procedure, being sent from the push server and including application command messages and "information specifying which mobile application 406 from a plurality of such applications." SAMSUNG-1003, ¶¶332-333; Petition, 70.

(3) The application command push messages being "received ... from another device or system," such as an application server as depicted in Figures 7-9, that sends these commands in an event trigger message—i.e., a "message[]" to launch or command a mobile application"—provided to the push server for delivery to the mobile application. SAMSUNG-1003, ¶¶320, 331-332, 339-

Based on the above evidence/analysis which was not considered/raised in IPR2024-0003, and based on Dr. Traynor's testimony in his original and supplemental declarations, a POSITA would have understood or found obvious that the push message sent by the application server—which includes application command messages for a destination mobile application—would include an application identifier identifying the destination mobile application to which the event trigger/application command is directed. SAMSUNG-1003, ¶¶319-342.

Pet. Reply, 27-28

Uncontested Evidence Refutes Headwater's Assertion that Application Server Would Not Know the Application to Which the Message is Directed

alone. But the Petition's assertion also ignores the expert testimony of Dr. Brogioli that there will be numerous examples where "the application server would not necessarily know which application the message should be directed to." Ex. 2001, ¶98.

PO Sur-Reply

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Sur-Reply, 23;
SAMSUNG-1039, ¶¶97-103; Pet. Reply,
24-25

97. PO's expert, Dr. Brogioli, contends that "there would be no need for the message sent from the application server to the push server to include an identification of an application in Dr. Traynor's proposed combination." EX-2001, ¶¶97-98. In support of this argument, Dr. Brogioli asserts that the application server "would not ... know" the application to which "the message should be directed." *Id.* Not only does Dr. Brogioli fail to cite any evidence to support this assertion, he also ignores Houghton's express disclosures (1) that the application server sends messages to a particular application from among multiple applications executing on a mobile terminal, and (2) that Houghton's message from the application server is an application command message that specifically commands the recipient application to perform an action. SAMSUNG-1007, 21-22. Because the application server sends an application command message that includes commands for a particular application, it cannot be the case that the application server does not know the application to which the message is directed—as Dr. Brogioli incorrectly argues.

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Issue 4

Dependent Claim 9:
Houghton-Munson Renders Obvious “Expiration of a
Periodic Timer” as a Message Delivery Trigger

Claim 9: Petition's First Theory Based on Houghton's Teachings

9. The message link server of claim 1, wherein one of the message delivery triggers is the expiration of a periodic timer.

Petition

Pet., 82-83

Houghton contemplates multiple message delivery triggers (SAMSUNG-1007, 21) and discloses a periodic message (sent upon “expiration of a timer”) so that devices in the communication path (push client at mobile terminal and push server) “do not time expire the connection.” *Id.*, 26, 19.

Headwater's POR Failed to Address Houghton's Teachings

The Petition's sole theory as to how its Ground 5 theory satisfies claim 9 is a theory in which it would have been obvious to "implement[] Munson's use of periodic timers for message delivery." Pet. 82-83; *id.*, 83 ("A POSITA would have been motivated to use periodic timers as a message delivery trigger, *per Munson*...."). Notably, although the Petition states in passing that "Houghton... discloses a periodic message" (Pet. 82-83), the Petition does *not* allege that Houghton's alleged "periodic message" constitutes a "message delivery trigger" either in Houghton or the proposed combination of Houghton with Munson. *See* Pet. 82-83. Accordingly, the Petition's theory relies on the premise that Munson does, in fact "use periodic timers as a message delivery trigger." *See* Pet. 83.

POR

POR, 43

Petitioner Reply

Pet. Reply, 28-29

The POR failed to address the Petition's express mapping based on Houghton alone, and is now foreclosed from addressing this theory in its sur-reply. *See In re NuVasive*, 842 F.3d 1376, 1380-81 (Fed. Cir. 2016) (arguments waived on issues not raised in POR); Paper 8, 9 ("arguments not raised in the response may be deemed forfeited").

Petition's Second Theory Based on Combined Teachings of Houghton's and Munson's Teachings

Houghton-Munson leverages Munson's teachings that "content can be pushed according to a schedule of time or event" ("*message delivery trigger*"), with Munson providing an example where a "group push" is performed "during off-peak hours." SAMSUNG-1017, [0044]; SAMSUNG-1003, ¶¶388-389.

Given Houghton's delivery triggers and Munson's use of periodic timers for message delivery, a POSITA would have been motivated and would have had a reasonable expectation of success in implementing Munson's use of periodic timers for message delivery. SAMSUNG-1003, ¶¶390-392. A POSITA would have been motivated to use periodic timers as a message delivery trigger, per Munson, to enable more efficient use of network resources and avoid repeated message requests that can impact performance of network communications. *Id.*

Petition

Munson

Pet., 82-83; SAMSUNG-1017, ¶44

[0044] In one embodiment, a content can be pushed according to a schedule of time or event. For example, when used with a group push, an application service provider can use pushes (i.e., pushing contents) for a system maintenance purpose during off-peak hours to take advantage of lower rates.

Headwater's Rebuttals Fail: Pushing Content According to “a Schedule or Event” Would Involve a Timer That Recurs

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107. *First*, PO argues, incorrectly, that pushing content according to a “schedule or event” does not involve a timer. POR, 43-44; Ex. 2001, ¶¶101-102. This is wrong because a “schedule of time or event” teaches or renders obvious to use a timer that would expire once the scheduled time or event arrives. *See, e.g.*, SAMSUNG-1040 (defining “schedule” as “[t]o allocate time periods and/or resources.”). PO’s speculated example of “push[ing] Halloween-related content” on

SAMSUNG-1039, ¶¶ 107-108; Pet.
Reply, 29-30

Headwater's Rebuttals Fail: Pushing Content According to "a Schedule or Event" Would Involve a Timer That Recurs

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108. *Second*, PO argues "there is no suggestion that 'system maintenance' [in Munson] occurs on any pre-established schedule that would be understood to be periodic," nor that the push updates would operate pursuant to a "periodic timer." POR, 44-45; Ex. 2001, ¶¶103-104. This argument is also flawed. A POSITA would have found obvious that a scheduled time or event such as system maintenance is indeed a recurring event that happens on a schedule and occurs, for example, "during off-peak hours" (as taught by Munson). *See, e.g.*, SAMSUNG-1001, 63:5-14 (in the context of describing roaming tables, the '192 specification states that "roaming

SAMSUNG-1040

periodic 1. Occurring, appearing, or characterized by regular and repetitive intervals or cycles. For instance, AC, the chopping of a signal, or the oscillation of a crystal. 2. Occurring, appearing, or characterized by irregular intervals. For example, the backing up of data occasionally. 3. Char-

192 Patent

IT manager using VSP functions). For example, roaming tables can be updated periodically in the background while on a home network and cached. In some embodiments, cache updates occur based on a fixed time period. In some embodiments, the roaming partner cost table cache updates are done whenever the device is connected to a desirable network that is not as expensive or bandwidth constrained (e.g., at home, work and/or off the WWAN). In some embodiments, updates occur at time of day that network is not busy. In some embodiments, updates occur based on a