

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCEDES BENZ USA, LLC
Petitioner,

v.

DAEDALUS PPRIME
Patent Owner

IPR2023-01333
Patent 10,049,080 B2

Record of Oral Hearing
Held: November 13, 2024

Before WILLIAM V. SAINDON, THOMAS L. GIANNETTI,
and GREGG I. ANDERSON, *Administrative Patent Judges*.

IPR2023-01333
Patent 10,049,080 B2

APPEARANCES:

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The above-entitled matter came on for hearing on November 13, 2024, 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 GIANNETTI: Good morning, everyone. This is Judge Giannetti. And we are here for a final hearing in Case IPR 2023-01333. Caption is Mercedes Benz USA vs. Daedalus PPrime. Let me introduce the panel.

I am Judge Giannetti and with me are Judges Saindon and Anderson. Counsel, I'd like to get your appearances. Let's start with the Petitioner. Who's appearing today for the Petitioner?

MR. LEWIS: Good morning, Your Honors. My name is Damon Lewis from Hogan Lovells and I am representing Petitioner, Mercedes Benz USA, LLC in this matter.

JUDGE GIANNETTI: Okay, Mr. Lewis, is that it?

MR. LEWIS: Yes.

JUDGE GIANNETTI: And you will be making the presentation?

MR. LEWIS: I will.

JUDGE GIANNETTI: Okay and who is representing the Patent Owner?

MR. FAHMI: Good morning, Your Honor. It's Terek Fahmi on behalf of the Patent Owner.

JUDGE GIANNETTI: Okay, Mr. Fahmi. I take it you will be making the presentation?

MR. FAHMI: I will.

JUDGE GIANNETTI: Okay any other appearances for either party or is it just the two of you?

1 MR. LEWIS: It's just me for Mercedes Benz.

2 JUDGE GIANNETTI: Okay.

3 MR. LEWIS: I have someone to help me with the slides.

4 JUDGE GIANNETTI: Mr. Fahmi, you're --

5 MR. FAHMI: Yes.

6 JUDGE GIANNETTI: -- you're by yourself?

7 MR. FAHMI: I'm here myself.

8 JUDGE GIANNETTI: All right. So let's get started. I want to
9 give you some general rules, general guidelines I would say for the
10 argument. In these virtual hearings it's important that you mute yourself
11 when you're not speaking so that we don't get background noise.

12 And before you speak especially if you haven't spoken for a while,
13 please identify yourself. We do have a court reporter on the line. She will
14 be making a transcript of this hearing and it's very helpful if she has your
15 identification before you speak.

16 We have the record, all of the judges have the record so if you do
17 have to refer to the record, please give us the citations. We will be able to
18 find those in our versions of the record and follow along. And the same
19 goes for demonstratives. We have your demonstratives.

20 If you do refer to demonstratives as I expect you will, please give
21 us the slide number and we'll be able to follow along. I don't know whether
22 you're going to share your screen or whether you're going to refer to them by
23 number. That's your choice.

24 But either way, please give us the slide number. That will also be
25 helpful in preparing the transcript. There are public lines, so we were not
26 put on notice of any confidential information. So I don't expect that this will

1 be an issue.

2 But please do not reveal any confidential information because we
3 do have members of the public listening in. According to your request and
4 the Order, the Hearing Order, each side has 60 minutes total to present its
5 case. That's 60 minutes a party.

6 Each party can reserve rebuttal time. There will be sur-rebuttal
7 time in the case of the Patent Owner, but you can reserve up to half of that
8 time as either rebuttal time or sur-rebuttal time. The order will be that
9 Petitioner will lead off and present its case.

10 Patent Owner will respond. Then Petitioner will present its
11 rebuttal case and then the Patent Owner will present its sur-rebuttal case.
12 I'm going to ask you when we do complete the argument to stay on the line
13 so that the court reporter can check any spellings or any other information
14 that may be necessary to prepare an accurate transcript.

15 So stay on the line when we are done with the hearing. Do the
16 parties have any questions? Petitioner, any questions for the panel?

17 MR. LEWIS: No, Your Honor.

18 JUDGE GIANNETTI: Okay, Patent Owner, any questions?

19 MR. FAHMI: No, Your Honor. Ready for the Patent Owner.

20 JUDGE GIANNETTI: Mr. Lewis, when you are ready, you may
21 proceed.

22 MR. LEWIS: Thank you, Your Honors. May it please the Court,
23 my name is Damon Lewis on behalf of Mercedes Benz USA, LLC in this
24 inter partes review. As I begin my argument, I would ask the Court if I may
25 reserve ten minutes of rebuttal time.

26 Today I will go over an overview of the '080 Patent and the two

1 chief prior art references in view of which Mercedes believes render the
2 '080 Patent unpatentable. These are the Sutardja references and the
3 Mathieson reference.

4 JUDGE GIANNETTI: Mr. Lewis, let me just interrupt you. Can
5 you get closer to the microphone? I'm hearing an echo. And it sounds like
6 you're in an echo chamber. I think it would be helpful if you got closer to
7 the microphone.

8 I don't know how your set up is configured there, but we are, it's
9 not as clear as it could be.

10 MR. LEWIS: Well, let's try something else. Why don't we try and
11 see if I can fix it. Your Honor, can you hear me better now?

12 JUDGE GIANNETTI: I think it's a little better now, yes.

13 MR. LEWIS: Testing.

14 JUDGE GIANNETTI: Try that again.

15 MR. LEWIS: Testing.

16 JUDGE GIANNETTI: That's not better. I think you should just
17 go back to what you were doing before. It was acceptable, but not optimum.

18 MR. LEWIS: Testing.

19 JUDGE GIANNETTI: That's okay.

20 MR. LEWIS: Okay. I apologize. I will try and speak loudly and
21 clearly for you. So I'm going to start with an overview of the '080 Patent
22 and the two chief prior art references in view of which Mercedes believes
23 render the '080 Patent unpatentable.

24 These are the Sutardja references and the Mathieson reference.
25 Having presented our arguments in chief and then met with the decision to
26 institute by this Board, there remain only four disputes concerning the

1 patentability of the '080 Patent which I will discuss in turn. First, we'll take
2 a look at '080 Patent.

3 The '080 Patent discloses a multiport processing system with two
4 types of processing cores, high power or a low power that support the same
5 instruction set. As it relates to this dispute, the '080 Patent further discloses
6 a power management hardware system that disables the high power cores
7 when the demand, the computing power drops below a threshold.

8 And an operating system that can monitor demand and control the
9 power management hardware based upon that demand. Moving to Slide 5,
10 Mercedes asserts that all the claims of the '080 Patent are unpatentable.
11 Claims 1 through 4, 7 through 12, 15 through 20, 23 and 24 are unpatentable
12 over Sutardja, the combination of two references where Sehat Sutardja was
13 the first named inventor.

14 These same claims are also unpatentable over Mathieson,
15 incorporating Carmack in view of Sutardja. My discussion today will center
16 around these arguments.

17 JUDGE GIANNETTI: Mr. Lewis, just one question. When you
18 use the term Sutardja, you're referring to both Sutardja references
19 collectively. Is that correct?

20 MR. LEWIS: That is correct. The Sutardja 785 is Exhibit 1008.
21 It was incorporated by reference into Sutardja 748 which is Exhibit 1007.

22 JUDGE GIANNETTI: Okay, thank you.

23 MR. LEWIS: Furthermore, Mercedes asserts that Claims 5, 6, 13,
24 14, 21 and 22 are unpatentable either over Sutardja in view of Rychlik or
25 Mathieson in view of Sutardja and Rychlik. And finally, Mercedes asserts
26 that Claims 7, 15, and 23 are unpatentable under Sutardja in view of

1 Carmack.

2 Moving to Slide 6, I would like to discuss the Sutardja arguments
3 now. Slide 7 show that the reference Mercedes refers to as Sutardja
4 discloses a multi-core processor with two types of processing force, high
5 power and low power that support that same instruction set.

6 We can see from this disclosure that the high power and low power
7 cores may be on a single dye or in a system and package aimed to be
8 dynamically switched depending on the type of applications being executed,
9 the processing load or the methods.

10 An operating system is also disclosed. Moving to Slide 8, the
11 Sutardja multi-core processing system is further described in Figure 3B
12 where the high power and low power core sharing similar structures and
13 having the ability to move threads between each other.

14 Moving to Slide 9, Sutardja also discloses detail regarding power
15 management hardware in Figure 5 and around paragraphs 253 and 254. In
16 particular, Sutardja discloses a hypervisor module 213. And the core
17 switching model 212.

18 When a transition is required between high power and low power
19 cores, Sutardja discloses that the core switching model 212 may transition or
20 switch the cores before returning control to the operating system kernel
21 module.

22 This core switching module 212 is disclosed to be either
23 standalone or integrated with the hypervisor module 213 which in turn is
24 disclosed to either operate above the operating system's kernel or
25 alternatively, below the kernel.

26 Throughout this section of Sutardja we have attempted to indicate

1 of how to manage our hardware in yellow. Moving to Slide 10, Sutardja
2 further discloses the operating system to control the power management
3 hardware.

4 Sutardja discloses an operating system which has as a component a
5 kernel module 220, but that is discussed briefly on the previous slide.

6 JUDGE GIANNETTI: Counsel, just let me just make sure I
7 understand your position on the power management hardware. Are you
8 saying that there's no software involved in that yellow box or it's just
9 hardware?

10 MR. LEWIS: I --

11 JUDGE GIANNETTI: Or is it a combination of hardware and
12 software?

13 MR. LEWIS: We are arguing that Sutardja discloses that the
14 possibility is available for PU. There are, let's go to Slide 9 for a second
15 please. Can you see in paragraph 254 the Sutardja disclosure shows that the
16 hypervisor may operate either above the kernel or below the kernel? I was
17 going to get to it later, but I can get to it now if Your Honor prefers, but the
18 idea that the --

19 JUDGE GIANNETTI: Well if you just answer my question. Is it
20 your contention that this is a, this yellow box is just hardware or does it also
21 contain software?

22 MR. LEWIS: I would say that our read of the Sutardja for
23 purposes of the '080 is on the alternatives disclosed as hardware.

24 JUDGE GIANNETTI: So it's just hardware?

25 MR. LEWIS: In this, well at least the hypervisor module is
26 hardware. The core system module we believe is hardware, but there are

1 alternatives that are disclosed in Sutardja.

2 JUDGE GIANNETTI: Okay, thank you. You can go on.

3 MR. LEWIS: Can we go back to Slide 10. Sutardja discloses that
4 kernel module 220 typically provides these resources to processes in the
5 application through inter-process communication mechanisms and
6 importantly, through system fails.

7 Sutardja further discloses power management system PMS module
8 242 that initiates a controls changes in the system operation based on the
9 monitor system living. It is further disclosed that a core profile module 240
10 which can also monitor system living such as core living.

11 Throughout the discussion, Sutardja we are attempting to indicate
12 the operating system in purple. Moving to Slide 11, Sutardja discloses an
13 example. When the low power cores reach their highest operating speed and
14 additional system loading occurs, the core profile module 240, the PMS
15 module 242, and/or the kernel module 220 disable interrupts and generate a
16 system call to a hypervisor or core switching module 212 to trigger the
17 transition.

18 Slide 12 we note that the Plaintiff raises only two disputes
19 regarding these Sutardja disclosures. The first is what was is Sutardja
20 discloses the claimed power management hardware. Mercedes argues that it
21 does. This dispute follows more blanks.

22 Moving to Slide 13, the Patent Owner argues that Sutardja's core
23 switching module is not power management hardware in satisfaction of their
24 claims. Instead, according to Patent Owner, the core switching module is
25 software.

26 The Patent Owner implies that if it is software, that means that the

1 structures disclosed by Sutardja cannot be power management hardware. In
2 our view, Patent Owner is incorrect.

3 JUDGE GIANNETTI: Counsel, let me interrupt on this point
4 again. I want to come back to it. Is there no software involved there? I
5 mean, the hardware by itself isn't going to do very much of anything useful
6 without some software.

7 So I don't quite understand your position that the box is all
8 hardware. There must be some software on some level --

9 MR. LEWIS: Well as the --

10 JUDGE GIANNETTI: -- involved in it or it wouldn't, it wouldn't
11 be able to operate.

12 MR. LEWIS: Yes, Your Honor. The '080 Patent discloses that
13 the operating system is available to control the power management
14 hardware.

15 JUDGE GIANNETTI: I see.

16 MR. LEWIS: We are arguing that Sutardja also discloses that.

17 JUDGE GIANNETTI: So you're arguing that just to go back to
18 your previous box, your previous slide, this would be 11; you're saying that
19 what's shown there in purple is doing the controlling of this yellow
20 hardware. Is that what you're saying?

21 MR. LEWIS: That is, that is correct. The purple, the kernel
22 module is PMS 50432. That's software. That's the part of the operating
23 system.

24 JUDGE GIANNETTI: So there would be no micro code or low
25 level code involved in that yellow box at all? Is that your contention?

26 MR. LEWIS: No. That's not our contention. Our contention is

1 that the --

2 JUDGE GIANNETTI: Well that's software isn't it? Microcode
3 would be software.

4 MR. LEWIS: I don't think that it is, Your Honor. I think that
5 microcode if it's embedded in hardware is still hardware. I think that one of
6 the issues that we have, you know, argued back and forth with the Patent
7 Owner now is can you use a definition of software to the exclusion of
8 hardware?

9 I think that you could say that hardware is the software, but the
10 other way around is not quite accurate. We have --

11 JUDGE GIANNETTI: Firmware, isn't that the term? Firmware?
12 It's kind of sort of borderline between hardware and software.

13 MR. LEWIS: Well, that's one. That's one way that you could look
14 at it, yes. That's not the only way. When I think about firmware, I think
15 about hardware that is changeable. It's persistent. But microcode embedded
16 in hardware is still hardware and maybe you can't change it in which case it's
17 wouldn't be firmware.

18 But microcode embedded in hardware does not remove it from
19 being hardware.

20 JUDGE GIANNETTI: Okay. All right. Thanks for the
21 explanation. You can proceed.

22 MR. LEWIS: Yes. Let's go back to Slide 13 I think. So we've got
23 the Patent Owner's argument. The argument that they make is that the core
24 switching module software and therefore it cannot be power management
25 hardware.

26 So we believe that Sutardja in this Sutardja disclosed core

1 switching module hypervisor disables all high power cores for dropping
2 them at the lower threshold. And let's see, let's move to Slide 14.

3 A person having ordinary skill in the art would understand
4 therefore that the claim power management hardware is the hardware
5 controlled by Sutardja's core switching module, i.e., the hypervisor in which
6 the core switching module can be integrated.

7 Sutardja discloses that the hypervisor can be hardware. We know
8 this because it expressly states the hypervisor may operate below the kernel
9 and then we discuss this a little bit before, but I can dive into it a little bit
10 more deeper now if you like. Move to Slide 15.

11 Petitioner's expert, Dr. Robert Horst, explains in paragraph 117 of
12 his declaration what that maintains below the kernel. Per Dr. Horst, an
13 operating system's kernel is the lowest level of the operating system.

14 As such, a POSITA would have understood that a hypervisor that
15 operates below the kernel is installed directly on the underlying hardware.

16 JUDGE GIANNETTI: Well, Counsel, again, I'm just reading this.
17 It says it's installed on the hardware, but it doesn't say it is the hardware.

18 MR. LEWIS: I think that line is maybe it's not clear. Let me try to
19 answer that with jumping to Slide 20.

20 JUDGE GIANNETTI: Okay.

21 MR. LEWIS: Slide 20 in the exhibit here is Exhibit 1028 which is
22 a contemporaneous book entitled Enabling the New Era of Cloud
23 Computing Data Security Transfer and Management. And it has a section
24 about hypervisor and so, you know, this reference has been cited by both
25 Patent Owner and the Petitioner to try to find what a hypervisor is.

26 Patent Owner latches onto the first sentence here that says that the

1 hypervisor is a software that does several virtualizations.

2 JUDGE GIANNETTI: Yes.

3 MR. LEWIS: And I apologize for the small print. But if you want
4 me to read from it, it says that there are chiefly two kinds of hypervisor later
5 on that page on the second column. It writes, there is a bare-metal
6 hypervisor and a post-hypervisor.

7 For the bare-metal hypervisor, the hypervisor runs directly on the
8 hardware and executes and acts against the hardware. The quote continues
9 on the following page citing our position where the hypervisor in the bare-
10 metal form "resides on rings on a processor and executes commands against
11 the
12 hardware."

13 This type of hypervisor requires certified hardware so that the
14 appropriate drivers are available to communicate with the hardware. Since
15 the bare-metal hypervisor is directly installed on the X86 base hardware, it
16 could access the hardware resources more efficiently as scalable.

17 The important part of that of that paragraph, that passage there is
18 noting that the bare-metal hypervisor is directly installed on the X86 based
19 hardware.

20 JUDGE GIANNETTI: So counsel, just to put a point on it, is your
21 position that the hypervisor itself is hardware or that the hypervisor because
22 it's directly on top of the bare metal that it controls hardware? What is your
23 position on that?

24 And that the hardware that you're relying upon is not the
25 hypervisor, per se, but the hardware that's controlled by the hypervisor.
26 Which is it?

1 MR. LEWIS: I actually think that it's one and the same. The
2 argument we're making, the Petition is entirely about the hypervisor being
3 the structure that controls the core mix. And we believe that the disclosures
4 in Sutardja and in this contemporaneous book show that the hypervisor can
5 be hardware whether it's physically on the chip as in being on the exact same
6 die.

7 I don't think it actually matters, but if it's hardware then it's power
8 management hardware.

9 JUDGE GIANNETTI: Well I don't see how that view is supported
10 by this article you've just shown me.

11 MR. LEWIS: Okay.

12 JUDGE GIANNETTI: Which says it's software and then it goes
13 on to say well if it's a bare-metal hypervisor, it's on top of the software, it's
14 on top of the hardware. But I don't see anything in this article that says it is
15 hardware and that seems to be your position.

16 MR. LEWIS: Your Honor, I understand that and respectfully I
17 read it a little bit differently. I think that the book is not as precise as a legal
18 brief would be which is a little bit unfortunate, but when it says a hypervisor
19 is a software, it then goes and describes two different kinds of hypervisors,
20 one being the bare-metal hypervisor and the other --

21 JUDGE GIANNETTI: Let me make a suggestion here. Why do
22 you, do you believe that you have to show that this particular element is
23 exclusively hardware to the exclusion of software?

24 MR. LEWIS: No, I don't believe that we have to show that's
25 exclusive, but the Petition, we would state that there's at least a --

26 JUDGE GIANNETTI: So why go there?

1 MR. LEWIS: I think that the easiest way to understand the
2 procedures that the Sutardja is disclosing is to recognize that the hypervisor
3 is where the core mix is occurring on hardware. If it is easier for the Board,
4 then it's easier for the --

5 JUDGE GIANNETTI: I think it's up to you to tell us what your
6 position is. That's -- you're counsel here, not us. We'd like to know what
7 your position is on this and I guess it's clear that you regard the hypervisor
8 as hardware. I think that's what you said.

9 MR. LEWIS: Yes, I think that is what the literature here is
10 disclosing the hypervisor --

11 (Simultaneous speaking.)

12 JUDGE GIANNETTI: Right.

13 MR. LEWIS: -- can be hardware, but in the alternative, it bears at
14 least the hardware on the --

15 JUDGE GIANNETTI: Understood.

16 MR. LEWIS: -- that is being --

17 JUDGE GIANNETTI: Is that is your papers?

18 MR. LEWIS: That is in the papers.

19 JUDGE GIANNETTI: Okay.

20 MR. LEWIS: I can find a cite for you.

21 JUDGE GIANNETTI: Yes, maybe you can give me the cite when
22 you come back on. I won't put you on the spot right now, but may you can
23 put, you can show me that when you come back on your rebuttal case.

24 MR. LEWIS: Absolutely, will do.

25 JUDGE GIANNETTI: Thank you.

26 MR. LEWIS: Just tying a bow on it I guess with the hypervisor,

1 Sutardja and this piece of literature also they're married in the idea that there
2 are two kinds of hypervisors that are known in the art. Sutardja calls it
3 above the ground and below the kernel, other practitioners would call it a
4 hosted hypervisor or a bare-metal hypervisor.

5 We make that, we show the dissention of the same throughout the
6 Petition where the bare-metal hypervisor is what we're explaining would be,
7 would render the '080 Patent unpatentable is the same thing as the
8 hypervisor below the kernel that is mentioned in Sutardja.

9 And we're issuing the hosted hypervisor which Sutardja would call
10 the above the kernel software. Let's go back to Slide 16 please. Patent
11 Owner also argues that the core switching module is software because
12 hardware cannot be loaded into high-speed memory from RAM or another
13 storage device.

14 Well it is true that Sutardja presents a possibility that the core
15 switching module can be loaded into high-speed memory from RAM or
16 other storage after boot up. But that's depending on whether the core
17 switching module is integrated in the hypervisor module 213.

18 In other words, it is alternative. Indeed this paragraph could be
19 describing firmware like bio switch can be viewed as well as software and
20 hardware. Go to Slide 18. In fact, the '080 Patent itself describes the
21 structure similarly without strict differentiation between software and
22 hardware.

23 It does that in the power management process flow can be
24 executed entirely in hardware or be a combination of hardware and software
25 implying that the combination is still power management hardware.

26 Later the '080 Patent is even clearer describing the processing to

1 alternative implementations including a hardware firmware implementation
2 that monitors and controls the core mix. The hardware is demonstrated by
3 Patent Owner's expert Dr. Brogioli.

4 A POSITA knows that hardware such as a chip may include
5 software components like firmware and microcode and with remaining
6 hardware. Here we see that he agrees that a chip or microcode embedded is
7 hardware.

8 The microcode is in the processor. Moving to Slide 21, in care
9 there are remaining doubts of a hypervisor controlled by the core switching
10 module could be hardware, Sutardja explicitly states that modules like the
11 core switching module can an ASIC, an electronic circuit, a processor or a
12 core that execute one or more software or firmware programs.

13 And in Slide 22, we show that the Patent's expert, Mr. Brogioli
14 agrees that ACISs are hardware. That's it for the first dispute. I'll move on
15 to the second one, the what Sutardja writes and that is where Sutardja
16 discloses and operating system controlling hardware which ACIS argues it
17 does. Moving to Slide 24.

18 But more directly, Patent Owner argues that the operating system
19 of Sutardja does not control the hardware and that the kernel and the power
20 management system 242 only makes system calls to the core switching
21 module.

22 The specification is clear that paragraph 253 of Sutardja states that
23 the PMS module and/or kernel module of the operating system sends system
24 calls to the hypervisor module 213 or the core switching module 212 which
25 triggers a transition in the cores.

26 The PMS module and kernel module are both part of the operating

1 system. Indeed, the kernel module is the lowest level of the operating
2 system. Moving to Slide 25, Figure 5 in the Sutardja reference further
3 quashes this position showing the line control between the kernel module
4 and the hypervisor module.

5 Moving to Slide 26, Patent Owner argues that the fact the control
6 must be returned to the kernel after switching from one core to another
7 means that the operating system was not in control of that switching, and
8 therefore, the operating system did not control the hardware. In our view,
9 Patent Owner is incorrect.

10 That interpretation is wrong because Sutardja teaches that the
11 kernel, part of the operating system, generates a system called to be
12 hypervisor which Sutardja discloses can be hardware to trigger the
13 transition.

14 A system call is akin to my communicating with another person by
15 mail. When I put a letter in the mailbox, I have effected communication
16 with that other person despite the message itself being carried to the
17 recipient by a postal carrier. That is control.

18 I have control of that communication. Similarly, when the PMS
19 module or the kernel module of Sutardja sends a system call to the
20 hypervisor, that is control of the power management hardware by the
21 operating system monitoring.

22 Returning control to the kernel does not negate that the operating
23 system call the transition. Moving to Slide 27, I would like to discuss the
24 grounds case on the Mathieson reference starting with the over view.

25 In our Slide 28, Mathieson liked the '080 reference and Sutardja
26 reference discloses a multi-core processor with high and low power cores

1 wherein a power management hardware disables the high power cores based
2 on an operating system schedule.

3 Moving to Slide 29, in detail Mathieson discloses a CPU in
4 magenta having multiple cores in red. I'm sorry, the first set of cores is in
5 red and the second set of cores in blue. Moving to Slide 30, Mathieson
6 further discloses hardware to transfer control from the first set of cores to the
7 second set.

8 Mathieson expressly discloses a hardware mechanism that stops
9 and powers off at the first set of cores 210 and boots the second set of cores
10 220 to effect the transition. Moving to Slide 31, Mathieson also discloses
11 that it is software that triggers the switch.

12 In paragraph 30, Mathieson discloses that the controller 240 is
13 implemented in software and executed by the CPU 102. This brings us to
14 our first dispute regarding Daedalus as a primary reference where the
15 Mathieson disclose an operating system controlling the hardware. Mercedes
16 POSITA said it does.

17 And as just discussed on Slide 31, Mathieson discloses that a
18 Controller 240 is implemented in software at two point CPU. Let's go back
19 to Slide 30 for a moment. Patent Owner's argument that the controller does
20 not perform the functions of an operating system in effecting transition is
21 wrong.

22 They say that it doesn't perform the operation system function
23 because it operates transparently to the operating system. Patent Owner
24 pledges this argument on paragraph 43 of the Mathieson reference where it
25 states that the transition from the first mode to the second mode and vice
26 versa can be done transparently to high level software such as the operating

1 system.

2 So this disclosure is an alternative embodiment where the
3 processing state may be directly transferred to the other set of cores via a
4 dedicated bus. But look on Slide 31 again. This disclosure does not, this
5 disclosure has not been to negate that Mathieson at paragraph 30 discloses
6 an embodiment with software-based core transfer by controller 240.

7 Moving to Slide 33, it further is the job of an operating system to
8 allow transparency to high level applications. Patent Owner's expert appears
9 to agree that transparency to the operating system can also be transparency
10 to higher level applications such as in his example, an email client.

11 Moving to Slide 34, and as Petitioner's Dr. Horst notes at
12 paragraph 217 of his declaration, Mathieson discloses that the control of
13 performing the core switching is performing the functions of an operating
14 system.

15 This is because Mathieson's control is software module that may
16 be inputted as part of an operating system and executed by a kernel. The
17 parties' final dispute concerns the claim limitation that the second plurality
18 of cores consume less power for a same applied operating frequency and
19 supply voltage than the first plurality of cores.

20 The dispute is whether Mathieson teaches that the second plurality
21 of cores consume less power than the first plurality of cores through the
22 same supply voltage. Because Mathieson is bound by the same physics
23 properties as other cores, Mercedes argues that it does so as this.

24 Moving to Slide 36, Patent Owner argues that Mathieson does not
25 disclose cores which consume less power for the same supply voltage
26 because core power Mathieson is ascribed only on the basis of operating

1 frequency. Patent Owner would argue that is incorrect.

2 As Dr. Horst explained at paragraph 48 of his declaration,
3 frequency and voltage are linked in core power consumption by the
4 relationship of P is proportional to V^2 at where P is the core power
5 consumed, V is the voltage and atmospheric frequency.

6 They further explain that the frequency is also directly proportional
7 to the voltage. This makes sense because to move electrons over to the same
8 space and sort of topic which is required when you increase the frequency,
9 one must proportionally raise the voltage.

10 Patent Owner does not dispute these physical correlations are
11 correct by meaning only that they are not disclosed. But a POSITA reading
12 Mathieson would be aware of a physical correlation between frequency,
13 voltage, and power and would thus read the reference to disclose the same
14 high power, low power cores explained in this limitation.

15 Moving to Slide 38, Mathieson also exemplifies the POSITA's
16 understanding of the known relationships between voltage, frequency and
17 power in this closing that embodiments may be configured to vary the
18 voltage and operating frequency using "any technically feasible technique
19 such as dynamic voltage and frequency scale (DVFS)."

20 DVFS was known to the POSITAs at the time that Sutardja and the
21 '080 Patent and Mathieson indicating a knowledge of the direct link between
22 voltage and frequency. And go back to Slide 28 briefly. Figure 6 makes
23 clear that the two sets of cores, first and second, have different power
24 frequency curves.

25 Because this chart discloses that one set of cores consumes less
26 power than the other core given frequency, i.e., between lines up to zero and

1 line 610. Due to a proportional relationship between the frequency and
2 voltage, this chart also discloses to a POSITA that one set of cores consumes
3 less power than the other for a given supply voltage and satisfaction of the
4 technical attention.

5 And for at least these reasons, the Board should find all claims of
6 the '080 Patent, the Patent vote over Sutardja and Mathieson and the
7 combination discussed in the Petition. Thank you, Your Honors.

8 JUDGE GIANNETTI: All right. How much time -- I'll ask Judge
9 Saindon. How much time does he have left?

10 JUDGE SAINDON: Nineteen minutes.

11 JUDGE GIANNETTI: Nineteen minutes. Okay.

12 MR. LEWIS: Thank you, Your Honors.

13 JUDGE GIANNETTI: All right, thank you very much, Mr. Lewis.
14 Mr. Fahmi, are you ready to proceed?

15 MR. FAHMI: I am, Your Honor. Thank you.

16 JUDGE GIANNETTI: Okay, at your convenience whenever
17 you're ready.

18 MR. FAHMI: Thank you. I'd like to reserve 15 minutes please
19 and trying to share the screen. Hopefully you're seeing the slides. May it
20 please the Board, there's two main topics I would like to address with you
21 today. Those being the challenges based on Sutardja and the challenges
22 based on Mathieson in view of Sutardja. As I'm --

23 JUDGE GIANNETTI: I think you mean Mathieson. Right?
24 Mathieson?

25 MR. FAHMI: Well there's an "i" in there, Your Honor. I think
26 it's --

1 JUDGE GIANNETTI: Mathieson, is that how you would
2 pronounce --

3 MR. FAHMI: Mathieson maybe.

4 JUDGE GIANNETTI: Mathieson.

5 MR. FAHMI: I'm happy to use Mathieson. If that --

6 JUDGE GIANNETTI: How did you pronounce it? Given it to
7 me --.

8 MR. FAHMI: I thought it was Mathieson, but --

9 JUDGE GIANNETTI: Okay.

10 MR. FAHMI: -- if it's Mathieson, --

11 JUDGE GIANNETTI: That's as good, that's as good as my
12 pronunciation. So go with the one that you are most familiar with.

13 MR. FAHMI: All right, thanks, Your Honor. As I'm going to
14 discuss with you in a few moments, we think the challenges that are based
15 on Sutardja as the primary references are unwinnable for the Petitioner.

16 And that's really because the reference itself says that when the
17 core switching takes place, the core switching module is what effects the
18 switching and then it returns control to the kernel module that is it returns
19 control to the operating system. So if it's the core switching module that's in
20 control to make the switching, it's not the operating system as would be
21 required by the independent claims.

22 And so really the Sutardja case we think is unwinnable. Regarding
23 the second set of challenges, the ones based on Mathieson in view of
24 Sutardja, the Petitioner has already conceded that Mathieson teaches the
25 controller that operates, in other words, that transfers the processor state
26 from one set of cores to the other set of cores, transparently to the operating

1 system.

2 You heard it during their presentation. And their declarant, Dr.
3 Horst recognized that in order for that to be done transparently to the
4 operating system, the controller has to be operating below the operating
5 system. He conceded this point during deposition.

6 JUDGE GIANNETTI: Counsel, I'm not following this argument
7 about returning control. I mean something, someone can control something
8 and then yield control to something else. That doesn't mean it isn't
9 controlling it. I don't quite follow the logic of that. Maybe you could
10 elaborate a little bit on that argument.

11 I also would like you to discuss the software hardware distinction
12 that we were talking about. I assume that that's on your agenda.

13 MR. FAHMI: Sure. Let's go over that, Your Honor. Let's look
14 at --

15 JUDGE GIANNETTI: Yes.

16 MR. FAHMI: -- I think let's go to Slide 10 because I think this
17 addresses the software, hardware issue that you discussed with --

18 JUDGE GIANNETTI: Yes.

19 MR. FAHMI: -- each of us. So the Petition's argument is that
20 Sutardja discloses the operating system that is a kernel and PMS module.
21 Those are the ones he had colored in purple, controls the power management
22 hardware and this is a direct quote from the Petition.

23 (Simultaneous speaking.)

24 JUDGE GIANNETTI: Which slide are you on again, Counsel?
25 Which slide are you on?

26 MR. FAHMI: I'm on Slide 10, Your Honor, Slide 10.

1 JUDGE GIANNETTI: Okay. Let me get your Slide 10 up. Okay.

2 MR. FAHMI: Are you there?

3 JUDGE GIANNETTI: Yes. I'm here.

4 MR. FAHMI: Right. So --

5 JUDGE GIANNETTI: Okay.

6 MR. FAHMI: So the Petition argues that the Sutardja discloses
7 that the operating system that is the kernel module and PMS module controls
8 the power of management hardware and they're saying the core switching
9 module is harder based on the demand.

10 And then they go on and talk about the system call. Well, Sutardja
11 dispels the notion that the core switching module is hardware because we're
12 told that regardless of whether it's stand alone or it's integrated into the
13 hypervisor, it's loaded into memory from RAM or other storage after boot
14 up.

15 You can't load hardware into memory. It's got to be software. The
16 core switching module whether it's integrated in the hardware or it's stand
17 alone, or excuse me, integrated in the hypervisor or stand alone, it has to be
18 software.

19 JUDGE GIANNETTI: Counsel, let me ask you this. In that
20 yellow box, do you recall the yellow box?

21 MR. FAHMI: I do. I do.

22 JUDGE GIANNETTI: Yes, in the slide. We can go back to it, but
23 I think you, I think you --

24 MR. FAHMI: I think I have a picture of it here, Your Honor. I'll
25 see --

26 JUDGE GIANNETTI: Are you contending that, are you

1 contending that that's entirely software in that box?

2 MR. FAHMI: It is. It's software as shown --

3 JUDGE GIANNETTI: No hardware, no hardware at all in there?

4 MR. FAHMI: The diagram shows software, Your Honor. We're
5 not saying there's no hardware anywhere that we know there's cores. Right?
6 The cores are shown.

7 JUDGE GIANNETTI: I mean, --

8 (Simultaneous speaking.)

9 MR. FAHMI: -- for software.

10 JUDGE GIANNETTI: The problem I have with your -- I have two
11 problems with your argument. One is I'm not sure that these, the claims say
12 it has to be only hardware that to the exclusion of software because we all
13 know that without software, hardware is basically useless.

14 But I also have a problem that there must be, there must be -- the
15 claims seem to admit of the possibility that it's not exclusively hardware. It's
16 hardware in conjunction with software. And those are my two problems
17 with your argument. Maybe you could address them for me.

18 MR. FAHMI: Yes, I'm not sure where you're coming to that
19 conclusion, Your Honor. I mean, Claim 1 says --

20 JUDGE GIANNETTI: It says hardware, but that, but hardware by
21 itself is useless. So there must be some software by implication. There must
22 be some software associated with the hardware or the hardware is useless.

23 MR. FAHMI: Well the claim says it's the operating system that
24 controls the hardware in so far --

25 JUDGE GIANNETTI: Yes.

26 MR. FAHMI: -- as this function is concerned, Your Honor. It

1 says wherein the operating system, to execute on the multi-core processor --

2 JUDGE GIANNETTI: Yes.

3 MR. FAHMI: -- is to monitor demand for the multi-core
4 processor --

5 JUDGE GIANNETTI: I see.

6 MR. FAHMI: -- and control the power management hardware
7 based on the demand. So yes, there's software all right.

8 JUDGE GIANNETTI: Yes.

9 MR. FAHMI: The claim specifies that it's the operating system.

10 JUDGE GIANNETTI: Okay so the operating system you will -- is
11 software. Right? That's --

12 MR. FAHMI: Sure.

13 JUDGE GIANNETTI: -- pretty clear. What's your position on the
14 hypervisor?

15 MR. FAHMI: Yes, so hypervisor is software.

16 JUDGE GIANNETTI: Yes.

17 MR. FAHMI: It's not part of the operating system. In this case,
18 it's the Petitioner is relying on the hypervisor that runs below the operating
19 system.

20 JUDGE GIANNETTI: Yes.

21 MR. FAHMI: Which they've analogized or said it is also known as
22 a bare-metal hypervisor.

23 JUDGE GIANNETTI: Right.

24 MR. FAHMI: I think that's right. But it's still software. And it's
25 not the operating system.

26 JUDGE GIANNETTI: But the metal, the metal, the metal that it is

1 associated with is hardware. Right?

2 MR. FAHMI: Sure, yes.

3 JUDGE GIANNETTI: So why isn't that part of the process that
4 causes the cores to switch? That piece of hardware that is interacting with
5 the hypervisor? Why isn't that hardware?

6 MR. FAHMI: It is. I don't really understand your question.

7 JUDGE GIANNETTI: I'm saying well why doesn't that satisfy the
8 claim that there be hardware?

9 MR. FAHMI: Oh, that's not their argument, Your Honor. No, no,
10 no. Look, Your Honor, I'm sorry, but the Board doesn't get to make up its
11 own theories of the --

12 JUDGE GIANNETTI: Oh, we know that. We know that. But
13 that's --

14 MR. FAHMI: Okay. It's our --

15 JUDGE GIANNETTI: I thought counsel said that was in his
16 papers. He's going to provide a cite for me later and we'll see.

17 MR. FAHMI: It will be interesting to see --

18 JUDGE GIANNETTI: Let's just, let's assume that it's in there.
19 What's your reaction to that? What's your answer to that?

20 MR. FAHMI: Well then, that's addressed on our Slide No. 12.

21 Right? Their Petition says the hardware controlled by the core switching
22 module corresponds to the claimed power management hardware. Okay.

23 But the core, if so, it's the core switching module that controls that
24 hardware. And the core switching module is not the operating system.
25 They've said that the operating system is the kernel and the PMS module.
26 So they've undoubtedly --

1 JUDGE GIANNETTI: Well, Counsel, let's just back up to your
2 Figure, to Figure 5 in your Slide 6. Doesn't that show that the kernel module
3 interacts with the hyper -- with the core switching module? Doesn't it show
4 that? If this --

5 (Simultaneous speaking.)

6 MR. FAHMI: It does, it's a call and a call is just a request. It's not
7 controlled.

8 JUDGE GIANNETTI: Well if that call didn't exist, would
9 anything happen? Would there be a switch?

10 MR. FAHMI: I don't know.

11 JUDGE GIANNETTI: What do you mean you don't know?

12 MR. FAHMI: I don't look at their --

13 JUDGE GIANNETTI: There wouldn't be, would there?

14 MR. FAHMI: -- it's not something that Sutardja --

15 (Simultaneous speaking.)

16 JUDGE GIANNETTI: There would not be --

17 MR. FAHMI: -- that would be to contemplate.

18 JUDGE GIANNETTI: If there was no interrupt there, there would
19 be no call, there would be no switch.

20 MR. FAHMI: Well actually, Your Honor, you just gave an
21 example where there's no call, there's an interrupt so that is a different way
22 of invoking something. They're not the same. A call is a request. An
23 interrupt would be a different way of alerting the core switching module.

24 JUDGE GIANNETTI: But what if I removed, what if I remove
25 that line between the kernel module and the hypothetically and the box 213?
26 Just remove that line from this diagram, would this thing be operative?

1 MR. FAHMI: It could because I see another line to the memory
2 and so a posting through memory could be made in this trial.

3 JUDGE GIANNETTI: It would, it would be able to switch
4 without that line?

5 MR. FAHMI: Sure.

6 JUDGE GIANNETTI: How is that?

7 MR. FAHMI: As I just said, there's another line through the
8 memory. I think it's --

9 JUDGE GIANNETTI: Yes.

10 MR. FAHMI: -- 210.

11 JUDGE GIANNETTI: Yes, I see it.

12 MR. FAHMI: You could use a mailbox sort of protocol where you
13 post a flag to the memory and the hypervisor checks the flag and if the flag
14 is set, it performs an action.

15 JUDGE GIANNETTI: All right. It's your position. Thank you.

16 MR. FAHMI: So I'm looking back at Slide No. 10 again, Your
17 Honor, and as I say, their first argument is that the core switching module is
18 hardware. It's not. Sutardja tells us it's something that gets loaded into
19 RAM and so it must be software.

20 Moving to Slide 11, the next argument the Petition presents is that
21 the hardware on which the hypervisor is installed is the power management
22 hardware. Well, if that's the case and we're talking about the hypervisor that
23 runs below the operating system, below the kernel that is, then we know that
24 it's not the operating system that is controlling that hardware. It's the
25 hypervisor --

26 JUDGE GIANNETTI: And again, Counsel, the operating system

1 is communicating with the hypervisor. Isn't it?

2 MR. FAHMI: Yes, we've discussed that, Your Honor. It makes
3 the call, but the call is simply --

4 JUDGE GIANNETTI: What in this claim says it has to directly
5 control? That there can't be some intermediate piece of management
6 software --

7 MR. FAHMI: I think it's software, Your Honor. The claim reads
8 the operating system to monitor a demand and control the power
9 management hardware based on the demand.

10 JUDGE GIANNETTI: But your reading of that claim is it has to
11 be direct control. Is that right?

12 MR. FAHMI: Well it says it's --

13 JUDGE GIANNETTI: It says it has to be direct control. Isn't that
14 your reading of the claim?

15 MR. FAHMI: Yes. It says --

16 JUDGE GIANNETTI: Okay, thank you.

17 MR. FAHMI: -- control.

18 JUDGE GIANNETTI: Direct control?

19 MR. FAHMI: Your Honor, I think direct control is what's said and
20 regardless, a call is not control. A call is a request. And Sutardja mentions a
21 call from the operating system.

22 JUDGE GIANNETTI: Okay, thank you. I have your position on
23 that.

24 MR. FAHMI: The third argument that the Petitioner makes on
25 Slide No. 12 is the hardware that's controlled by the core switching module
26 is the power management hardware and here again, we know that if it's the

1 core switching module that is controlling the switching, it's not the operating
2 system because the Petition itself distinguishes the operating system from
3 the core switching module.

4 So effectively all of the arguments that are made in the Petition
5 fail. Now I would have to go back just a moment, Your Honor. We've got
6 down this path of looking into Sutardja and I was happy to do it, but I think
7 there is something that meets -- the Board does need to address as part of its
8 decision and that is the construction of the operating system. This is our
9 Slide No. 4.

10 The Petition didn't originally set forth any construction for this
11 term, but since it is a term that's in dispute, I think the Board should construe
12 it and I think the construction that you should adopt is the one that Dr.
13 Brogioli has advanced.

14 And that is that the operating system is the software that controls
15 an allocation and usage of hardware resources, et cetera. Dr. Brogioli
16 testified that is the understanding that the person of ordinary skill in the art
17 would come to. And --

18 JUDGE GIANNETTI: And this was proposed in your Patent
19 Owner response. Is that correct?

20 MR. FAHMI: It was, yes.

21 JUDGE GIANNETTI: All right, thank you.

22 MR. FAHMI: You're welcome. And while we're on the subject of
23 the person of ordinary skill, Your Honor, I think this is also something that
24 you should address in your decision. The parties by and large agree on who
25 that person of ordinary skill would be with the exception that in the
26 Petitioner's definition, it's the person with at least a certain level of skill and

1 education.

2 And we think that's wrong. We don't think it's, we think that the
3 term at least creates a problem with the definition. And the problem is this,
4 a person with more than the specified level of education, skill, et cetera, fills
5 that bill.

6 And so that proposed definition would subsume within it experts.
7 In other words, you wouldn't be able to know based on that definition who's
8 an expert and who's not. Who's just a person of ordinary skill?

9 And since this person of ordinary skill is the one that you have to
10 use in order to look at the claim and look at the teachings, it would be
11 improper to view all of that through the lens of the expert. And as we
12 pointed out in our papers, other panels of the Board that have been faced
13 with this question have agreed and said that terms like at least a certain level
14 of ordinary skill are improper.

15 And they've stricken that qualifier and made it a definite amount of
16 education and skill. So we think that's something that you should do as well.
17 And you asked about Mathieson and let me address the arguments based on
18 Mathieson.

19 This begins on our Slide No. 15 really. The Petitioner's argument is
20 that the controller which is implemented in software selects the or it operates
21 as if it were an operating system in controlling the core switching, but this is
22 wrong.

23 It's not acting as an operating system. Mathieson indicates that the
24 controller makes these transitions transparently to the operating system.
25 And the Petitioner's expert, Dr. Horst testified that in order for this to be the
26 case, the controller must be operating below the operating system.

1 This is in the transcript of his deposition. It begins on about Page
2 31, line 18, carries over to Page 32, line 1 that he agrees that in order for
3 something to be operating transparently to the operating system, it must be
4 operating below the operating system.

5 And if it's operating below the operating system, it's not part of the
6 operating system. So again, the operating system is not in control of this
7 core switching. The other failing in the Mathieson --

8 JUDGE GIANNETTI: Counsel, I thought that when this was
9 discussed by the Petitioner. He referred to an alternative embodiment. Is
10 that --?

11 MR. FAHMI: Your Honor, --

12 JUDGE GIANNETTI: What's your response to that?

13 MR. FAHMI: Yes, the Petitioner's trying to create an alternative
14 where there is none. There's no alternative specified in Mathieson. This is
15 the embodiment that's disclosed. The one where the controller is what is
16 performing the core switching. And it's said that the, that the transition is
17 transparent to the operating system.

18 There's no alternative to this. The other failing of the Mathieson
19 and Sutardja argument concerns that highlighted -- this is on our Slide 16,
20 concerns the highlighted version of Figure 6 that Mr. Lewis discussed with
21 you.

22 They argue that this Figure 6 provides the support for the claim
23 requirement that the second set of cores consumes less power than the first
24 set of cores for the same operating frequency. But Figure 6 doesn't say
25 anything, it says only that.

26 It says it gives you a plot of power consumption versus frequency.

1 But the claims require not only the same operating frequency, but the same
2 supply voltage. And this figure provides no information about what the
3 applied supply voltage is.

4 And so the figure doesn't provide support for their argument. I'm
5 happy to take further questions, Your Honor, but it sounds to me like you've
6 got a pretty good grasp of the dispute here and the positions of the parties.

7 So if there are no other questions, I'm happy to save any time for
8 rebuttal. I know it's more than the half of the allotted time, but I don't think
9 we'll need the entire bit.

10 JUDGE SAINDON: Counsel, I have a question. This is Judge
11 Saindon. Going back to your Slide 10, if you can. This is regarding the
12 what's loaded into RAM. The sentence that you have quoted on the middle
13 of the right column says "depending on whether the core switching module
14 212 is integrated into the hypervisor module 213, the hypervisor module 213
15 or the core switching module 212 is loaded into high speed memory."

16 So there's "depending on" one or the other, and then there is a
17 result of it's being loaded on one or the other. Could you walk me through
18 this a little more? Is it saying that one or the other is loaded into RAM, or is
19 there a case where they both are loaded into RAM?

20 MR. FAHMI: Yes, I think what this is saying, Your Honor, is if
21 the core switching module is a standalone module, that's what's loaded into
22 RAM. If the core switching module is integrated in the hypervisor, then the
23 hypervisor is loaded into RAM. I think that's how this is read.

24 JUDGE SAINDON: Okay and then so if just the core-switching
25 module is put into RAM, does that speak to where the hypervisor module is,
26 as far as it being software or hardware?

1 MR. FAHMI: A hypervisor has to be software, Your Honor.
2 There's no such thing as a hardware hypervisor. Even if it's the so-called
3 bare-metal hypervisor, it's still software. This --

4 JUDGE SAINDON: Okay. But --

5 MR. FAHMI: You know whether it's loaded into RAM or not I
6 think in that instance, we're not sure, but it's still software.

7 JUDGE SAINDON: Okay so effectively this argument doesn't
8 really tie down one way or the other based on RAM. It's more, what is the
9 hardware and software line that we draw. Does that sound accurate?

10 MR. FAHMI: Yes, I think that's right, Your Honor. What we're
11 saying here is, you know, insofar as the Petition argues, the core switching
12 module is hardware. It's not. Because in either instance, it's loaded into
13 RAM. That's really what the crux of this argument is.

14 JUDGE SAINDON: Okay. Understood. Thank you.

15 MR. FAHMI: Yes.

16 JUDGE GIANNETTI: Judge Anderson, anything?

17 JUDGE ANDERSON: Yes, I do have one question that as far as
18 the person of ordinary skill in the art, your argument seems to be that the at
19 least means that the expert here is too qualified, too skilled and that means
20 what in terms of your positions in this case?

21 MR. FAHMI: Yes, thanks for asking, Your Honor. Let me see if I
22 can clarify for you. If you accept the definition where the person of ordinary
23 skill in the art has let's just say at least two years of experience, well that
24 means that a person with three years of experience is a person of ordinary
25 skill or ten years of experience is a person of ordinary skill or 15 or 20 or 30
26 years of experience is a person of ordinary skills.

1 There's no way to differentiate between the person of ordinary skill
2 and the expert. And that causes two problems. One, you can't take
3 Petitioner's declarant's testimony for any value because by definition, it's not
4 expert testimony. He has only ordinary skill. Number two, you now
5 viewing the claims and the specification and the teachings of the references
6 and the question of obviousness through the eyes or the lens of a person who
7 might have much more than ordinary skill. Right?

8 If that person's got 30 years of experience, they're going to view
9 things very differently than the person who has two years of experience.
10 Where do you draw the line? Basically what you've done is you've negated
11 the entire rationale for the level of ordinary skill by accepting a definition
12 that has no upper bound.

13 And we know from cases like Deere and KSR that it's only
14 ordinary skill that you're supposed to use as the lens through which you view
15 all of this, not an extraordinary skill.

16 JUDGE ANDERSON: You're not actually asking us to exclude
17 the testimony of Petitioner's expert are you?

18 MR. FAHMI: No, Your Honor. I mean, if you adopt the
19 definition, then if you adopt the definition that says at least, well then I think
20 you might have to. Right? You might have to throw out all of the testimony
21 because all of the testimony would only be from people of ordinary skill.
22 Right?

23 But we're not saying that's the right answer. We're saying the right
24 answer is strike at least, limit it to the two years and then take the testimony
25 for what it's worth just recognizing that, you know, Dr. Horst used a
26 different definition. And so you need to view his testimony from that

1 standpoint.

2 JUDGE GIANNETTI: Counsel, what do you think of the view
3 that their reading of this is really that that's a minimum requirement? And
4 that's what we've been using. I mean, I know there's some cases that take
5 issue with the use of the word at least, but I think if you look at our cases, I
6 think that the interpretation that says that this is viewed as a minimum
7 qualification have some merit. What do you think of that?

8 MR. FAHMI: I think that's wrong, Your Honor. I don't think it's a
9 floor.

10 JUDGE GIANNETTI: So, well --.

11 MR. FAHMI: Because if it's a floor, you have no idea where the
12 ceiling is and now you're in the problem I just described. So I, yes, I think it
13 is a real problem.

14 JUDGE GIANNETTI: Well I just have one more question for you.
15 Any further questions on this issue? I just have a question for you. I'd like
16 to go back to your Slide 11.

17 MR. FAHMI: Yes, sir.

18 JUDGE GIANNETTI: And, the Petitioner's argument that you're
19 addressing here is that a person of ordinary skill would have understood that
20 the hardware on which the disclosed hypervisor is installed corresponds to
21 the claimed power management hardware.

22 And I think you would agree that in order for the hypervisor to do
23 anything, there has to be associated hardware. Would you agree with that?

24 MR. FAHMI: Yes, sir, I would.

25 JUDGE GIANNETTI: Otherwise, it's just a piece of software that
26 doesn't do anything. Okay. Now you say well, okay, the hypervisor can't

1 control the hardware because it's below the kernel. Isn't that just one
2 embodiment of the hypervisor, the below the kernel?

3 Isn't there a description of the hypervisor in which it does not
4 operate below the kernel?

5 MR. FAHMI: Yes. No, the -- let me correct something you said,
6 Your Honor. We're not saying the hypervisor doesn't control the hardware.
7 We think in the instance where the core switching module is integrated with
8 the hypervisor, that combination definitely controls the hardware.

9 JUDGE GIANNETTI: Right.

10 MR. FAHMI: Okay? Our argument there is that is not the
11 operating system.

12 JUDGE GIANNETTI: All right.

13 MR. FAHMI: So when the hypervisor is installed above the
14 hardware, or excuse me, above the kernel and it's still the case as stated on
15 our Slide 12, that the operating system is not controlling the hardware. It's
16 handed over to the hypervisor whether it's above or below.

17 JUDGE GIANNETTI: Even though there is communication
18 between the operating system and the hypervisor I think is the --

19 MR. FAHMI: Yes. Even though there's communication in the
20 form of the call, yes.

21 JUDGE GIANNETTI: All right. Thank you very much. I don't
22 think we have any further questions so let's proceed with the Petitioner's
23 rebuttal case, Mr. Lewis. You ready to go forward?

24 MR. LEWIS: I am, Your Honor.

25 JUDGE GIANNETTI: Whenever, sir.

26 JUDGE SAINDON: If I could interrupt. One point. I gave the 19

1 minutes was remaining of the 50 that you had reserved for your main
2 argument. In actuality, you have 29 minutes.

3 MR. LEWIS: Okay. Thank you, Your Honor. I don't think that I
4 will use all of that time. Let me start I think with the discussion that the
5 Patent Owner raised about the definition of a person of ordinary skill in the
6 art.

7 I'm struggling with this for a few reasons, but probably chief
8 amongst them is that I don't see how the distinction makes a difference
9 because Patent Owner has not explained how any of the particular opinions
10 that are offered by Dr. Horst would be different or incorrect based on
11 whether the person of ordinary skill in the art has exactly two years or has at
12 least two years of experience in the field.

13 And so that's the reason why I personally have struggled with it.
14 Without a reason to understand why the different definitions form of
15 ascension, I'm not sure how to properly address it. And if the Board wants
16 me to expound upon it further, I will attempt to do so.

17 Regarding the control of the power management hardware by the
18 operating system in the claims of the '080, you looked at the exact language
19 of the limitation, bottom of the second part of Claim 1 where it says power
20 management hardware too and then it skips on to a wherein clause.

21 Wherein, an operating system to execute on the multi-core
22 processor is to monitor a demand for the multi-core processor and control
23 the power management hardware based on the demand. Respectfully, I
24 believe that the Patent Owner is adding limitation that does not exist in the
25 claim language that the operating system is controlled direct.

26 That there could be, I don't know, nothing in between and that

1 missing limitation is probably missing for a reason because of what level of
2 directness is required. I think that would probably, you know, that would
3 lack definiteness because you wouldn't be able to tell exactly how much
4 control is thus direct control if it does not include sending a system call that
5 actually effectuates the change of claim language responded so.

6 Regarding the four switching modules being loaded into RAM, I
7 think that the Board has already addressed that with this question, but I
8 wanted to just sort of go back to it and make sure. The paragraph in
9 question is paragraph 256 of the Sutardja reference, the '740 Patent.

10 And it says, actually I have a slide on it somewhere. All right. So
11 is it, right, Slide -- sorry, Slide 16. Paragraph 256 of the Sutardja reference,
12 we address this in our opening argument and I believe that the Board
13 questions indicated that the issue is understood that this is a and I'll -- that
14 the Patent is disclosing a potential embodiment or depending on whether the
15 cores involves integrated the hypervisor model 213.

16 These things can be loaded into RAM after the -- I don't read the
17 Sutardja reference the same way that my brother-in-law does, but I do
18 believe that this is a disclosure that is, it comports with these models being
19 hardware or at least controlling underlying hardware as we mentioned in our
20 Petition.

21 You had asked me for the page for that, that is at the bottom of
22 Page 33 and continuing to 34. And I know the Board had saw that because
23 they mentioned that in the questions to the Patent Owner of the quote is as a
24 POSITA would have understood that the hardware which the disclosed
25 hypervisor is installed corresponds to the claimed power management
26 hardware and that is our position.

1 With respect to the and going back to the RAM, loading these
2 modules into RAM and therefore they can't be hardware. I don't think that is
3 the true, Your Honors. I think that actually is reminiscent in my mind of
4 BIOS which is the epidemic check when we prove up a computer, it loads
5 that in the brain and forms a layer below the operating system.

6 The operating system is not justified the BIOS. BIOS controls
7 were the opposite goes and we do have examples in the art of hypervisors
8 being installed in BIOS. I'm not sure I have any other points.

9 I did hear counsel speaking briefly about Mathieson and operating
10 transparently to the operating system and let me see which slide that is.
11 Okay. And I mentioned that the Patent Owner -- actually, let's go to Slide
12 30.

13 The Patent Owner is hinging the argument that the transition from
14 a person of second mode can be transparent to high level software and it
15 includes in the, in Mathieson reference that it could be the operating system.
16 I think that we are reading too much into that.

17 This is an embodiment. If you look about two-thirds down at
18 paragraph 43 on Slide 30, it says still further embodiments, the processing
19 state may be directly transferred to the other set of cores via a dedicated bus,
20 where the processing state is not stored in any memory unit when switching
21 between the two sets of cores.

22 That's the context for that sentence where it says the transition
23 from the first mode to the second mode may be transparent depending on the
24 software including the operating system. But that doesn't negate what is
25 disclosed in paragraph 30 which is shown on Slide 31.

26 When the controller is implementing software executed by the

1 CPU, that is where it's indicating that it can be and it is disclosed within an
2 embodiment where the operating system is doing the control.

3 And to kind of put some context on the dichotomy here that it's
4 either controlled by software in which it will be, you know, rendering
5 unpatentable or is not controlled by the operating system which
6 demonstrates it's not rendered unpatentable, both of those things controlled
7 by the software and controlled by the hardware, a system can do both.

8 In fact, it probably would do both because a system that is well
9 designed is going to recognize when it needs more processing power with
10 the operating system is all about. Just same way like I just took a breath. If
11 I don't think about taking a breath, my body will still breathe.

12 But if I'm about to dive into a water, I can send a signal to my
13 lungs saying stop breathing for a moment. And when I stop saying that
14 signal, I will automatically start breathing again with what I'm thinking
15 about.

16 I think this is what's going on in most of these references in the
17 '080 and the Sutardja and the Mathieson. The software calls are not
18 necessarily to the exclusion of the hardware figuring out that it needs more
19 processing power on its own.

20 But the software calls are disclosed as being an alternative that's
21 available so that, you know, I think Mathieson discusses it in terms of
22 application type. If the application type calls for an extra set of umph from
23 the processor, then that operating system can send that signal to the
24 processor to warm up the high-powered cores and get started. If the Board --

25 JUDGE SAINDON: This is Judge Saindon. I'm going to jump in
26 here with a question. Am I to understand your position is that because it

1 says “software,” that has to be, in and of itself, an operating system?

2 Or that it just provides exposure to the operating system to be
3 controlled? I'm having a hard time seeing where the operating system comes
4 in here.

5 MR. LEWIS: Thank you for the question, Your Honor. I am
6 going to have to look back at the Petition for a little, but I think that it at
7 least it renders obvious that the Mathieson reference is disclosing that the
8 software ability to control the power -- to control the high power, low power
9 cores would be operating system available.

10 I would probably have to spend a couple of minutes studying the
11 Petition to find an exact citation for you there unfortunately.

12 JUDGE SAINDON: That's okay. I can go back and look at that
13 later. Is your position that it's not explicitly disclosed, but it would have
14 been obvious and you provide some sort of rationale for that? Or is your
15 position an either/or? What I just said or it directly discloses an operating
16 system?

17 And if it's this latter one, I'm just having a hard time seeing where
18 the operating system comes in looking at your Slide 31.

19 MR. LEWIS: I don't want to concede that it doesn't say an
20 operating system because I'm not sure that that's, I don't think that's our
21 position. But I do think that this disclosure in paragraph 30 does indicate
22 that the control of the high power and low power core mix can dump the
23 software and it is a direct disclosure then that the software could do it.

24 JUDGE SAINDON: And I guess going back to my first question,
25 is disclosure of software in and of itself a disclosure of an operating system?
26 Is that what you're resting your conclusion on?

1 MR. LEWIS: Again, I apologize. I'm not sure off the top of my
2 head. I think that if I had read this section of the Petition again, I could give
3 you a better citation for that position. But I don't want to concede right now
4 that this is not disclosure of an operating system while --

5 JUDGE SAINDON: Okay.

6 JUDGE GIANNETTI: Any further questions for Mr. Lewis?
7 Okay, thank you, Mr. Lewis. Sur-rebuttal, Mr. Fahmi?

8 MR. FAHMI: Thank you, Your Honor. Mr. Lewis began his
9 remarks by indicating he wasn't sure what the difference was with respect to
10 our complaints about the Petitioner's definition of a person of ordinary skill
11 in the art.

12 But then he went on to talk about what that person of ordinary skill
13 in the art would and wouldn't understand. And the whole case is based on
14 what a person of ordinary skill in the art would understand. Right? That's
15 the entire substance of Dr. Horst's testimony.

16 And that's the problem with their definition. Their definition
17 admits that a person of ordinary skill in the art with untold years of
18 experience is that person. And --

19 JUDGE GIANNETTI: Counsel, let me -- I think I understand your
20 position on this, but have you objected to anything? I mean, I don't recall
21 any evidentiary objections to the expert's testimony.

22 MR. FAHMI: There's no --

23 (Simultaneous speaking.)

24 JUDGE GIANNETTI: Or any specifics, any specifics on how this
25 alleged defect in the definition has led to a, to a result that favors your client.
26 I haven't seen anything.

1 MR. FAHMI: Yes, there's no evidentiary objection, Your Honor.
2 Our point was --

3 JUDGE GIANNETTI: Well what, what's before us then? What
4 are you asking us to do?

5 MR. FAHMI: Well very simply, Your Honor. Dr. Brogioli
6 limited his testimony to an understanding that a person of ordinary skill in
7 the art has two years of experience and --

8 JUDGE GIANNETTI: I know. I know exactly what your point is,
9 but what are you asking us to do? There's nothing before us, no Motion to
10 Strike, no Motion to Exclude, not even an objection.

11 MR. FAHMI: I'm asking --

12 JUDGE GIANNETTI: What are we, what are you asking us to
13 do?

14 MR. FAHMI: I'm asking you to assess obviousness based on that
15 limited amount of experience.

16 JUDGE GIANNETTI: Oh.

17 MR. FAHMI: That's the lens through which you should be
18 viewing this case.

19 JUDGE GIANNETTI: Okay. I don't --

20 MR. FAHMI: I --

21 JUDGE GIANNETTI: Are you, are you, are you contending that
22 we didn't do that or we haven't done that? I --

23 MR. FAHMI: You're going to have to weigh the testimony here,
24 Your Honor. Right? That's going to be what makes up the decision.

25 JUDGE GIANNETTI: Yes.

26 MR. FAHMI: When you're taking that analysis, I think this is part

1 of the thing that has to factor into that analysis.

2 JUDGE GIANNETTI: All right. I think you made your point, but
3 again, I don't see anything that we have to rule on specifically. I have a
4 question for you on your operating system proposed definition or
5 construction if you will.

6 How does that affect the outcome of this case? If we were to
7 accept your dictionary definition, would that have any effect on the outcome
8 of the case and if so, what would that be?

9 MR. FAHMI: I think where it has effect, Your Honor, is the idea
10 that insofar as the Petitioner would like you to view Sutardja as hypervisor
11 as an operating system or Mathieson's controller as an operating system that
12 would affect your decision.

13 JUDGE GIANNETTI: Okay, in what way? So will you just take
14 me through, take me through your proposed construction and tell me how
15 that would affect that analysis.

16 MR. FAHMI: Right. So the hypervisor, for example, doesn't
17 control the memory or any of the IO and so it doesn't meet the requirements
18 of an operating system.

19 JUDGE GIANNETTI: The control aspect?

20 MR. FAHMI: Correct. The --

21 JUDGE GIANNETTI: But was there really a dispute that an
22 operating system should control something? Is that really a dispute? Is
23 there a dispute about this, about this construction?

24 MR. FAHMI: I don't know that there's a dispute about the
25 construction. It's just that the Petitioner didn't propose one.

26 JUDGE GIANNETTI: Well we normally don't make

1 constructions unless they're necessary for us to resolve a dispute.

2 MR. FAHMI: Yes, I think --

3 JUDGE GIANNETTI: Your point, can you point to a dispute here
4 that would drive us to enter this construction?

5 MR. FAHMI: So the main dispute you have to resolve, Your
6 Honor, with respect to Sutardja is what's controlling the hardware? Right?
7 Is what's controlling the hardware an operating system or not an operating
8 system? To answer that, I think you should know what an operating system
9 is.

10 JUDGE GIANNETTI: But is that disputed? I mean, there may be
11 a dispute over whether there's control or not, but is there really a dispute
12 over whether an operating system means that there is control? I don't think
13 there is.

14 MR. FAHMI: Well there's a dispute I think, Your Honor, about
15 what is in control. You're right. If you don't think you need to define an
16 operating system in order to know what's in control, I guess you could reach
17 that decision.

18 JUDGE GIANNETTI: Well I'm looking for some guidance from
19 you about why we should accept this construction and if we do, where that
20 leads us in terms of the analysis and it sounds like the dispute is over
21 whether there is control or not.

22 Not whether an operating system exercises control. That's a
23 feature of an operating system.

24 MR. FAHMI: Well, Your Honor, let's say you come to the
25 conclusion that the core switching module of Sutardja is what controls the
26 hardware.

1 JUDGE GIANNETTI: Yes.

2 MR. FAHMI: Is that an operating system or not? We say it's not.

3 JUDGE GIANNETTI: Well I thought there was also an issue as to
4 whether the control has to be direct or not.

5 MR. FAHMI: You know, with respect to --

6 (Simultaneous speaking.)

7 JUDGE GIANNETTI: And this definition, this construction
8 doesn't really help me on that.

9 MR. FAHMI: All right. I agree. There hasn't been a dispute
10 between the parties as to this idea of direct control. I think that arose out of
11 one of your questions.

12 JUDGE GIANNETTI: Well I think that arose, it arose out of your
13 argument is where it arose. It is, it seems to me implicit in your argument.

14 MR. FAHMI: It's not. It's not. I mean, our argument is that the
15 operating system is not what is controlling power management hardware,
16 that it's the core switching module that's doing the control. The operating
17 system makes a call. There's no dispute about that. And there's no dispute
18 about a call being a request.

19 JUDGE GIANNETTI: All right. Well I think I see your point, but
20 I'm still puzzling over your proposal here. This may be a non-issue in the
21 case, but I'll reserve on that. All right, anything further from the panel? All
22 right, I think that wraps it up.

23 And we will, well, I'll ask the parties to stay on the line with the
24 Court Reporter in case there are any spellings or other things that need to be
25 resolved. I will say this, Mr. Lewis, we have another argument coming on
26 this afternoon and I had some problems with your audio.

1 You might want to check that during the break here between now
2 and 2 o'clock when we will resume with our second case.

3 MR. LEWIS: Again, my apologies for that, but rest assured that I
4 will.

5 JUDGE GIANNETTI: Okay. I think it's to your advantage to
6 have the clearest audio you can have. All right, I think that wraps it up. I
7 thank counsel, The panel will take the case under submission. I think the
8 panel can sign off and the parties will stay on the line with the Court
9 Reporter.

10 Thank you very much for your arguments. I thought this was a
11 very helpful argument and helped the panel understand the case and your
12 positions. And with that we are adjourned and we will resume with our
13 second case at 2 o'clock this afternoon. Thank you all.

14 (Whereupon, the above-entitled matter went off the record at 11:30
15 a.m.)

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