Trials@uspto.gov
571-272-7822

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD., GOOGLE LLC, and SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

IPR2024-00341
Patent 8,406,733 B2

Held: May 5, 2025

Before HYUN J. JUNG, GARTH D. BAER, and RUSSELL E. CASS, and, *Administrative Patent Judges*.

APPEARANCES:

ON BEHALF OF THE PETITIONER:

TURHAN SARWAR, ESQUIRE
Wolf Greenfield, LLP
600 Atlantic Avenue
23rd Floor
Boston, MA 02210
Suite 1900
Los Angeles, CA 90071
(617) 646-8000
tsarwar-ptab@wolfgreenfield.com

ON BEHALF OF THE PATENT OWNER:

JAMES MILKEY, ESQUIRE
Russ August & Kabat, PLLC
12TH Floor 12424 Wilshire Blvd
Los Angeles, CA 90025-1052
(310) 826-7474
jmilkey@raklaw.com

The above-entitled matter came on for hearing on May 5, 2025, commencing at 1:00 p.m., via video teleconference.

P R O C E E D I N G S

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JUDGE JUNG: Hello. This is Judge Jung, and to my right is Judge Baer, and from Denver is Judge Cass. This is the oral argument for IPR2024-00341. In this proceeding, Petitioner Samsung and Google, challenge Claims 1 through 17, 19, 21 through 27, 29 and 30 of U.S. Patent Number 8,406,733. The '733 patent is owned by Headwater Research, LLC.

Beginning with Petitioner's Counsel and followed by Patent Owner's Counsel, please state your names for the record.

MR. SARWAR: Good afternoon, Your Honors. I'm Turhan Sarwar from Wolf Greenfield. I'm joined today by Karl Renner, Jeremy Monaldo, and Karan Jhurani from Fish & Richardson. And I'm also joined by my colleague from Wolf Greenfield, Greg Corbett. We are here on behalf of Petitioner, Samsung and Google.

JUDGE JUNG: Thank you, Mr. Sarwar. Patent Owner's Counsel?

MR. MILKEY: Good morning. Sorry. Good afternoon, Your Honors. This is James Milkey with the law firm of Russ August & Kabat on behalf of Patent Owner, Headwater.

JUDGE JUNG: Thank you, Mr. Milkey. A few reminders for this hearing. If you encounter any technical difficulty, please let us know immediately. If you're not speaking, please mute yourself, and if you are speaking, please identify yourself each time you speak to help make the transcript clear. Please refer to the demonstratives, papers, or exhibits by slide or page number so that we can follow along. And there is a public

connection.

With that said, Mr. Sarwar, you may begin when you're ready.

MR. SARWAR: Thank you, Your Honors. I'd like to reserve 25 minutes for rebuttal.

JUDGE JUNG: Okay. All right.

MR. SARWAR: All right. Let's start with Slide 2. There is only one ground in this proceeding, combining TS-23.140, which I will call the MMS standard, and the Ogawa Patent. I plan to focus on the disputed issues first, which all involve MMS. MMS stands for multimedia messaging service. This is similar to text messaging, though as the Petitioner has explained, MMS isn't just for sending messages between users. The standard also describes using MMS to transport application-specific information to other applications on a device.

On Slide 3, you can see Independent Claim 1. Claim 1 is representative, as far as the parties' dispute is concerned. Patent Owner --

JUDGE CASS: Excuse me, Counsel. This is Judge Cass. Would it be possible for you to speak a little bit louder or adjust your volume a bit? It's coming through a bit soft to me.

MR. SARWAR: Yes, of course, Your Honors. I will try to speak a little bit louder. If this isn't helping, just let me know and I will continue to an increased volume, as needed.

JUDGE CASS: Okay.

MR. SARWAR: On slide --

JUDGE CASS: Thank you.

MR. SARWAR: Okay. All right. On Slide 3, you can see Independent Claim 1. Claim 1 is representative, as far as the parties' dispute

is concerned. At a high level, the claims recite the user device with various agents on it. One of the agents receives an encrypted message over a service control link. That agent decrypts the message and delivers its content to another agent on the device using an agent identifier.

In the claims, that delivery within the device, between the agents on the device, occurs over what the patent calls an agent communication bus. I've highlighted that term on Slide 3 because that's where our dispute is. The only disagreement that Patent Owner has raised is about whether the agents we identified are communicatively coupled through an agent communication bus.

Slide 4, Petitioner has raised two alternative arguments to meet this requirement. I'll start with the first, which is based on how the specification uses the term "agent communication bus." Slide 6 shows what the patent says about the term. As you can see, Your Honors, agent communication bus is very broad. The phrase is used to describe the communication link or interface, over which agents to talk to one another. The patent doesn't describe any other way to couple agents to be able to talk to one another, and the patent is very flexible in its description. If the agents are software, for example, processes in an application, the agent communication bus can be a software bus.

As you can see on Slide 7, this broad understanding of bus is consistent with the way software buses were understood in the art. Software bus is simply an interface between software modules. You can see that in the definition up top. We also include a figure from Mostafa here on the bottom, just to illustrate an example of such an interface. Mostafa is a 2006 printed publication that talks about MMS specifically, and I plan to revisit

this figure shortly, but just note here that Mostafa shows an interface that allows different software modules to talk to one another on a terminal.

I also want to emphasize, referencing Slide 8, that this broad understanding of bus is completely consistent with the way Patent Owner interpreted agent communication bus in parallel district court litigation. Patent Owner said, for infringement purposes, that the agent communication bus was just a communication path for various agents and functions to communicate over. That's all. So that is all in this map.

Onto MMS Ogawa, Slide 9.

JUDGE CASS: Counsel, this is Judge Cass.

MR. SARWAR: Yeah.

JUDGE CASS: Is there a difference between a software bus and just function calls or other methods for different applications or application components to communicate with each other? And if so, what is that difference?

MR. SARWAR: So that's a great question, and I will also be sort of discussing that a little bit later in my discussion. But just to answer your question right up front, the function calls and method calls are, you know, describing the communication that takes place between different parts of software and the software bus is describing the infrastructure over which those communications take place. Does that answer your question, Your Honor?

JUDGE CASS: I think so, but let me just make sure I'm clear. So are you saying that any communication between application or application modules will occur over a software bus or are there some instances where communications could occur that would not be over a software bus?

MR. SARWAR: That's a great question, Your Honor. So in the context of the patent, when we're talking about communications between agents, the Specification does not describe any other way over which agents can communicate with each other. So there's no other way that is described for bits and pieces of software to talk to one another. Agent communication bus is the only way that's discussed.

In terms of whether or not function calls and method calls can go over this agent communication bus, as I'll discuss in more depth later, they can. There's nothing exclusive about those two -- they're not really alternatives. They're sort of orthogonal concepts.

JUDGE CASS: Okay, that sounds fine for now. We can talk more when we get to the prior art.

MR. SARWAR: Thank you, Your Honor. Okay. I think I was on Slide 9 and getting ready to discuss how all of this maps on to our combination in the Petition. Slide 9 summarizes it. This is all based on disclosures in the MMS standard. There are three basic parts of the mapping to know about in order to resolve this dispute.

First, for the service control device link agent, we relied on the standards MMS User Agent application, which is on the user device. That's highlighted purple. In MMS, this agent receives MMS communications and can route them somewhere within the device. Patent Owner Response didn't challenge this mapping, so there's no dispute here that MMS Ogawa has an end user device with a service control device link agent, as claimed.

Second, for the plurality of device agents, we relied on the standard's description of destination applications that are also on the user device. That's highlighted blue. Again, the Patent Owner Response did not

dispute this mapping, so there's no dispute here that MMS Ogawa's end user device also has a plurality of device agents.

Third, there's no dispute that the agents in MMS can communicate with one another. I highlighted some of the standard's disclosure showing that agents talk to an interface with one another in yellow. Patent Owner also doesn't dispute this in its papers. The MMS User Agent undisputedly transports data to the destination applications over some interface.

Now, turning to Slide 10, you can see this interface illustrated in Mostafa, which as I mentioned earlier, is a 2006 printed publication that discusses MMS. Mostafa corroborates how a POSITA understood the MMS standards disclosures and Mostafa shows that there was a communication path between the MMS User Agent and, you know, a destination application. This is to link the interface in MMS for transporting data between those two agents.

So Petitioner has established that MMS Ogawa has a service control device link agent and a plurality of other device agents, and that they talk to each other over some interface. All based on express disclosures in MMS. And then Petitioner explained that a POSITA would've understood those agents to be coupled to each other through an agent communication bus, as that term is used in the patent.

And as I noted earlier, Your Honors, you can see on Slide 6, there's no other way in which the Specification contemplates agents talking to one another, aside from an agent communication bus. So we think that really should end the matter.

Now, we are not sure whether or why Patent Owner disagrees with this first argument and we respectfully invite Your Honors to ask them about

it. We initially thought it had something to do with Patent Owner's subapplication theory, as shown on Slide 11. Patent Owner says here that the device agents in MMS Ogawa are part of the service control device link agent, and Dr. Brogioli, Patent Owner's expert, seems to say that if the two agents happen to be an application and a subapplication, they would not talk through an agent communication bus.

But why, Your Honors? It shouldn't matter whether the device agents in MMS are part of the service control device link agent or not. As we explained in our Reply and as shown on Slide 12, there's no basis for such a narrow reading of agent communication bus. There's nothing in the intrinsic record. Patent Owner doesn't point to anything. In fact, Patent Owner never even once discusses what the patent says about the term. There's no mention anywhere in the Patent Owner's papers. Not even in the Sur-reply.

And we explained in our reply on Slide 13 that it's probably because there is no intrinsic basis to narrow the term to only communication links going outside of an application. So, you know, if you turn back to Slide 6, Your Honors, you can see why. There's no language in the patent suggesting that an agent communication bus is something that can only be used for communication between specific types of agents.

Instead, the patent just uses the term to refer to the interface that allows the agents -- however they're designed -- to talk to one another, regardless of whether those agents are part of one application or many, regardless of whether the receiving agent is external or internal to the sending agent, regardless of whether the agent is a subapplication or not. The patent simply does not distinguish between any of these categories or

talk about subapplications at all. So we think there's no intrinsic basis to narrow the term. There's also no credible extrinsic basis to narrow this term.

On Slide 11 is where we put up Dr. Brogioli's testimony. That's Exhibit 2001, paragraph 37, and that's the testimony on this point from Patent Owner. This is an uncorroborated statement about how buses in computing were typically used and it is untethered to the Specification's discussion of agent communication bus.

Moreover, as you can see from the evidence collected on Slide 16, the term "bus" was in fact used to describe an interface for communications happening within one application. Up top, you see the encyclopedia says a software bus is for software modules or processes to transfer data to one another, and Savanyo literally shows a bus being used to facilitate communications within an application between software subsystems.

Now, I said earlier that I was not sure what Patent Owner's position on our first argument is. On Slide 17 -- this is because after we pointed all of this out, Patent Owner said that it's actually not arguing the term "agent communication bus," by definition, includes intra-application communications. So we think our first argument is unrebutted. And we don't see how, if a device has multiple agents, and those agents talk with each other over some communication link or interface -- all of which is undisputed here -- we don't see how Patent Owner can argue that those agents are not coupled through an agent communication bus given the way the term is used in the '733 patent and given what a bus is. On --

JUDGE CASS: Counsel, this is Judge Cass, again. Going back to your Slide 16 and looking at the dictionary definition or I guess encyclopedia definition of software bus, it says, although bus is traditionally

a hardware term for an interconnecting pathway, it is occasionally used in this manner when the focus is on internally transferring large amounts of data from one process to another. And just reading this, it's not -- wasn't clear to me whether a software bus is some sort of specialized method of communication where you're transferring large amounts of data, but for instance, if you were just transmitting small amounts of data, whether that would be done in some manner not involving a software bus. Do you have any reaction or response to that?

MR. SARWAR: Yes, Your Honor. We're not aware of any other way aside from a software bus in the context of the patent, given how broadly the patent uses the term "agent communication bus." So regardless of the amount of data that's being transferred, we think it goes over the bus, and that's borne out by the disclosures regarding agent communication bus, which are summarized on Slide 6.

So here we're, you know -- there's no suggestion that for a small amount of data, you would use a certain piece of infrastructure that's not described anywhere in the patent and not described anywhere in the art, but then for larger amounts of data, you would use the agent communication bus. It's all going through the agent communication bus.

And that, by the way, is also consistent with Patent Owner's litigation position, which you can see on Slide 8. They're talking about a communication path for various agents and functions to communicate over, so you know, the idea of functions communicating with each other doesn't really imply to us, a very large amount of data. Those are also going over the agent communication bus.

JUDGE CASS: All right. Thank you.

MR. SARWAR: Okay. Thank you, Judge Cass. All right. If there are no other questions about our first argument, I will move onto argument two. Okay. And that's on Slide 18. All right. If for some reason the undisputed communication link between the undisputed agents is somehow not considered an agent communication bus, Petitioner has alternatively established that implementing MMS Ogawa, such that it used an agent communication bus, would have been obvious.

The basic argument was this and it's summarized on Slide 19. Software buses for communications between processes were very well known. In view of that, using a bus would've been a conventional, obvious way to implement and accomplish the described application data transfer and interface between agents on the MMS User device. This was just using a familiar known component -- the software bus or inter-process bus -- to achieve a predictable result of the agents on the MMS device being able to communicate with one another. And because buses were conventional and known to work for communications between processes, a POSITA would've reasonably expected success with such a solution. This argument on Slide 19 relies on the basic premise that software buses for inter-process communications were well known, and they were.

Slide 20 shows where we've collected references corroborating POSITAs were familiar with software buses, and you had to implement and modify them. This is evident from the patent itself, upper left, which recommends a variant of a D-Bus and doesn't bother to describe how to, you know, accomplish the variation. That's because POSITAs already knew.

And you can see in the patent, the agent communication bus does not even need to be a D-Bus. It can be any inter-process communication

protocol. This, again, Judge Cass, goes to your question about sort of the amount of data that we're talking about here. Any protocol for communication between inter-process, regardless of the amount of data that's going through, qualifies as the patent's understanding of agent communication bus.

We also cited references in our papers, making clear that software buses for communications between processes were very well known. Selections of this evidence are also on the slide. The computer desktop encyclopedia, which we discussed, explains that bus is just an interface between processes or software modules.

Sathish, upper right, talks about a bus between processes and separate applications. And Savanyo, that's sort of middle right, talks about a bus between components or processes within one application. Software buses were a commonplace conventional solution.

Now, unlike for Petitioner's first argument where Patent Owner does not seem to have a substantive response, for the second alternative argument, Patent Owner raised some disputes. Slide 21. And to be clear, Your Honors, they need to win on both of these disputes to defeat Petitioner's alternative argument. Dispute A is that Patent Owner says the destination applications in MMS are subapplications of the MMS User Agent. And dispute B is Patent Owner says that it would not have been obvious to use a bus in this single application context.

All right. On Slide 22, regarding dispute A, I will talk about how Patent Owner arrives at this conclusion about subapplications using some resides on language in the MMS standard, but before I do that, I want to discuss what the MMS standard actually teaches. On Slide 23 in the

definitions, the standard defines application data as information/data specific to an application other than the MMS User Agent.

Also, MMS User Agent is defined as an application that can perform operations on another application's behalf. The standard also talks about applications other than MMS. For example, a chess application, initially registering with the MMS User Agent before information can be routed there. And then the standard reference is exchanging information between those two entities.

Later in this bottom passage -- and I haven't highlighted this -- but you can see that the standard contemplates this other application being downloadable. Something, for example, that you sign in online and want to have on your device. And after it's downloaded on a device, it can be registered to use MMS or data transportation. I've also included excerpts from Mostafa on Slide 24. Again, Mostafa is about MMS and it provides visual and textual corroboration of what a POSITA would've understood the MMS standard to be disclosing. These figures are from pages 732 to 733 of Mostafa, which we cited in the Petition and in the Reply.

In Figure 4, at top, Mostafa shows that the MMS User Agent application and another application of separate entities on a mobile terminal that communicate with each other using some kind of application interface. In Figure 5, at bottom, Mostafa shows multiple such applications interfacing with the MMS User Agent application. And note here that there's no suggestion that the MMS User Agent is a larger application that includes within it, a series of subapplications, and Your Honors can look. Neither the MMS standard, nor Mostafa ever uses the term "subapplication."

And turning to Slide 25, where respectfully, it makes little sense to

us to suggest that the standards only teaching about other applications is to add on non-MMS functionality, like chess or weather or news to a User Agent that is primarily responsible for figuring out what to do with and where to route information received using MMS. It's sort of a different area.

So where is Patent Owner hanging its hat for its subapplication theory? Turning to Slide 26, it's the use of the phrase "reside on" in Section 7.1.18. Patent Owner suggests, based on this one phrase in this one section, that the standard rules out the MMS User Agent transporting data to any applications other than itself. This is despite all of the evidence we cited in our papers, summarized on Slide 23, making clear that the destination application is its own entity and an application other than the MMS User Agent. This is despite Mostafa, on Slide 24, corroborating that the MMS User Agent was its own application, separate from other applications, all interacting through some interface.

And this is despite Dr. Traynor's explanation, shown on Slide 27, that in context, the "reside on'" language in that section simply means that the destination application is on the same device as the User Agent. As shown on Slide 28, the standard sometimes uses the phrase "MMS User Agent" as shorthand to describe the device on which the agent application is operating. You can see this in Figure A.8, which labels what is clearly a user device as the MMS User Agent.

And Patent Owner's expert, Dr. Brogioli, also corroborates this on Slide 29. Dr. Brogioli previously offered testimony regarding the MMS standard. At right, Dr. Brogioli recognized that the standard sometimes uses the phrase "MMS User Agent" to refer to user equipment. For example, he testified that when the standard refers to the MMS User Agent switching

on -- that's on page 29 of the standard, you can see that in upper left -- is referring to switching the user terminal on.

Okay. So despite all of evidence and despite Dr. Traynor explicitly confirming this reading of the "reside on" language for the MMS User Agent during his deposition, which you can see on Slide 31, Patent Owner maintains that the destination applications described in the standard can only be subapplications of the MMS User Agent. And we don't think that makes any sense.

All right. Dispute B. Let's turn to Slide 32. Even if Your Honors were to believe that the MMS standard limits its teachings to communications within a single application, we still don't think that defeats Petitioner's obviousness shown because Patent Owner also loses on dispute B. To start, Your Honors only need to wade into this dispute if you believe that the other separate applications disclosed in the MMS standard are actually just said applications of the User Agent application.

Patent Owner says that using a bus for intra-application communications would not have been obvious because buses were typically used for communications between separate applications. We discussed the main reasons already about why this point fails, but simply, Patent Owner's premise is wrong. On Slide 33, you see here evidence showing that buses were a well-known way for two processes to talk to one another. They were a conventional solution for that purpose.

Slide 34. Applications themselves may include more than one process. Slide 35. Those processes, including within an application, may talk to each other over a bus. So in short, Slide 36, a bus was a conventional obvious way to implement agents talking to one another. Regardless of

whether we were talking about agents in different applications or agents in one application, Your Honors might see Patent Owners suggested -- they provided unrebutted testimony establishing otherwise, but I encourage Your Honors to look closely at whether their evidence, which is a series of conclusory statements by their expert, has any corroboration.

All right. I'm going to go back to Slide 4 and sort of sum this up. Petitioners provided two arguments for why MMS Ogawa missed the "agent communication bus" term. First, based on MMS's express disclosures, a POSITA would have understood that the communication link described in the standard to be an agent communication bus, as that term is used in the patent.

Second, alternatively, it would've been obvious to a POSITA to specifically implement MMS Ogawa to use an agent communication bus or communications between agents. Regarding the first argument, Patent Owner admitted in its Sur-reply that it's not trying to narrow the broad scope of this disputed term. It is undisputed that there are agents in MMS and that they talk to each other over an interface. Given the Specification and how the term "bus" was used in the art, a POSITA would have understood those agents to be communicating through an agent communication bus. We don't think Patent Owner has any real response to that and in fact, they pursued a very broad understanding of the term in parallel litigation. So we don't think they actually want to narrow the term.

Okay. In order to challenge Petitioner's alternative obviousness argument, Patent Owner identified two arguments and they're both false premises. Slide 21. Patent Owner first needs to convince Your Honors that the destination applications described in the standard are exclusively

subapplications of the MMS User Agent and that the standard only contemplates the MMS User Agent transporting data to itself. I don't think that makes much sense, especially given the standard's repeated references to applications, other than the MMS User Agent application and the references to transporting or routing data to different entities.

Patent Owner then -- second -- needs to convince Your Honors that using a bus to facilitate communications within one application was not obvious. We established that buses were conventional and known and desirable for that very purpose in the prior art. And seemingly, Patent Owner's best response is an uncorroborated expert conclusion suggesting that computing buses weren't typically used this way. We don't think that's entitled to weight or correct. Buses were conventionally used this way. Our expert testimony supports that and we cited documentary evidence corroborating that. So we don't think they've established either point. Okay. That's all I have on the disputed issues. Unless Your Honors have any further questions, I'd like to reserve the rest of our time for rebuttal.

JUDGE JUNG: This is Judge Jung. Mr. Sarwar, I have no questions. You have 33 minutes left for rebuttal.

MR. SARWAR: Thank you, Judge.

JUDGE JUNG: And Mr. Milkey, you may proceed when you're ready.

MR. MILKEY: Thank you, Your Honor. So I first want to start at a high level with two main points. First, much of my friend's argument essentially deletes agent communication bus from the claims. I'll share my screen, and this is Petitioner's Slide 2. So this -- sorry -- Petitioner's Slide 3. This shows the language of Claim 1 and the language of Claim 1 -- there are

two points where an agent communication bus is introduced into the claim. The first is just this highlighted portion. You can see the claim recites, a plurality of device agents communicatively coupled to the service control device link agent. So I've heard my friend saying, this is -- the first time, I think the Petitioners have clearly articulated this. They believe that the only way for agents to communicate between themselves is an agent communication bus, but if that were the case, there would be no point at all in the claim actually specifying that this communicative coupling is through an agent communication bus. By their argument that any communication between agents at all requires an agent communication bus effectively deletes -- not effectively -- it does delete, "through an agent communication bus," from this limitation. And they have no expert support for this. They have no, you know, proposed construction of agent communication bus. This is, you know -- the plain meaning applies and there's no evidence that -- and it's just inconsistent with the claim language itself that all communication between device agents would occur through an agent communication bus.

The next place where this arises is the very last limitation, limitation 1D and it says, based on the particular agent identifier, deliver the message content to the particular agent. So there is -- and this is -- specifically, if we go back up to where this originates from, it's wherein the service control device link agent is configured to do this. So the service control device link agent is configured to deliver the messages content to the particular device agent.

So again, the claim is discussing transferring data between the service control device link agent and the particular device agent. And again,

according to Petitioner's argument, this just has to occur over an agent communication bus. So there would be no point to the claim actually saying that this occurs over the agent communication bus. It would be inherent. Again, they have no support for this and it is just reading out the claim term here over the agent communication bus. There would be no point for the patent to have included that portion of the claim limitation under Petitioner's argument.

And the reason that this is specific in the claims -- the reason this matters is because it's undisputed in this case. There's unrebutted expert testimony and this – I'm turning to Patent Owner's Slide 20 now, that there are other ways to communicate between agents. So Dr. Brogioli testified that the MMS User Agent can provide data to its subcomponents via standard function calls, which would just involve a simple memory write. It simply writes data to a memory location.

Now, under Petitioner's theory, if -- by the way, they've never actually disputed that this is not an agent communication bus. I don't -- even in the briefing, they haven't said this is not an agent communication bus -- or sorry, that this is an agent communication bus. They've never argued that a memory write in the manner that Dr. Brogioli testified about is involving an agent communication bus. They've never --

JUDGE JUNG: Mr. Milkey?

MR. MILKEY: Um-hum.

JUDGE JUNG: This is Judge Jung. Looking over your arguments, I did not see any dispute about agent communication bus being -- or the term encompassing any communication link that facilitates communication as argued by Petitioner. Is that correct? Did you dispute

anywhere in your papers that the agent communication bus can't be as broad as any communication link that facilitates communication?

MR. MILKEY: So Your Honor, we don't understand Petitioners, who have argued that it includes all communication links. That's not something that we believe they have argued. We believe that they argued that a communication link can be an example of an agent communication bus, but not that agent communication buses are all communication links. That's not defined in the patent. It's not argued anywhere. And they haven't rebutted Dr. Brogioli's testimony. This example in paragraph 38 of his declaration of Exhibit 2001 is not involving an agent communication bus, so we have specifically made the argument, Your Honor, that a memory write in the way described by Dr. Brogioli does not involve an agent communication bus.

So to the extent that this is considered a communication link, I'm not sure, you know -- I think that this is a sort of communication link, potentially. That's not something that has really been briefed extensively, but this is at least one example of something that is not an agent communication bus. A memory write to a memory location, you know, within an application, between an application and its sub-components. That is not involving the agent communication bus and there is no evidentiary dispute on this issue, other than Petitioner's attorney argument.

JUDGE JUNG: Okay. Sticking with the scope of this term "agent communication bus," Petitioner also points us to your infringement contentions at Exhibit 1038. And there it says, agent communication bus can be, by example, a communication path for various agents and functions to communicate over. Did you present any arguments that a communication

path for various agents and functions to communicate over would somehow exclude what the Petitioner is pointing to as an agent communication bus, or would've been understood by one of ordinary skill in the art after reading the standard to be an agent communication bus?

MR. MILKEY: So Your honor, I want to be clear in the full context of Patent Owner's infringement contentions. This is referencing a specific communication structure within the queue system and they didn't show you this, but it says, the communication bus connecting device agents to the service control device link agents need not be internal to the device. And we specifically identified the communication channel between Samsung Knox and MDM servers and managed devices is an example of such a communication bus.

So this is not a definition that all communication paths involve an agent communication bus, and again, that completely reads out the term "agent communication bus" from the limitation -- from the claims. What Petitioners are asking you to do is just eliminate a claim limitation with -- we don't believe there's any disclaimer, we don't believe that there's any redefinition of this in the patent, and you know, in our infringement contentions, we identified a specific communication channel that is clearly not the type of memory write that we're talking about that happens in the MMS specification because here, we're talking about a communication channel between servers. And so it would be impossible to simply do a simple memory write in the way that we're talking about here. So our infringement contentions simply just do not encompass the type of thing that MMS is talking about here.

JUDGE JUNG: So just to summarize, you're saying

communication between servers, that could fall within the scope of agent communication bus, but a memory write would fall outside the scope of agent communication bus; is that right?

MR. MILKEY: Yes, Your Honor. I believe that a memory write that is simply just writing to a memory location and not going specifically to another application that is -- so to use an analogy, for example, it's sort of like if I drop off a package in a post office box, I'm not necessarily delivering that directly to the recipient of it. I'm directing it to a storage location. Someone may or may not go retrieve that, and so, you know, if the recipient then goes and retrieves that from the storage location, then that's different than me handing it directly to the recipient. And so I think that's what we're dealing with here is in the example provided by Dr. Brogioli, there is simply a memory write and if all memory writes are agent communication buses, that completely broadens the term to have essentially no meaning.

JUDGE JUNG: And just to confirm, in your argument, you seem to indicate that a standard function call would be viewed as a -- the software form of an agent communication bus; is that correct?

MR. MILKEY: A standard function call could be used to invoke an agent communication bus, but a standard function call can also be used to do all sorts of things within computing. Standard function calls do not require agent communication buses, certainly, and here we have, you know -- with Dr. Brogioli's testimony, we have an undisputed situation where there is no invoking of an agent communication bus in this example. They didn't cross-examine Dr. Brogioli on this, they didn't provide any rebuttal expert testimony on this, and a person of ordinary skill in the art

would understand that simply writing application data to a memory location via a function call, in the way that Dr. Brogioli describes here, is not using an agent communication bus.

And so again, to be clear, we're not arguing that the definition of agent communication bus somehow would -- for example, it may be possible to use an agent communication bus to transmit data between subapplications, but it certainly isn't required and they don't -- I don't believe that they've set forth an argument that is required. You know, honestly, this is the first time that we've heard that there is no other way to transmit data between agents, other than an agent communication bus, and that's just inconsistent with the claim structure in which there is -- agent communication bus is a recited term. It needs to be given meaning.

JUDGE JUNG: Okay. Thank you, Mr. Milkey. That was just --

MR. MILKEY: Yeah.

JUDGE JUNG: -- a topic from the scope of this term "agent communication bus" to Petitioner's first theory, which is that you have an MMS User Agent and you have a destination agent described in the MMS standard, and one of ordinary skill in the art reading the standard would've understood that there is some kind of communication interface between those two things -- the MMS User Agent and the destination application. So first off, do you agree that you provided no response to that first theory?

MR. MILKEY: No, Your Honor. We don't agree. We think that, for example, this paragraph 38 in the associated briefing makes clear that there are ways to communicate between agents that do not involve an agent communication bus.

JUDGE JUNG: But isn't it enough if one of ordinary skill in the

art reading the standard can see, all right, this MMS User Agent could communicate with a destination application by something that looks like an agent communication bus or just a simple memory call, isn't that enough? Like one of the ways that these two things can communicate with one another is, for example, a software communication bus?

MR. MILKEY: I don't think, Your Honor, that -- I mean, again, we have expert testimony on this that it would've been obvious to use an agent communication bus to transmit data between the subapplications within MMS because within MMS, there are -- sorry -- within the MMS User Agent, there are -- it has access to the memory of its subapplications. These are shared resources of memory and in fact, the Petitioner's demonstratives at -- towards the end here.

So this is Petitioner's Slide 35. It says -- Locasto says that a software application can include multiple processes that share resources. Kravitz says that processes are either intra-application and they may share resources. And so when you have an application that has access to its subapplications memory locations and the variables that are within the subapplications, it can simply do a memory write and there's no need to use an agent communication bus.

Again, we don't believe that there's any evidentiary dispute that a simple memory write in the way that Dr. Brogioli described is not an agent communication bus. They did not specifically rebut that other than to argue, I guess, now that all communications between agents involve an agent communication bus, but that's, we believe, entirely unsupported.

JUDGE JUNG: Okay. I understand your position. I just want to dig a little further. So let's say, like Petitioner argues, the MMS User Agent

is a separate application from the destination application. In that situation, one of ordinary skill in the art reading the MMS standard, wouldn't they understand that there is a -- that there's some kind of interface that would fall in the scope of agent communication bus?

MR. MILKEY: I certainly don't think that's inherent, Your Honor, but we haven't disputed that it would not be obvious under that interpretation. We don't believe that it's inherent. We don't believe that that's the only way to do it. There are other ways to communicate, such as memory writes, et cetera, but it's, you know -- when you have two distinct applications that are not, you know -- the MMS specification talks about a registration process, that that forms how the applications are integrated with one another, absent some process like that, if you have truly distinct applications, a memory write doesn't really make much sense.

You start running into security vulnerabilities and things like that, so that's a situation where an agent communication bus would make a lot more sense, unlike the situation which MMS describes where you have, you know, an application, and then it's integrated such that it has subapplications and can simply have an intra-application communication.

JUDGE JUNG: I see. Okay. Since you have the Petitioner's slides up, can you go to Petitioner's Slide 39? On Slide 39, you'll see Figure 3 from the MMS standard.

MR. MILKEY: Um-hum.

JUDGE JUNG: Okay. So you see the MMS User Agent off to the left in this -- kind of in the middle on the left-hand side, right?

MR. MILKEY: Yes.

JUDGE JUNG: And you see along the top, towards the right,

there's an MMS value added service application, correct?

MR. MILKEY: Correct.

JUDGE JUNG: So those two things, they would communicate by something that would fall within the scope of agent communication bus, correct?

MR. MILKEY: I don't know that it's explicit, but I think that that's certainly something that would be, you know -- we wouldn't dispute that --

JUDGE JUNG: That'd be understood?

MR. MILKEY: We wouldn't dispute that that would be at least an obvious implementation of, you know, an agent communication bus between those two software entities.

JUDGE JUNG: Okay. But according to your argument, if the destination application is at the MMS User Agent, there would be no agent communication bus, correct?

MR. MILKEY: So the claim requires not just an agent communication bus in abstract, if I''m going back to the claim language. It requires that the service control device link agent be configured to deliver the message content to the particular device agent over the agent communication bus. So it's not just that there's an agent communication bus somewhere along the process between the messaging server and the destination. It has to be an agent communication bus between the claimed service control device link agent and the particular device agent. So going back to Slide 39, even if there's an agent communication bus between the MMS and VAS applications and the MMS User Agent A, that would not get you the rest of the way there where there has to be an agent communication

bus between the MMS User Agent and its subapplications.

JUDGE JUNG: But if there was a message that satisfied the last limitation of Independent Claim 1, that would be something that goes over an agent communication bus.

MR. MILKEY: Sorry. Could you rephrase the question? I'm not entirely --

JUDGE JUNG: Oh, sure. So for example, the last limitation of Claim 1 says, delivered the message content to the particular agent -- device agent -- over the agent communication bus, based on the particular agent identifier. So if there was some message in that figure on Slide 39 of Petitioner's slide deck, it had a particular agent identifier and it was going to be delivered to a destination application at the MMS User Agent, that would be something that goes over an agent communication bus, correct?

MR. MILKEY: It might be, Your Honor, but I want to be clear that the service control device link agent has to be configured to deliver the message content over the agent communication bus. The mapping that Petitioners have made is that the service control device link agent is the MMS User Agent software, and so the MMS User Agent has to, after receiving the message from the MMS VAS application, then it has to deliver the message content to the destination application. In other words, the subapplication of the MMS user agent.

And so the question is whether that communication occurs over an agent communication bus. So it hasn't been at issue and we haven't disputed anything, and Petitioner hasn't argued anything about whether, you know, messages between the VAS application and the MMS User Agent would occur over an agent communication bus. Rather, the sole focus is on

whether the message between the MMS User Agent and its subapplications would be over the agent communication bus. So I don't quite know the answer to your question, Your Honor, because it hasn't been at issue. I would say that we haven't disputed anything about that because it hasn't come up, and I believe it's irrelevant to Petitioner's claimed mapping.

JUDGE JUNG: Okay. All right. Switching over to Petitioner's second theory, it would've been obvious to use a software communication bus because it was a known option. Your argument seemed to indicate that you agree that communication buses were a known option, but it wasn't a preferred option. Is that correct?

MR. MILKEY: I don't think that it actually was a specifically known option for intra-application communication. We've seen no evidence of that. I think it's a possibility. I wouldn't dispute that it's -- it may be possible to engineer a system such that you could use an agent communication bus to transmit data within an MMS User Agent. But there's no evidence that use of an agent communication bus for intra-application communication of the sort used by the MMS User Agent was known. I think the only reference that the other side provides that they even allege discloses any sort of bus used for intra-application communication is the Savanyo reference, Exhibit 1050.

And in that reference, it's talking about a real-time controller scenario and it's talking about the use of a bus in order to -- it's really -- by "bus" in that context, they're talking about a very specific type of bus, which is a buffer used to ensure that -- because these are very real-time processes that require very up to date information on like millisecond type timings, the bus is used to ensure that the timing of the communication is exactly on

point. And in MMS -- in the types of MMS examples that we're talking about -- you would never implement the sort of like real-time processing control systems that require, you know, very, very precise timings, like for Savanyo.

So we don't believe that this is a known option for intra-application communication of the sort described by MMS. Whether this could have been done, that's not something that -- we're not arguing impossibility. It possibly could have been done. I don't know one way or the other, but we don't believe that this was a known way to do intra-application communication of the sort described in MMS.

JUDGE JUNG: So can you explain why you used the word "typically"? Communication buses were typically not used for intra-application communication. What was the purpose of that word "typically"?

MR. MILKEY: So that was Dr. Brogioli's declaration. And in terms of "typically," Dr. Brogioli does not know all of, you know -- he's going off of his personal experience. He is going off of what he is personally seeing. You know, he wasn't aware of instances of this being done before, but he also can't speak to, you know, what was always done or, you know, what had, you know, never been done before. He simply doesn't have that information. So, you know, in his experience, this isn't an obvious implementation. This isn't something that he's aware of having occurred before, but in terms of whether this was a known thing, there's no evidence that anyone has ever used an agent communication bus for intra-application and communication of the type described in MMS.

JUDGE JUNG: Okay. So if a bus could be used, which is what you seemed to have indicated a few minutes ago, wouldn't that be obvious?

MR. MILKEY: I'm not sure why you would architect a bus for intra-application communication when, one, there's no evidence of anyone ever having done that before, and two, it adds complexity, when you can simply do a memory write. So, you know, sort of on two levels, I don't think that this is the example of, you know -- this is applying a known technique to solve a problem because -- on two different layers. First of all, the use of agent communication buses for intra-application communication was not a known thing. That's not the way that people did things. Two, it doesn't solve a problem at all because within intra-application communication, the broader MMS User Agent application has access to the variables and memory locations of the subapplication, such that it just does a memory write. And so I don't think that -- one, I'm not sure that a POSITA would've -- and I don't believe that a POSITA would have viewed this as a real option for implementing intra-application communication.

JUDGE JUNG: All right. Mr. Milkey, it seems like you've just told me that, you know, communication buses, a software bus could've been used, but it wouldn't have been used because it's much more complex and much more expensive. Is that a good summary of your argument?

MR. MILKEY: So again, we're not -- I frankly don't know whether it could have been used. We're not saying it definitionally could not have been used.

JUDGE JUNG: Okay.

MR. MILKEY: You know, but I do think that overall, that is fair in terms of, you know -- we're not disputing that it may have been possible to architect a system in which an agent communication bus was used for intra-application information, but that wasn't a known technique that people

were using and it's not something that would've been viewed as desirable in the art.

JUDGE JUNG: Okay. Let's talk hypothetically then. Let's say one of ordinary skill in the art did want to use a communication bus -- a software communication bus. Are you indicating that it would've been beyond ordinary skill to actually implement a software bus for intra-application communication?

MR. MILKEY: No, we have not disputed -- we don't have a dispute on that issue. So it really, you know -- in terms of our arguments, it is about whether it would be desirable to do this, and we don't -- you know, whether it would be known and desirable to implement it in this manner and we don't think that it would've been.

JUDGE JUNG: Okay. So just to be clear, you are agreeing that one of ordinary skill in the art -- it was within the ordinary skill to do it, if there was a reason to do it?

MR. MILKEY: I'm not sure that -- so again, I don't have a dispute on that point. We haven't disputed that. Whether it was within the skill in the art to do something that we've seen no evidence of it ever being done before, I'm not sure I would concede that, but again, that's not something that we've independently disputed.

JUDGE JUNG: Okay. You're down to 30 minutes in your total argument time. Do you want to reserve any time for rebuttal or --

MR. MILKEY: Yes, Your Honor.

JUDGE JUNG: -- do you want to go on?

MR. MILKEY: We'd like to reserve 10 minutes for rebuttal.

JUDGE JUNG: Okay, all right. Now I want to shift over to the

premise that the Petitioners asserted for a plurality of reasons -- the destination applications. Are they or are they not subapplications of the MMS User Agent? So you have on Patent Owner's Slide 7, some quotes from the MMS standard. That middle quote starts with, if the destination application resides on a receiving MMS User Agent. Doesn't that conditional phrase at the beginning indicate that destination applications might not reside on a receiving MMS User Agent?

MR. MILKEY: So, yes, Your Honor. It may not reside on the MMS User Agent, and in that case, that means that there is no application that can receive the message, and you see what -- here what happens, if it does not reside on the MMS User Agent, then -- and this is the last quotation we have here. If the destination application does not reside on the MMS User Agent, the MMS User Agent shall discard the corresponding abstract message. So our point is that in this example where if the destination application does not reside on the receiving MMS User Agent, that means that there is no destination application, in other words. The --

JUDGE JUNG: Okay.

MR. MILKEY: And if we go back up -- so yeah, in order -- basically, in order for the Petitioner's theory to work, there has to be message delivery and the only way that there's message delivery is if the destination application resides on a receiving MMS User Agent. There's a check to see if -- and I can give a concrete example of how this would work. If I send -- if I'm a VAS application and I send a message to the MMS User Agent, you know, identifying say, you know, a chess application that the user hasn't installed and integrated with the MMS User Agent, at that point, the MMS User Agent will receive that message, it will check to see if that --

the chess application app ID is -- you know, if that corresponding subapplication is there or not, and if the subapplication is not there, the message will simply be discarded.

So that's not the type of thing where there would be any sort of message communication to the application. So our understanding is that it's undisputed that for message delivery to occur, there needs to be a subapplication residing on the MMS User Agent.

JUDGE JUNG: Okay. So if two MMS User Agents are communicating with each other, when the first MMS User Agent sends a message to the second MMS User Agent, then those messages would go over an agent communication bus?

MR. MILKEY: I believe that there's only one MMS User Agent per user device, so --

JUDGE JUNG: Okay.

MR. MILKEY: So for example --

JUDGE JUNG: Well, let's just say there's two devices talking to one another and each --

MR. MILKEY: Yeah.

JUDGE JUNG: -- has an MMS User Agent.

MR. MILKEY: Right. So this would be -- so I'm going to the diagram at Petitioner's Slide 39 and we see the MMS User Agent A. You can kind of imagine -- instead of this MMS VAS application over here, you would just have a different MMS User Agent be in that example. Well, I guess we can see it here. There's an MMS User Agent B at the --

JUDGE JUNG: Right.

MR. MILKEY: -- bottom right. So in this communication link

between MMS User Agent A and MMS User Agent B, you know, again, we haven't -- I believe that that -- one possibility for that would be to use an agent communication bus between those two separate User Agents, but again, the focus of the claim is what happens after the User Agent receives the message and whether, you know -- how it routes it to the particular device agent that is the destination application of the app ID.

JUDGE JUNG: Okay. And also at page 56 of the MMS standard, there's another conditional statement where it begins that the destination application resides on the MMS VAS or the value added service application, and then certain things will happen.

MR. MILKEY: Um-hum.

JUDGE JUNG: It seems like in that case, you would have messages going over an agent communication bus, as well. Is that correct or not correct?

MR. MILKEY: I don't think that that's correct in that example because, again, as Dr. Traynor testified -- and this, there really is no dispute that -- even a facial dispute where he testified that what it means when an application resides on a VAS application, it means it's a subapplication of it. And so our understanding is that Dr. Brogioli's example of the, you know -- talking to a subapplication, that would apply with equal force to the VAS application. So, you know, we don't believe that there would be an agent communication bus in that context. Again, this hasn't come up in the briefing because it, you know -- the VAS application is not part of Petitioner's theory, so we haven't explicitly argued this --

JUDGE JUNG: Right.

MR. MILKEY: -- in the briefing, but no, we don't believe that the

VAS application routing messages onto a subapplication would encompass an agent communication bus.

JUDGE JUNG: Okay. How about in the situation where MMS User Agent is communicating with an MMS VAS application? Would be there an agent communication bus over which messages go through?

MR. MILKEY: I believe this is what Your Honor was asking a little bit earlier in the hearing.

JUDGE JUNG: About the two MMS User Agents?

MR. MILKEY: Well, before you asked about the two MMS User Agents, Your Honor, you were -- I believe you were asking about -- and this is going back to Petitioner's Slide 39, the path between the VAS application and the User Agent. And my response to that was that this communication from VAS application to User Agent could possibly include an agent communication bus, but that that would be irrelevant to the claim language, which requires the routing, you know -- the claim language focuses on what would happen after the MMS User Agent receives the application -- sorry -- receives the message.

JUDGE JUNG: Okay. Understood. So if we determine that the destination applications are subapplications of the MMS User Agent, you would agree that they have to communicate with each other in some manner, correct?

MR. MILKEY: Yes, Your Honor. And we believe that the way that they do so is through just standard memory writes of the type that Dr. Brogioli identified.

JUDGE JUNG: But there would be other alternative ways that they could communicate with one another?

MR. MILKEY: There are certainly other alternative ways to do that. Whether they were known in the art is a different matter and whether they were obvious is a different matter. But yes, we agree that a memory write of that type is not the only way to do that. For example, you have like interrupts is another way to communicate.

JUDGE JUNG: Okay. All right. Thank you, Mr. Milkey. That ends my questions.

MR. MILKEY: Thank you, Your Honor.

JUDGE CASS: Counsel, this is Judge Cass. I'm going to, if you don't mind, ask a few follow-up questions. I'm going to go back to the meaning of the term "agent communication bus." You would agree that an agent communication bus can be a software bus; is that right?

MR. MILKEY: Yes, Your Honor. Our understanding of agent communication bus is sort of a software architecture or would include a software architecture that is for routing messages directly to applications. Not sort of just a memory write scenario of the type that Dr. Brogioli identified.

JUDGE CASS: Yes. And is there anywhere in the record where you proposed a construction or defined what either agent communication is or communication bus, or bus, or software bus, or some variant of that term?

MR. MILKEY: No, Your Honor. I think that we've been applying the plain meaning of the term, which is -- I don't think it's been explicitly defined, but what is clear is that a memory write of the type that Dr. Brogioli identified doesn't encompass that. And in general, I would say agent communication bus is some architected communication process that, you know, has a specific protocol and is for communication between agents

and not just sort of like a memory write scenario.

JUDGE CASS: So I notice on Petitioner's Slide 16, they have a cite to the computer desktop encyclopedia, Exhibit 1049, and then there's a definition of a software bus. Would you agree that the definition of a software bus would be encompassed within an agent communication bus that is claimed?

MR. MILKEY: So I would say that software bus in terms of -- a software bus is a type of programming interface that allows software modules to transfer data to each other. But in terms of -- I don't think that encompasses all contexts of transferring data between modules. For example, if there is some sort of -- just if I install, or sorry if I save a file in Microsoft Word, and then I open up that file that I've saved in, you know, a different application -- I open up that same file in a different application, those two applications have communicated with one another in some sense in the sense that, you know, I saved the file using Microsoft Word and I opened the file with a different application.

So there was some sort of communication between those applications. But that file save process is not an agent communication bus. That's not the type of architected direct application communication that we're talking about here. So I don't dispute that software busses do allow for software modules to transfer data to each other, but in the context of do all data transfers between any two entities involve a bus? I would say no.

JUDGE CASS: Okay. I'm not sure. I think that may have gotten a bit of (INDISCERNIBLE) from my question. So let me just make sure I understand this. So it's referring to the definition of software bus on Petitioner's Slide 16, Exhibit 1049, and just wanted to confirm that you

would agree that that definition is encompassed by an agent communication bus. I mean, it might be other things, potentially, too, but that that would be encompassed. Is that correct?

MR. MILKEY: I'm sorry. I want to be very clear on what the question is. Are you asking if an agent communication bus includes all interfaces that allow software modules to transfer data to each other?

JUDGE CASS: Well, I'm just trying to get an understanding of whether this definition here of a software bus is something that's encompassed within an agent communication bus. The first sentence is as you read it, but there's some other stuff that follows that, too. And if it's your position that the definition of a software bus in Exhibit 1049, some of the things that fall within that might not be agent communication busses, then you know, you can explain that to me, but that's what I'm trying to get an understanding of is what your position is, whether what's defined in Exhibit 1049 as a software bus falls within an agent communication bus's claim.

MR. MILKEY: Thank you, Your Honor. Yes, we're not trying to say that agent communication bus and software bus are sort of two distinct things. A software bus that is used for communication between two agents, I believe would be an agent communication bus. Again, I just want to emphasize, though, that we don't believe that, you know, storing something to a memory location in the way that Dr. Brogioli's described is an agent communication bus.

JUDGE CASS: All right. Let me also ask you to turn to Slide 8 of Petitioner's slides. And there, there's an excerpt about infringement contentions, I believe, Exhibit 1038, and it says, "An agent communication

bus, (e.g., communication path for various agents and functions to communicate over)." I understand there may be other details in these contentions that might not be fully encompassed by this excerpt. But as I'm understanding your position, it's that an agent communication bus is more than just a communication path for various agents and functions to communicate over. Is that right? Is that your position?

MR. MILKEY: So, Your Honor, I do think -- yes, I agree that, in general, that -- again, we talk about saving something to a memory location and then a different application opening something from that same memory location. I don't believe that that would be within the plain and ordinary meaning of agent communication bus. I think my understanding of these contentions is that the example is that the agent communication bus is in the accused products. The example of that was the communication path between the agents and functions within the accused system. And this is not a definition of agent communication bus. It uses the words "e.g." and not "i.e." And then later, I think we discussed earlier that we're talking about even server-to-device type of transmissions, making clear that it's not the type of just simple memory, read and write operations that the MMS entails.

JUDGE CASS: So is it your position that the kind of writing to a memory as a way to communicate between different agents is not a communication path? Is that your position?

MR. MILKEY: So yes, Your Honor, I think that at least in the context of what we're talking about with the example that Dr. Brogioli gave, if you're just writing to a memory location and waiting for someone else to read from that memory location, in this context, that would not be an agent communication bus.

JUDGE CASS: All right. Thank you, Counsel.

JUDGE JUNG: Mr. Milkey, you have two minutes before you start using your rebuttal time.

JUDGE CASS: On this agent communication bus, issue, I've heard you articulate multiple times what it is not, that is this write to memory and a later access from that memory. Have you articulated a position of what an agent communication bus --

MS. ELLIS: Excuse me. I'm sorry to interrupt. There's been an issue with the court reporter being disconnected from both lines, and she's trying to get back in.

(Whereupon, the above-entitled matter went off the record at 2:11 p.m. and resumed at 2:22 p.m.)

COURT REPORTER: Hello?

JUDGE BAER: So this is Judge Baer and we were having a discussion about the agent communication bus, and my question, Counsel, was have you articulated affirmatively what an agent communication bus is? I understand you've articulated clearly what it's not just to write to memory and access to memory, but have you articulated specifically what it is?

MR. MILKEY: Apologies. I was muted. I don't believe that there has been a specific definition proposed by either side in terms of what the strict definition of an agent communication bus is. You know, we -- our expert, as you noted, provided the opinion that this type of memory write is not an agent communication bus, but I would say at a high level that an agent communication bus is sort of an architected system for communication that involves specific protocols for transmission and reception of data, such that different applications that don't have closely shared memory write

resources are able to effectively communicate with one another.

For example, if you can't -- if you have one application, you know, within a device, and then another application within that device and these are two completely distinct applications, they can't just write a variable to the other application's memory. It's not that simple. They need to have some sort of architected protocol in order to make sure that the sending application can send a message and that the destination application is going to receive that message in a known format and in a predictable way. So at a high level, that's my understanding of the plain meaning of agent communication bus, but in terms of, you know -- we have just been applying the plain meaning without sort of an expressed definition in that sense.

JUDGE BAER: Thank you.

JUDGE JUNG: All right, Mr. Milkey. Do you want to continue? You have nine minutes left for rebuttal.

MR. MILKEY: Yes, Your Honor. And I would just like to close by saying that really, the theory of Petitioner -- so they really have two theories, as I understand it, as of this hearing. There's one that agent communication bus is just inherent within the claims and that we can read it out and that there is no -- there should be no dispute about agent communication bus because any time you meet the other claim limitations, you just necessarily have an agent communication bus. We don't believe that that's supported.

And then the other theory is that essentially, that Dr. Traynor's opinions on obviousness should be given weight; however, I think it's clear from the deposition transcript of Dr. Traynor that he fundamentally has inconsistent opinions regarding how the MMS specification operates and,

you know, his opinions regarding the obviousness of the use of an agent communication bus fundamentally assume that these are distinct applications that would have benefitted from an application -- sorry -- from an agent communication bus. That's just not the case.

Just very briefly walking through page 28 of Dr. Traynor's deposition transcript, and this is all in the context of 7.1.18 of the MMS specification. He said an MMS User Agent is software in the context of that section and then we asked him whether, you know -- what it means for when the specification in that section says applications may either reside on an MMS User Agent or on an MMS VAS application, he said that residing on a VAS application was -- meant that there's a larger VAS application and it has multiple subapplications. So that "residing on" means that it's a subapplication.

So in the same sentence, though, it says that applications that intend to transport application-specific data using MMS may reside on an MMS User Agent and this "reside on" is the exact same "reside on" that he just testified means that there's a subapplication. And then when he got there, he said, oh I need to go to my report for this, I need to, you know, have my opinion that I testified on in my report, and then he went on to give testimony about how what we're really talking about is the -- it's residing on the user equipment itself and not on the applicant and that he just had completely inconsistent opinions with his previous opinion that one, the MMS User Agent means software and two, that "reside on" means subapplication.

So I would encourage Your Honors to review the deposition testimony, view the credibility of Dr. Traynor's testimony in that regard, and

in terms of the actual correct understanding of the MMS specification wherein these are subapplications of the MMS User Agent, there is no opinion that this would've been an obvious thing to implement and there was no rebuttal declaration submitted. So unless Your Honors have any further questions, I will reserve the remainder of my time.

JUDGE JUNG: I have no questions. Thank you, Mr. Milkey.

MR. MILKEY: Thank you, Your Honor.

JUDGE JUNG: Mr. Sarwar, when you're ready, you may start.

MR. SARWAR: Thank you, Your Honors. I have a handful of things that I want to discuss in rebuttal, but I wanted to ask if you had any questions that you wanted me to deal with sort of as an initial matter.

JUDGE JUNG: I have no questions, Mr. Sarwar.

MR. SARWAR: Okay. I'll just launch into it then.

JUDGE CASS: And Counsel, this is Judge Cass. I have a question. I have a feeling you're going to get to it, but --

MR. SARWAR: Okay.

JUDGE CASS: -- so I'll let you deal with it as you see fit, but I'm hearing a lot of discussion from Patent Owner about how writing to a memory location is not an agent communication bus. I'd just like to hear your rebuttal on that, which like I said, I expect you'll provide us.

MR. SARWAR: Yes. You have correctly predicted what will be one of my modules here. Okay. I just wanted to start with our first theory. Patent Owner suggested that we're reading out words and we think the words "through an agent communication bus" needs to be considered together with "communicatively coupled." That's the full term and we're giving meaning to all of those words by mapping multiple agents in MMS

that communicate with each other or transport data with one another, route data to one another through an interface.

The phrase "communicatively coupled" requires the agents to be able to talk to one another. You can imagine the multiple agents on a device -- sorry -- you can imagine that there are multiple agents on one device in which some, but not all of the agents, can route data to one another. In that scenario, you have an agent communication bus, but the recited agents may not be coupled through it.

So Patent Owner came up with this language. The analogy here is islands and a bridge. You can claim the islands, the agents, you can claim the bridge, the bus. And if you want to make clear that your claim is covering the islands linked together by that bridge, the agents are linked together by that bus, you have to say that they're coupled to that bus, which is what Patent Owner did. Was there another more word-efficient way of writing claims? Maybe, but that's not our fault, Your Honors.

The patent uses the term "agent communication bus" very broadly. It emphasizes the design of the bus can vary depending on the agents that are linked together. We don't think there's any basis to conclude that the words "communicatively coupled" and "through an agent communication bus" are sending our two separable requirements. The patent doesn't even use the term "communicatively coupled." So those words should be considered together and they can be mapped onto agents that talk to each other over the communication link or interface or pathway between them that's described in MMS.

And as you can see on Slide 8, that's how Patent Owner asserted this claim in litigation. It used the communication path between agents as its

basis for arguing that there is an agent communication bus there and that is their interpretation of it. Notwithstanding the suggestion that there are certain cases in which it would not be occurring. You know, notwithstanding the suggestion that there are certain cases in which communications between agents might not involve a communication path.

Another point that we want to raise is that the MMS standard expressly discloses that the MMS User Agent and destination applications interface with each other and transport and route data to one another. That's on pages 14, 19, 54 through 55 of Exhibit 1004. We still don't think there's a clear reason why the standard's disclosure is of agents talking with and interfacing with one another. The routing data to one another wouldn't satisfy the agent communication bus term as it's used in the '733 patent and as it was understood in the art.

And we'll just sort of re-emphasize here that Patent Owner hasn't really provided any evidence regarding what that term means. Petitioners did. We did that at pages 30 through 31. We explained what the plain meaning of this term was. We explained it in further detail in reply at pages 4 through 10, once it seemed like there was a dispute about this, but we haven't really heard why it is that the term "agent communication bus" should be excluding certain types of communications between agents.

Okay. Regarding our alternative obviousness theory, first I want to push back on any suggestion that Dr. Traynor's deposition testimony supports Patent Owner's subapplication theory. If we look at Petitioner's Slide 30, Patent Owner relies on this testimony for its theory and here, Dr. Traynor, you can see, was asked specifically about the ways in which a completely separate element -- the MMS value added service applications --

might have an application residing on them.

That's not the MMS User Agent. That's a separate part of the network on a different device, as you can see on Slide 39 near the top and to the right. The subapplication concept only came up in that specific context. We'll note that Patent Owner has been glossing over the very next question in the deposition where they asked directly what it meant for an application to reside on the User Agent, specifically, and that's the element way on the left.

So on Slide 31, as you can see here, Dr. Traynor, we think very reasonably, cited back to paragraph 51 of his report which directly addressed this question and made it clear that in the context of the MMS User Agent, standard is referring to the user device. Paragraph 51 is on Slide 27 of our slides and this says the same thing. In Section 7.1.18, the standard is explaining that the MMS User Agent application of the destination applications reside on the same device. Dr. Traynor explained that sometimes, the term is used in the standard to refer to the device.

Now, Patent Owner asks you to ignore that and conclude that MMS only contemplates data transport between an application and its subapplication, but when you look at what the MMS standard says about other applications, Slide 23, and what Mostafa shows, Slide 24, and when you see that the MMS standard itself occasionally uses User Agent to refer to the device on which the User Agent application is operating -- that's Slide 28 -- and you see that Dr. Brogioli himself agreed, Slide 29, the theory starts to fall apart.

And it really falls apart when you sit back and think about the full implications of the subapplication theory. They're trying to convince you

that the standard tells a POSITA that data transport functionality will only work if the MMS User Agent itself, which is a message delivery app, is reprogrammed to do a bunch of non-MMS tasks, like playing chess or giving you a weather report. We don't think that makes sense.

All right. I also want to push back on the idea that Dr. Brogioli provided any credible, unrebutted testimony about the non-obviousness of using a bus for processes in a single application. Again, Your Honors, this portion of the argument is only important if you believe Patent Owner's suggestion that MMS solely contemplates transporting data -- application data -- to MMS User Agent subapplications. But if Your Honors get there, we want to make clear that Patent Owner's characterization of certain statements from Dr. Brogioli as being unrebutted is not true.

As an initial matter, I should point out that all of this testimony -- and you can see on Headwater's Slide 19 through 22 -- all of this testimony is completely uncorroborated. You won't see a cite to -- a reference -- any supporting reference anywhere. It's all conclusory. It all parrots the Patent Owner Response. It doesn't add any additional supporting evidence or technical reasoning. So just to start, this testimony should be entitled to minimal weight under the Board's precedential *Xerox* decision, and we quote from that decision on Slide 14.

Moreover, the arguments are actually slide -- you know, rebutted in our papers. Headwater's Slides 19 and 21 – that's paragraph 38 of Exhibit 2001 -- where Dr. Brogioli just concludes that using a bus would not have been obvious for data transfer within the MMS User Agent. This is rebutted by the arguments in evidence cited in Petition at pages 30 through 31 and Reply at pages 12 through 16, which discussed using a bus for

communications between processes, regardless of whether they are internal or external to an application.

And turning to Petitioner's Slide 19, you can see portions of Exhibit 1003, paragraphs 125 to 126. Here, Dr. Traynor is narrowing the standards used of other applications on Slide 23. So to the extent Patent Owner is suggesting that those disclosed other applications and MMS standard are subapplications, Dr. Traynor's analysis from Slide 19 applies.

Further, Slide 20 establishes that it was not inventive to use buses for communications between software processes in a single application. That's confirmed by the encyclopedia which talks about software modules, and Savanyo, which literally shows a bus dealing with communications between subsystems of an application. So we don't -- we're not sure why there's this suggestion that this was not known.

On Slides 20 and 22 of Headwater's slides, they cite to Exhibit 2001 -- sorry -- Exhibit 2001, paragraph 48, I think -- where Dr. Brogioli asserts that using a bus would not have been helpful or necessary, or needed, or desirable in a single application context. So none of those words are the standards for obviousness and the indirect proposition that there was no reason to use a bus is again, rebutted by the argument in evidence presented in the Petition at pages 30 through 31, and the Reply at pages 12 through 16.

The same area of Dr. Traynor's declaration -- that's paragraphs 125 through 126 of Exhibit 1003 -- set out the reasons a POSITA would've used a bus for inter-process communications and those reasons apply regardless of whether they're inside or outside the application. And Petitioner's Slide 35 collects some evidence we cited to corroborate that buses were used for intra-application communications.

Okay. So now I'm going to get to the part that Judge Cass is excited about. So the question of the function call argument and the memory. So Petitioner's Slide 37, Patent Owner is arguing that an MMS communication within an application would occur through a function called an auto bus. I touched on this in our -- in my opening. The alternative solution that they proposed, these calls, it's not actually an alternative to a bus. The calls describe the communication itself. That's a different concept. The calls do not describe the infrastructure that's facilitating the communication, the interface, the link, the pathway, which is what the claim is trying to capture. We have two agents here. They are communicating over some path and that's, as far as I can tell, not really disputed. So that path is the bus.

Now, the evidence shows that calls and buses are not mutually exclusive. Calls indisputably can occur over a bus. You can see it on Slide 38 of our slides -- Petitioner's slides. Sathish describes method calls being made over a D-Bus. And remember, the D-Bus is an example of an agent communication bus or inter-process protocol that the patent discusses when it's talking about the agent communication bus. And in Slide 8, you can see that Patent Owner itself recognized that functions could communicate over an agent communication bus in litigation.

The second point I want to make about this is even if function calls were an alternative to a bus, the existence of an alternative solution to a problem doesn't defeat our obviousness (INDISCERNIBLE). We explained that a bus was a conventional, reasonable solution to the problem of figuring out how to enable agents to talk to one another. They were known to work for this problem.

Slide 36. And there's no credible evidence in the record teaching away from a bus anywhere. No documentary support suggesting that a bus wasn't conventional or desirable or that there was no reasonable expectation of success. And all you have is uncorroborated words from Dr. Brogioli about how buses were supposedly ""typically used." That's Slide 11. And respectfully, Your Honor, that statement is not entitled to weight, nor accurate, and you can see why we think that on Slides 14 through 16.

Okay. The memory argument. First, we'll note that the MMS standard describes a message received by the MMS User Agent that includes an identifier for a destination application. And then the agent uses the identifier to "route" the application to the right location, and we describe some of that in the Petition at pages 6 and 29. Patent Owner seemed to suggest during the argument that the need to use an identifier in that way to route data, you know, means that we're not talking about memory writes. So we're not really sure why Patent Owner is saying that MMS solely involves a simple memory write that would not use an agent communication bus.

Another point. We don't have a slide on this, but the Reply at pages 15 through 16 provides argument and evidence rebutting the memory write argument in general. Patent Owner basically seems to suggest that a POSITA would not have used a bus because an application and a subapplication reside in the same area in memory, and I guess that means that the way they would communication would be through these memory writes or these function calls. But the '733 patent itself at column 42, lines 54 through 67, refutes the proposition that the same memory location rules out the use of an agent communication bus. In that passage, the patent

makes clear that the agent communication bus can be an inter-process software communication bus that runs a session bus, which is protected by storing all software and secure memory, and executing all that software within a protected memory space.

In other words, the '733 patent itself describes the use of a bus to facilitate communications between software components located in the same area within the memory. So we think that means that their memory argument fails. And that, by the way, Your Honors, we went over that in our Reply at pages 15 through 16. And Judge Cass, I have to ask, does that respond to the question that you might've had on this point?

JUDGE CASS: It does. Thank you.

MR. SARWAR: Okay. All right. To sum up -- and I don't know how much time I have left -- but I think I have a little time to sum up. We still don't think Patent Owner has articulated a response to our first argument. We don't know why MMS's undisputed disclosure of agents -- this is express -- of agents talking to one another and interfacing, and routing data to one another using identifiers, we don't understand why that does not meet the claim's requirements that the agents be communicatively coupled through an agent communication bus. Neither party sought to narrow the term from its plain and ordinary meaning, and that's what the plain and ordinary meaning is. We actually have corroboration for that.

For our alternative obviousness argument, Patent Owner's two-part argument fails on both levels. MMS discloses the MMS User Agent application and other separate applications. The subapplication theory is inconsistent with MMS's teachings. And it used the standard was limited to other applications that are only subapplications of the MMS User Agent.

Petitioners showed that it would've been obvious to use a bus to facilitate communications between processes, regardless of whether those processes were within a single application. Unless Your Honors have any further questions, that's all I have for rebuttal.

JUDGE JUNG: No questions. Thank you, Mr. Sarwar.

MR. SARWAR: Thank you, Your Honors.

JUDGE JUNG: Okay. Mr. Milkey, you can start when you're ready. You have five and a half minutes left.

MR. MILKEY: Great. Thank you, Your Honor. So I'd like to begin with where I began my previous argument, which is that Petitioners are reading out the agent communication bus aspect of the claims. They're not even really pretending otherwise at this point, but, you know, they did give the example of islands linked to one another via a bridge and so, you know, if islands were linked to one another, you know, and it specifies that the bridge is the way that they are linked together, you know, that's an example of how -- maybe bridge would be redundant -- but it would still make sense to say islands linked to one another via a bridge.

I would submit, though, that there are different ways to link islands together. You can link islands together via a ferry service, you can link islands together via an airport service, or you can have a bridge that cars can go over. And so in this way, specifying the bridge actually does contain relevant information because there are other ways to link islands. And that's exactly why, Your Honors, that the claims specify that the agents are communicatively coupled to one another through an agent communication bus.

Under Petitioner's theory, through an agent communication bus in

the claim language simply has no meaning. It's just completely redundant and they don't provide any justification for that. And the fact that it is not completely redundant, I think, is shown by the fact that they have arguments on it and they didn't -- in the Petition, they didn't just say that this is sort of a nonce thing that doesn't have any meaning. They do, you know -- they do argue that it is present, but it can't just mean that any time agents are communicatively coupled to one another, they go through an agent communication bus, and that's not what a POSITA would understand, that's not what the evidence shows, and, you know, we strongly disagree with that.

I'll say that Dr. Traynor's testimony is all based off of this misunderstanding of the TS -- of the MMS specification. He was very clear that -- and very explicit that he believed that residing on an MMS User Agent does not mean what it says. MMS User Agent is defined in the MMS specification as being the software. And he specifically testified about this in the context of section 7.1.18, which is about the destination application.

The core of the Petitioner's theory in this regard. He testified that in that context, it means software. And he also testified that in the context of that section, that residing on an application means that it's a subapplication. But then when he got to what it means to reside on an MMS User Agent, he totally changed his opinion and started saying that what it means by reside on is different than what that exact same reside on means elsewhere, and it actually just means that it's on the device.

That is not a credible reading of that MMS specification and Dr. Traynor's opinions about what would've been obvious to do in MMS are all based on this fundamental misunderstanding of how MMS operated. And there is a registration and integration process described in MMS. It doesn't

require a fundamental reprogramming of the MMS User Agent. It just requires registration such that these applications become registered to subapplications and thus, the MMS User Agent is able to write to their variables and memory without having to use an agent communication bus.

And going to page 16 of Petitioner's Reply, and in this regard, they talk about residing in protected memory space. Residing in the same protected memory space just means that, for example, two applications are in -- within like the same protected partition within a disk. It doesn't mean that they have access to each other's variables and memory. If I install two applications, you know, protected memory space, that doesn't mean that one application can start writing to the other application's variables and updating how that application operates. That would -- even within a protected memory space, that would be a huge security and functionality problem, and it would lead to all sorts of functionality issues.

And so when the patent is talking about residing within a protected memory space, it's not talking about subapplications, it's not talking about that they share variables and memory the way that an application and a subapplication would. This is just a completely different context.

And then finally, I want to touch on Savanyo, which is the transfer between submodules within a real-time processing system. Savanyo at column 3 -- sorry, this is Exhibit 1050 -- the discussion --

JUDGE JUNG: Mr. Milkey, you're out of time.

MR. MILKEY: Okay.

JUDGE JUNG: Any last thing you want to say in closing?

MR. MILKEY: Yes, Your Honor. So just very briefly, Savanyo spanning from Columns 2 to 3 talks specifically about what its bus does and

it's a very, very different context and a very different purpose of what the MMS User Agent alleged bus would involve. I'd invite Your Honors to review that disclosure and evaluate whether this only alleged example of an agent communication bus for intra-process communication would indicate that this would be obvious to do in the MMS specification in particular. Thank you, Your Honors.

JUDGE JUNG: All right. Thank you, Mr. Milkey. Thank you both for your arguments. It was very helpful. We'll pause to see if the Court Reporter has any questions or spellings that need to be made.

COURT REPORTER: I do not have any clarifying questions. Thank you.

JUDGE JUNG: Thank you. All right, gentlemen. This hearing is adjourned.

(Whereupon the above-entitled matter went off the record at 2:52 p.m.)

PETITIONER:

W. Karl Renner
Jeremy J. Monaldo
Karan Jhurani
Parvin Ghane
FISH & RICHARDSON P.C.
axf-ptab@fr.com
jjm@fr.com
jhurani@fr.com
ghane@fr.com

Turhan F. Sarwar
WOLF, GREENFIELD & SACKS, P.C.
tsarwar-ptab@wolfgreenfield.com

PATENT OWNER:

Reza Mirzaie
Dale Chang
James A. Milkey
Neil Rubin
Philip X. Wang
RUSS, AUGUST & KABAT
rmirzaie@raklaw.com
dchang@raklaw.com
jmilkey@raklaw.com
nrubin@raklaw.com
pwang@raklaw.com