

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ADVANCED MICRO DEVICES INC.
AND PENSANDO SYSTEMS INC.

Petitioners, Case No.
IPR2025-00223

v. U.S. Patent No.
10,985,943

CONCURRENT VENTURES, LLC
AND XTREAMEDGE, INC.,
Patent Owner.

_____)

VIDEOTAPED DEPOSITION OF DONALD ALPERT, Ph.D.

January 16, 2026
9:04 a.m. Pacific Time

Reported by: Lori J. Goodin, RPR, CRR, RSA,
California CSR #13959

Job No. 00175120

2 1 VIDEOTAPED REMOTE DEPOSITION of 2 DONALD ALPERT, Ph.D., 3 in the above-titled action, held on Friday, 4 January 16, 2026, commencing at approximately 5 9:04 a.m. before Lori J. Goodin, RPR, CRR, RSA, 6 California CSR #13959, Registered Professional 7 Reporter, Certified Realtime Reporter, Realtime 8 Systems Administrator, and Certified Shorthand 9 Reporter, and Notary Public of the State of 10 Florida, State of California, and District of 11 Columbia. 12 13 14 15 16 17 18 19 20 21 22	4 1 INDEX TO EXAMINATION 2 3 WITNESS: DONALD ALPERT, Ph.D. 4 5 6 EXAMINATION BY PAGE 7 MR. JACOBS 6 8 MR. LIANG 109 9 10 11 12 13 14 15 16 17 18 19 20 21 22
3 1 REMOTE APPEARANCES: 2 3 FOR THE PETITIONERS: 4 REICHMAN JORGENSEN LEHMAN & FELDBERG LLP 5 BY: MICHAEL MATULEWICZ-CROWLEY, ESQUIRE 6 400 Madison Avenue, Suite 14D 7 New York, New York 10017 8 212-381-1965 9 mmalewicz-crowley@reichmanjorgensen.com 10 AND 11 REICHMAN JORGENSEN LEHMAN & FELDBERG LLP 12 BY: ZACH JACOBS, ESQUIRE 13 1909 K Street, NW, Suite 800 14 Washington, D.C. 20006 15 202-894-7310 16 zjacobs@reichmanjorgensen.com 17 18 19 20 21 22 FOR THE PATENT OWNER: SHEPPARD MULLIN BY: JEFFREY LIANG, ESQUIRE BY: MICHAEL ETNYRE, ESQUIRE BY: FRED CHUNG, ESQUIRE 1540 El Camino Real, Suite 120 Menlo Park, California 94025 650-815-2600 jliang@sheppardmullin.com metnyre@sheppardmullin.com fchung@sheppardmullin.com	5 1 INDEX TO EXHIBITS 2 DONALD ALPERT, Ph.D., Ph.D. 3 Advanced Micro Devices, Inc., et al. v. 4 Concurrent Ventures, LLC, et al. 5 Friday, January 16, 2026 Lori J. Goodin, RPR, CRR, RSA, California CSR #13959 PREVIOUSLY MARKED EXHIBITS 6 PRIOR MARKED EXHIBITS FIRST REFERRAL 7 Exhibit 1001, '943 patent 10 8 Exhibit 1003, Dr. Alpert's 9 Declaration 10 10 Exhibit 1004, Seshadri 62 11 Exhibit 1006, Atsatt 92 12 Exhibit 1053, errata 110 13 14 (Previously marked exhibits retained by counsel.) 15 16 17 18 19 20 21 22

6 1 FRIDAY, JANUARY 16, 2026, 9:04 a.m. 2 PROCEEDINGS 3 * * * 4 Whereupon, 5 DONALD ALPERT, Ph.D., 6 a witness called for examination, having been 7 first duly sworn, was examined and testified as 8 follows: 9 * * * 10 THE REPORTER: Unless an objection 11 is heard at this time, all parties to this 12 deposition are appearing remotely and have 13 agreed to the witness being sworn in 14 remotely. 15 * * * 16 EXAMINATION 17 BY MR. JACOBS: 18 Q. Good morning, Dr. Alpert. How are 19 you? 20 A. Good, okay. That is Mr. Jacobs, I 21 guess, that will be conducting the examination. 22 Q. Yes -- and since, at least I saw you	8 1 right now? 2 A. No, no one is here. 3 Q. And, can you agree not to 4 communicate with your counsel during the course 5 of this deposition? 6 A. Yes, I do agree. 7 Q. Okay. And, I know last time you had 8 a binder made of the relevant materials. 9 Is that also the case this time? 10 A. Yes. I have three binders. One for 11 the papers and two for various exhibits. 12 Q. Okay. Just like last time, I'm also 13 going to drop the relevant exhibits in the Chat 14 for us to have electronically. I don't 15 personally care if you look at the paper copies 16 or the electronic copies. 17 However, if you are looking at 18 something on paper, please let me know what you 19 are looking at, so we can make sure we are 20 looking at the same thing. 21 A. Okay. Yes, I will do my best for 22 that.
7 1 a few weeks ago, I don't think I was on video, I 2 don't think I need to ask you if you have been 3 deposed before. 4 But, I do want to remind you of a 5 few things. So, first, do you remember you are 6 under oath and you have agreed to tell the truth? 7 A. Yes. That was less than a minute 8 ago. I definitely remember that, yes. 9 Q. Okay. And, if you don't understand 10 anything in my questions, please let me know. 11 Otherwise, I will assume you have understood the 12 question. 13 A. Okay. I understand that. Yes. 14 Q. If you need to take a break at any 15 time, just let me know. 16 Just make sure, if we do take a 17 break, that you finish answering the question 18 that is pending. 19 A. Okay. 20 Q. And because this is a remote 21 deposition, I just want to confirm. 22 Is anyone else in the room with you	9 1 Q. Sure. And, just lastly, make sure 2 that any other programs on your computer are 3 closed and you don't access the internet during 4 this deposition. 5 A. Yes. I mean, of course the internet 6 is being used for Zoom. But, I don't, actually I 7 should say -- the only thing I have open is the 8 browser that I use to connect and Acrobat and 9 Zoom. 10 Q. Okay. That is fine. 11 Jumping in, what did you do to 12 prepare for this deposition? 13 A. To prepare for the deposition, I 14 reviewed my deposition and the exhibits 15 associated with this IPR. 16 And I also met with the attorneys 17 from Sheppard Mullin. 18 MR. JACOBS: Okay. And, I'm going 19 to get us started by dropping in what are 20 marked Exhibit 1001 and 1003 in the Chat, 21 which are respectively your -- the '943 22 patent as well as your report.

10 1 (Whereupon, previously marked 2 Exhibit 1001, 3 first referral.) 4 (Whereupon, previously marked 5 Exhibit 1003, 6 first referral.) 7 BY MR. JACOBS: 8 Q. And I will just give you a moment. 9 Let me know when you have those pulled up. 10 A. All right. I have got both of those 11 open and I'm looking off to the left side because 12 I've got a separate screen over here with the PDF 13 documents. 14 And I have seen that those are 15 searchable, so I will be referring as we talk 16 about it, various times at the electronic copy or 17 the paper copy I've got in front of me. 18 Q. Okay. That works for me. 19 Let's start by looking at the '943 20 patent, which is Exhibit 1001, and let's take a 21 look at the claim language, specifically Claim 1. 22 And let me know when you are there.	12 1 analysis of the Seshadri reference. Seshadri 2 teaches the programmable device in a user 3 configurable server with swappable odds or cards. 4 For example, Seshadri discloses a 5 programmable circuit, e.g., an FPGA. Seshadri 6 uses the FPA in a configurable computing system 7 with configurable devices that allow remote users 8 to configure the server by loading custom logic 9 on FPGAs for client virtual machines to utilize. 10 Another example where I have applied 11 the plain meaning of programmable device is for 12 the Atsatt-113 reference. 13 Q. Dr. Alpert, just to be clear, I'm 14 not asking about how you are applying that to the 15 prior art references. 16 I'm just asking you -- 17 A. All right. Yes, but I would like to 18 complete the answer to the previous question. 19 Unless you want to drop the question. I'm not 20 sure. 21 Q. I will give you the opportunity to 22 complete it, but I am going to narrow it in a
11 1 A. Yes, I've got the paper copy for 2 Claim 1 over here. 3 Q. Okay. Dr. Alpert, the claims 4 require programmable logic device, right? 5 A. Yes. 6 Q. And, they require a, specifically a 7 programmable device, right? 8 A. There is a programmable device that 9 is recited in the preamble. I think that might 10 be what you are referring to. 11 Q. Yes. What is the programmable 12 device recited in the preamble? 13 A. Well, a programmable device, as it 14 is recited in the preamble, would be a device 15 that satisfied the claims -- the claim elements 16 that are recited below. 17 Q. Okay. So, I guess, what does a 18 programmable device mean? 19 A. I applied the plain meaning for 20 programmable device. 21 And so, for example, I have applied 22 the plain meaning for programmable device for my	13 1 moment. 2 A. Atsatt-113 teaches a programmable 3 device. For example, Atsatt-113 states that its 4 disclosure relates generally to configuration of 5 programmable devices such as field programmable 6 arrays. Yes. 7 Q. Okay. So, to be clear, my question 8 wasn't how you were applying that to the prior 9 art references. 10 I am specifically asking, what does 11 a programmable device mean to a POSITA? Because 12 you said that you are applying the plain meaning 13 of that. So, I am trying to understand, what is 14 the plain meaning. 15 A. I am just looking in the patent for 16 a moment now. '943 patent. 17 Q. Sure. 18 A. For example, the '943 patent does 19 give an example of a programmable device. This 20 is at -- I was just going to cite to Column 4. 21 The sentence beginning at Line 39. 22 It says in Figure, "In Figure 3, the

14 1 programmable device is an FPGA 122 in a pod, for 2 example, mounted to a printed circuit board that 3 is one of one or more printed circuit boards in 4 the pod 104. 5 "But the programmable device could 6 also be in a card. In some embodiments of the 7 server, the majority of the pods or all of the 8 pods and a majority of the pods or all of the 9 cards present in the system." 10 Each have a programmable device 11 similar to the one depicted in Figure 3. 12 So again, considering the disclosure 13 of the patent, I have applied the plain meaning 14 of programmable device. In my analysis of the 15 prior art in Seshadri, Seshadri teaches a 16 programmable device in a user configurable server 17 with swappable pods or cards. For example, 18 Seshadri discloses a programmable circuit, e.g., 19 and FPGA. 20 Seshadri uses the FPGA in a 21 configureable computing system with configurable 22 devices that allows remote users to configure the	16 1 an ASIC? 2 A. Looking at the patent again 3 describing Figure 3 at Line 30, the '943 patent 4 explains, "The programmable device could be, for 5 example, an FPGA as depicted here, a PLD or an 6 ASIC, or more than one of these or some 7 combination of these, or other programmable 8 device that can configure electronic circuitry in 9 some versions including one or more processors or 10 controllers." 11 And so, in my analysis, I have 12 considered the plain meaning of a programmable 13 device. And in my analysis, for example, of 14 Seshadri -- 15 Q. And Dr. Alpert, just to be clear, I 16 want you to have the opportunity to give your 17 opinion. 18 But, we are going to be here all day 19 if we keep moving back and forth between my 20 question and your analysis for the references. 21 So, my question was specifically, 22 just about the plain meaning, not as it is
15 1 server by loading custom logic on FPGAs for 2 client virtual machines to utilize. 3 Another example where I have applied 4 the plain meaning is for Atsatt, the Atsatt 5 reference. Take a moment here. 6 Atsatt teaches a programmable 7 device. For example, Atsatt-113 states that it 8 is disclosure relates generally to configuration 9 of programmable devices such as field 10 programmable gate arrays, FPGAs. Okay. 11 Q. Okay. So, in that answer that you 12 just gave me, what is the plain and ordinary 13 meaning of programmable device? 14 Because, I understand that you just 15 read part of the patent as well as how you are 16 applying that for two of the references. 17 But, as a person of ordinary skill, 18 what is your understanding of the meaning of 19 programmable device? 20 Are you saying that the programmable 21 device in the claim is either a PLD or an FPGA, 22 or are you saying it is something different, or	17 1 applied to the prior art references. 2 So, if you feel there is more you 3 need to add about your understanding of the plain 4 meaning, please go ahead. But, we are also going 5 to dive into the substances substantively very 6 shortly. 7 A. Okay. So, the '943 patent, 8 Column 4, beginning at Line 30 says, "The 9 programmable device could be, for example, an 10 FPGA as depicted here, a PLD or an ASIC, or more 11 than one of these or some combination of these or 12 other programmable device that can configure 13 electronic circuitry in some versions including 14 one or more processors or controllers." 15 So, that is an example or multiple 16 examples of a programmable device that the '943 17 patent teaches. 18 And, I looked for comparable, for 19 the same devices in the prior art. 20 BY MR. JACOBS: 21 Q. Okay. So, to be clear, and this is 22 your opportunity to give your understanding of

18 1 the plain and ordinary meaning, your 2 understanding is that section that you are 3 quoting in the patent about Figure 3, right? 4 A. That portion that I quoted is giving 5 examples of what would be programmable device. 6 And I -- in my analysis of the prior art, I 7 looked for some of the same examples, in 8 particular, an FPGA. 9 Q. Okay. So, bringing it back to the 10 claim language in the '943 patent. It specifies 11 that the programmable device is a programmable 12 logic device having a first region and second 13 region, right? 14 A. Well, I guess I see it says that the 15 programmable device is comprising a programmable 16 logic device, PLD having a first region and a 17 second region. 18 So, my understanding is that the -- 19 what this claim is requiring is that a 20 programmable logic device be part of the 21 programmable device. 22 Q. Okay. What is an FPGA?	20 1 Configurable Logic Device? 2 A. And the question was what, how is 3 what different from a CLD? 4 Q. What is a CLD -- have you heard of 5 CLDs before? 6 A. I have heard of CLDs. And I have 7 explained that a PLD is, in quoting the JEDEC 8 standard is an integrated circuit consisting of 9 an array of logic elements whose interconnection 10 pattern can be programmed, either mass programmed 11 or user programmed, to perform specific logic 12 functions. 13 And so, if a CLD satisfied that 14 requirement, that it was an integrated circuit 15 where the user can alter the connection pattern 16 of the circuits, then a CLD would also be a PLD. 17 Q. Okay. What do you mean in 18 Paragraph 6? You say that, "FPGAs contain 19 programmable logic blocks and programmable 20 interconnects." 21 What is the difference between a 22 logic block and an interconnect?
19 1 A. FPGA is an acronym. It stands for 2 Field Programmable Gate Array. 3 Q. And what is the difference between 4 an FPGA and a PLD? 5 A. I was just looking at, in my 6 deposition a portion where I covered information 7 related to your questions -- to your question, 8 sorry. 9 Okay. Could I just hear the 10 question again? 11 Q. Yes. What is the difference between 12 an FPGA and a PLD? 13 A. All right, an FPGA is the type of 14 PLD. 15 And a PLD, Programmable Logic 16 Device, means an integrated circuit where the 17 user can alter the connection pattern of the 18 circuits. 19 And an FPGA satisfies that, can 20 alter connection pattern, but there is additional 21 logic blocks within an FPGA that can be altered. 22 Q. How is that different from a CLD,	21 1 A. Well, generally an FPGA would 2 include programmable logic blocks. They are 3 often called LUTs, or Lookup Tables. 4 And the interconnects would be the 5 wires and switches that interconnect those 6 blocks. 7 And so, for example, there is -- the 8 following Paragraph 7 or in the middle of 9 Paragraph 7 of the declaration, there is a block 10 diagram for -- it says generic FPGA architecture. 11 And in that diagram, the 12 programmable logic blocks are the squares or 13 rectangles in blue, and you can see those blocks 14 have input and output to the matrix of wires. 15 And those wires are coupled, 16 selectively coupled by the, I guess it is maybe 17 an octagon that is also in blue of switches that 18 allow one wire to be connected to another wire 19 that is arriving at the switch. 20 Q. So, an interconnect connects the 21 logic blocks together? 22 A. The interconnect --

22 1 MR. LIANG: Objection to form. 2 THE WITNESS: The interconnect 3 connects the logic blocks. Also the 4 input/output for the FPGA and in particular 5 that, for an FPGA or for a PLD, that 6 interconnect is programmable. The 7 configuration of the switches can change the 8 hardware circuitry of the switch in order to 9 direct the signals, one path or another. 10 BY MR. JACOBS: 11 Q. Okay. So, is that a yes, the 12 interconnect is connecting the logic blocks which 13 are comprising the configurable circuit? 14 MR. LIANG: Objection to form. 15 THE WITNESS: The purpose of the 16 interconnect is to interconnect the logic 17 blocks. 18 The interconnect also can be used to 19 connect the input and output of the FPGA, and 20 the interconnect has switches that allow the 21 pattern of the interconnection to be altered. 22 BY MR. JACOBS:	24 1 particularly? 2 Q. Okay. So, when an FPGA is 3 reconfigured, the logic -- the pattern of the 4 logic blocks changes; is that right? 5 A. No. I believe that I was referring 6 to the function of the logic blocks, the 7 input/output function of the logic blocks. 8 The pattern that has changed that I 9 mentioned is associated with altering the 10 physical hardware interconnections. 11 Q. So, does the function of the logic 12 blocks change because the interconnections are 13 modified? 14 I'm just kind of trying to 15 understand what happens from a technical 16 perspective because I don't have a computer 17 science background, for the record. 18 A. Sure, sure. So, what happens is 19 there is, if it is an FPGA, then there is 20 programming or reprogramming that occurs for the 21 programmable logic blocks. As I mentioned that 22 is commonly a lookup table.
23 1 Q. What is a logic block? 2 A. In this context, I was talking about 3 programmable logic block. 4 And the FPGAs generally have, as I 5 have mentioned, it is shown kind of in the 6 rectangle in this figure at, in the middle of 7 Paragraph 7. 8 They generally have some logic 9 function that can be configured or programmed. 10 It is often -- it is very commonly in the form of 11 what is called a lookup table. 12 So, there is a memory that is 13 programmed that can alter the physical circuits 14 so that they will produce one logic function or 15 another. 16 Q. I guess this is a bit of like a high 17 level or technical question. 18 But, like, what is actually 19 happening when it is being reconfigured? 20 A. You said when it is being 21 reconfigured? 22 And what is it that you mean	25 1 So, there would be a memory that 2 would be programmed within that lookup table. 3 And based on the memory, that would 4 alter the operation of the circuit so that the 5 output function that it produces, given a certain 6 input, the input would be altered. 7 Now, one way that the FPGA operates 8 is that more complex functions can be implemented 9 by interconnecting those logic blocks. 10 And, the interconnection between the 11 logic blocks is configured or programmed by, 12 again, commonly by programming SRAMs that do 13 change the circuitry within the interconnection 14 so that different outputs could go to different 15 inputs in other logic blocks. 16 Q. What did you mean by the more 17 complex functions can be implemented by 18 interconnecting those logic blocks? 19 A. Well, for example, logic block could 20 produce a logic function of three inputs to 21 produce one output. That is just an example. 22 And, you could connect multiple

26 1 logic blocks, for example, to produce two outputs 2 from six inputs, just a hypothetical example 3 there. 4 But, there are more complex 5 functions that are implemented on an FPGA, more 6 complex than that of a single programmable logic 7 block by programming the interconnection of the 8 outputs of one block to the inputs of one or more 9 other blocks. 10 Q. Okay. So, by changing these 11 interconnecting logic blocks, FPGA is 12 reconfigured? 13 A. Can you just repeat that again? 14 Q. Yes. I'm just making sure I 15 understand. 16 A. Yes. 17 Q. So, it is through this changing of 18 the logic blocks and interconnects, that is how 19 the PLD or the FPGA is reconfigured? 20 A. Reconfiguring in the FPGA, yeah, it 21 would involve changing the program of the logic 22 blocks and of the interconnects. Although, I	28 1 region. 2 Another example where I have applied 3 the plain meaning of sandbox is for the Atsatt 4 reference. Atsatt-113 teaches the second region, 5 e.g., the programmable logic sectors of Atsatt, 6 comprising one or more sandboxes. 7 For example, the programmable logic 8 sectors comprise logical groupings within the 9 programmable fabric of the FPGA. Atsatt-113 10 teaches grouping the sectors into partitions for 11 different users to load dedicated logic 12 performing different functions into their 13 particular partitions. 14 Q. Okay. So, I asked for your 15 understanding of the plain and ordinary meaning 16 of the sandbox, and you gave me two examples. 17 One is from the Seshadri reference and one from 18 the Atsatt reference. 19 So, are you saying that your 20 understanding of the plain and ordinary meaning 21 is what those two references disclose? 22 A. I am saying that I have applied the
27 1 suppose it is possible, again hypothetically, in 2 some cases you might change only one of them. 3 But, in the general cases that you 4 are changing the program or configuration of both 5 the logic blocks and the interconnection 6 circuits. 7 Q. Got it, okay. 8 So, let's actually jump back to the 9 claim language now of the '943 patent. 10 And I want to direct your attention 11 to, I guess it is Limitation 1C where it 12 references sandboxes. 13 A. Yes. 14 Q. Okay. What is a sandbox? 15 A. For sandbox, I have applied the 16 plain meaning. And, for example, one application 17 of the plain meaning for sandbox is for Seshadri, 18 the prior art reference Seshadri. 19 Seshadri teaches the second reaching 20 comprising one or more sandbox. For example, 21 Seshadri discloses expressly sandboxing of the 22 client configurable circuit which is the second	29 1 plain and ordinary meaning. And those are 2 examples that satisfy the plain and ordinary 3 meaning. 4 Q. So, what is the plain and ordinary 5 meaning? 6 A. To the patent for a moment, 7 the '943 patent. At the '943 patent, Column 5, 8 is an explanation beginning at Line 19. 9 It says, "Each of one or more 10 sandboxes 132 on FPGA 122 is designated for 11 programmable electronic circuits which could 12 include analog circuitry, digital circuitry, 13 memory, one or more processors or controllers, et 14 cetera, in various combinations with the intent 15 of providing user programmable functionality for 16 user customization of one or more pods of cards. 17 "For example, a user could define an 18 analog, digital or mixed signal hardware module 19 or a software module in embodiments with 20 processor, controller, availability in the FPGA 21 122 or more than one of these or some 22 combinations of these in one or more sandboxes

30 1 132." 2 So, that is an example from the 3 patent of what is a sandbox. 4 And again, in my -- I have applied 5 the plain meaning for sandbox in my analysis of 6 Seshadri. 7 Seshadri expressly discloses 8 sandboxing of its client configurable circuits. 9 Seshadri explains that the shell 10 logic may provide encapsulation or sandboxing of 11 client configurable circuit so that one client 12 may not obtain secure information associated with 13 the operation of another client's logic. 14 Another example that I have provided 15 is for Atsatt-113. Atsatt-113 provides express 16 teachings, suggestion of -- to combine the 17 partitions. That is a separate issue. 18 So, Atsatt-113 teaches the second 19 region comprising one or more sandboxes. 20 For example, the programmable logic 21 sectors comprise logical groupings within the 22 programmable fabric of the FPGA.	32 1 Q. Okay. You said that you don't 2 believe a construction is necessary of sandbox 3 for this IPR, right? 4 A. That is what I have said, yes. 5 Q. Okay. And, your opinion that a 6 construction is not necessary is because you 7 think there is a plain and ordinary meaning of 8 sandbox? 9 A. I think there is a plain and 10 ordinary meaning, yes. That does include the 11 explanation, for example, that is given in the 12 patent, what is that Column 5, beginning 13 Column 5, Line 19. 14 Q. So, aside from that example in the 15 patent that a sandbox is a designated area for 16 programmable electronic circuits, in the two ways 17 that you are applying the sandbox in Seshadri and 18 Atsatt, do you have any other examples to share 19 of what a sandbox needs? 20 A. Well, the patent itself in this 21 Column 5 says -- where are we? About Line 25, 22 for example, "a user could define an analog,
31 1 Q. So, that section of the patent that 2 you have read at Column 5, that lists a number of 3 functions that a sandbox can perform. 4 So, is it your opinion that a 5 sandbox is just purely defined by its functions? 6 MR. LIANG: Objection to form. 7 THE WITNESS: The meaning of 8 sandbox, I don't believe a construction is 9 necessary for this IPR. 10 BY MR. JACOBS: 11 Q. Why not? 12 A. Well, I have given examples that, 13 like the patent describes areas that are 14 designated for programmable electronic circuits, 15 including digital circuitry and so on. 16 Q. Okay. So, a sandbox is generally an 17 area designated for programmable circuits? 18 A. That is one example of a sandbox. 19 And, I have shown, for the prior art, in my 20 analysis for this IPR, that the prior art teaches 21 an area designated for programmable electronic 22 circuits.	33 1 digital or mixed signal hardware module or a 2 software module in embodiments with processor or 3 controller availability in the FPGA." 4 So, those would be other examples. 5 They are not examples that I applied in my 6 analysis for the IPR. 7 Q. So, you are saying that something 8 that a user could define as an analog, digital or 9 mixed signal, that is a sandbox? 10 MR. LIANG: Objection. 11 THE WITNESS: No. I -- sorry. 12 Okay. 13 I'm not offering a definition. I 14 don't think it is necessary for the purpose 15 of this IPR to provide a construction or 16 definition of sandbox. 17 I think there are examples that I 18 have read into the record here. 19 And in my analysis, I have relied on 20 the example of a portion of the circuit that 21 is designated for programmable electronic 22 circuits.

34 1 BY MR. JACOBS: 2 Q. Okay. So, this is your chance. You 3 are not offering a construction for sandbox, 4 right? 5 A. I don't think a construction is 6 necessary for the IPR. 7 Q. Okay. So, you are not offering one? 8 A. No, I'm not offering one. I am 9 saying that the, based on the disclosure of the 10 patent, that the examples I have provided in the 11 prior art do satisfy the limitation of a sandbox. 12 MR. JACOBS: Okay. Let's go off the 13 record. 14 (Recess taken -- 9:54 a.m.) 15 (After recess -- 10:04 a.m.) 16 BY MR. JACOBS: 17 Q. Okay, Dr. Alpert, let's jump back to 18 the claim language of the '943 patent. 19 A. Okay. 20 Q. And, the claims, in addition to the 21 sandbox, also require a router, port and bridge, 22 right?	36 1 the same meaning is for the Atsatt reference. 2 And Atsatt-113 includes router functionality in 3 global resources to route communication to the 4 second region which further includes port 5 functionality to enable communication between the 6 global resources. 7 Q. So, what is router functionality? 8 A. Just turning to the patent for a 9 moment. 10 Q. And Dr. Alpert, what are you looking 11 for in the patent at the moment? 12 A. I'm looking for the various 13 explanations of router. 14 Q. So, I understand you said, however, 15 that you are applying a plain and ordinary 16 meaning of router, right? 17 A. That is what I said, yes. 18 Q. So, to you, as a person of ordinary 19 skill, what is the plain and ordinary meaning of 20 a router? 21 A. Well, I did want to refer to the 22 explanation in the patent in order to be able to
35 1 A. Yes. 2 Q. Okay. What is a router in the 3 context of the '943 patent? 4 A. I was just looking through my 5 declaration -- 6 Q. Sure. 7 A. -- for some information I have 8 provided on that. In my analysis, I have applied 9 the plain meaning for router. 10 And, so, for example, I have applied 11 the plain meaning for router to my analysis of 12 Seshadri. And for Seshadri, the first logic 13 reading -- sorry, the first logic region, which 14 includes the shell logic, includes the 15 functionality that performs bridging functions 16 between local interconnect, e.g., PCI 17 interconnect and the client configurable circuit. 18 This functionality roots message 19 communication between the shell logic and client 20 configurable circuit in order to convey messages 21 to/from the host. 22 Another example where I have applied	37 1 answer that question. 2 Please bear with me for a particular 3 cite I was looking for. 4 Okay. One example I wanted to point 5 to is Column 3, Line 4. It says, "a header on a 6 module message interface packets specifies 7 chassis board, module, instance and type 8 identifiers, so that packets in the MMI network 9 are routed to a hardware or software module in a 10 pod or card on a basis -- sorry, in a pod or card 11 in the chassis or one of the multiple chassis." 12 So, this is one explanation of the 13 router is routing messages to hardware or 14 software modules in a pod. 15 And, so, for example, I have 16 analyzed the prior art according to the plain 17 meaning and relying on this as one example of a 18 router. 19 And, so, the -- for example, in 20 applying to the Seshadri reference, the first 21 shell logic -- sorry. The first shell logic 22 region, but the shell logic with exception of the

38 1 network is a router that routes message 2 communication between the shell logic and the 3 client configurable circuit in order to convey 4 messages to or from the host device. 5 Inbound communication from the host 6 device is received by the FPGA over the 7 peripheral interface and the shell logic and 8 functionality in the shell logic routes commands 9 to functional modules or blocks of peripheral 10 device 210 based on an address. 11 Another example where I have applied 12 the plain meaning is for Atsatt, Atsatt-113. 13 And Atsatt-113, I have explained 14 that teaches a router in the -- sorry, in its 15 global resources with the exception of the 16 network. 17 And, for example, the global 18 resources include a device controller which 19 enables communication by routing communication to 20 the destination sector from Atsatt. 21 Each sector controller does make 22 communicate with a device controller which may	40 1 have pointed to examples of a router in Seshadri, 2 which is the shell logic, other than the network. 3 And for Atsatt, the router is the global resource 4 other than the network. 5 Q. What do you mean other than the 6 network? 7 A. Well, for example, in Seshadri, 8 Seshadri teaches a network that couples the 9 router to the client configurable circuit that is 10 separate from the router. It is doing the, that 11 coupling similarly for Atsatt-113. 12 Atsatt-113 teaches that there is a 13 network that couples the router to the 14 programmable logic sectors. In fact, it is a, 15 the reference incorporated by How shows that that 16 is a network on chip. 17 And so, the network is separate from 18 the router. 19 And just, for example, and right 20 back behind me, I've got a closet that has some 21 home networking equipment, and there is a box 22 there that is a router, and it is a router
39 1 coordinate the operations of the sector 2 controllers and can make commands initiated from 3 outside from the FPGA device. 4 Actually, I am done. I know I was 5 looking for a number of references there -- 6 Q. Okay. 7 A. -- but, I have completed my answer. 8 Q. Okay. So, I want to restate what I 9 understand your definition of a router is to a 10 person of ordinary skill. 11 So, you have cited that a router is 12 something that is routing the MMI packets, as 13 discussed in Column 3. 14 And then you are saying that a 15 router is a shell logic in Seshadri and that a 16 router is in the global resources of Atsatt. 17 Is that correct? 18 A. I have looked at the patent, 19 the '943 patent, and I have pointed to an example 20 of the routing. In this example, it was routing 21 for the MMI network. 22 And then I have, in my analysis, I	41 1 whether or not I have connected a network cable. 2 Q. Okay. So, the router in that 3 example is the box. And then the network cables 4 are providing a network that the router routes 5 things with; is that right? 6 A. You are asking about the home 7 network? 8 Q. I mean, I'm asking in general. You 9 provided that example. 10 A. Yes. 11 Q. I guess, to the extent that example 12 is not, you know, accurate, let me know. 13 A. So, the router -- just a little bit 14 more specifically, the router has a port. Like 15 my home router has an Ethernet cable, or USB -- 16 sorry, a port for Ethernet or USB. 17 And then the router is coupled to 18 another device with the use of a network with 19 the -- in that practical example would be a 20 network cable. 21 Q. Okay. How does the bridge that is 22 discussed in the claim language fit into that

42 1 example? 2 And maybe it doesn't apply to the 3 example you gave. But, I will restate my 4 question. 5 What is the bridge in the '943 6 patent? 7 A. I was just looking at the -- 8 searching in the patent. 9 So, I point to the '943 patent 10 paragraph -- sorry, not Paragraph 4. Column 4. 11 There is a paragraph that begins at 12 Line 48. And it says that, "FPGA 122 has 13 multiple sections in some embodiments, one of 14 which is a bridge 128, for external 15 communication, for example, the serial connection 16 to an external network or a parallel connection 17 to an external bus. 18 "And shown generally as I/O, and 19 internal communication. The bridge 128 is thus a 20 communication bridge between the outside of the 21 server or system, and internal modules and/or 22 memory.	44 1 But, this is an example that I 2 looked at in considering my analysis of the prior 3 art. 4 Q. But you accept that as an example? 5 A. Oh, it is definitely, it is an 6 example from the patent and, you know, I do 7 accept it, yes. 8 Q. Okay. And I guess aside from your 9 analysis of the prior art, how is that example 10 too limiting, if you are seeking to add more to 11 it? 12 A. An example that I see here is that 13 it is saying that the MMI -- it is I/O for 14 external communication, MMI for internal 15 communication. 16 And I, as I recall, the MMI is not, 17 or, is not a claim term for the '943 patent. 18 So, perhaps in that way it is being 19 restrictive. But, I think it is a good example. 20 Q. Okay. So, like the example that the 21 bridge is a module that sits on a router or for 22 purposes of crossing the I/O, that is reflective
43 1 "It has at least two ports, I/O for 2 external communication and MMI for internal, 3 possibly also external communication. 4 "The bridge 128 is a module that 5 sits on a router port for purposes of crossing 6 the I/O type or protocol, i.e., from a wide 7 internal parallel bus to PCI, or ethernet, et 8 cetera." 9 So, that is what the patent has to 10 say. And I have applied the plain meaning of 11 bridge in my analysis of the prior art. 12 Q. Before we get to your analysis of 13 the prior art, I just want to clarify. 14 Do you agree with what the patent 15 has described as the plain and ordinary meaning 16 of a bridge? 17 A. Again, I was just pointing out that 18 this provides, this disclosure from the patent 19 provides an explanation of the bridge, an 20 example. I was not trying to say that this is 21 what I have read is the specific definition of a 22 bridge.	45 1 of your definition of a bridge? 2 MR. LIANG: Objection to form. 3 THE WITNESS: So, I have applied the 4 plain meaning of bridge in my analysis. We 5 talked about an example of the plain meaning 6 from the patent. 7 And I have identified for Seshadri, 8 for example, I have applied the plain meaning 9 for bridge. And the, in Seshadri -- excuse 10 me while I find that particular limitation. 11 Yes, so, Seshadri teaches a bridge, 12 the bridge is the shell logic of Seshadri, 13 the shell logic circuitry, other than the 14 network. 15 And Seshadri explains how the shell 16 logic includes functionality to perform 17 bridging functions between the PCI interface 18 and the client configurable logic. 19 Another example that I have provided 20 in my analysis -- another example for bridge 21 is in my analysis of Atsatt. And for Atsatt, 22 the bridge is the global resources other than

46 1 the, other than the network. 2 And those global resources provide 3 the bridge functionality. And let me just 4 find something here. 5 And Atsatt, for example -- just one 6 example in Atsatt. In Figure 9, does show a 7 bridging function between an outside 8 configuration source 212, and the 9 programmable sectors, I believe are shown 10 as 48. 11 Okay, that was my answer. 12 BY MR. JACOBS: 13 Q. So, in that answer you just said 14 that the router is the shell logic in Seshadri -- 15 or, strike that. 16 In that answer, you said that the 17 bridge is the shell logic in Seshadri. 18 But, earlier you said that the 19 router was the shell logic. 20 So, you are saying that it is both? 21 A. Well, first of all, I want to 22 clarify. I said that the router is the shell	48 1 then? And specifically the bridge that you are 2 mapping to the '943 patent? 3 A. The shell logic circuitry, other 4 than the network, is the bridge. 5 Q. Okay. 6 A. It is the part of the bridging 7 function that is required. 8 Q. So, you are claiming that the router 9 and bridge are both in the circuitry of the shell 10 logic; is that right? 11 A. The router is the circuitry of the 12 shell logic. And in particular, the circuitry 13 performs the function of a router. And the 14 circuit -- Seshadri's shell logic circuitry is 15 the bridge. It performs the bridging function 16 and the other functions that are required of a 17 bridge by the claim. Claim 1, I am talking about 18 now. 19 Q. I guess, how is -- 20 Are you agreeing with me, then? 21 My question was, you are claiming 22 that the router and bridge are both in the
47 1 logic in Seshadri, other than the network. 2 And so, the shell logic circuitry in 3 Seshadri includes the functionality of a router. 4 The shell logic circuitry in 5 Seshadri, other than the network, does include 6 the bridging functionality between the external 7 I/O and the internal sandboxes. 8 Q. Okay. So, earlier we said that the, 9 I believe the bridge is a module. 10 Are you saying that it is a module 11 on the shell logic or the shell logic's circuitry 12 is the functionality? 13 I'm a little confused with the 14 distinction you are making. 15 A. The bridge in Seshadri is the shell 16 logic circuitry, other than the network. And, 17 that circuitry performs the bridging function. 18 Q. Okay. But, the '943 patent doesn't 19 claim bridging functionality, right? It claims a 20 bridge. And I think in Claim 1B, it says a 21 bridge. 22 So, is the shell logic a bridge,	49 1 circuitry of the shell logic. 2 So, is that a yes? 3 A. I forgot what the question was. 4 What would I be answering yes to? 5 Q. My question was, so you are claiming 6 that the router and bridge are both in the 7 circuitry of the shell logic, right? 8 A. I would say that it is the shell 9 logic circuitry, again other than the network, 10 that is the router and the bridge. 11 And that is because the circuitry I 12 have identified in the shell logic does perform 13 the functions required of a router and functions 14 required of a bridge, in particular, the 15 functions required by the claim. 16 Q. Okay. So, that is a yes? You just 17 said it is a router and a bridge. 18 So, are you answering my question 19 yes? I'm just trying to clarify. 20 A. The shell logic circuitry, other 21 than the network, is a, is the claimed router and 22 is the claimed bridge.

50 1 Q. Where does the port fit into that 2 relationship? Is that also part of the shell 3 logic circuitry? 4 A. I recall that is covered in my 5 declaration. I just wanted to go back and 6 refresh, refresh my memory. 7 Okay, sorry. Could I hear the 8 question again? 9 Q. Sure. Where does the port fit into 10 that relationship with the router and bridge? 11 Because, I think you have been clear 12 that the router and bridge are in that circuitry 13 of the shell logic. 14 So, I'm just wondering where the 15 port falls into that, because that is also 16 claimed in the '943 patent. 17 A. Yes. Yes, I understand the 18 question. 19 Q. Okay. 20 A. The port for Seshadri is the shell 21 logic other than the network. And, in 22 particular, that shell logic circuitry does	52 1 A. Okay. I am on Paragraph 32. 2 Q. And I guess, I will just have you 3 scroll up a couple of pages or flip up a couple 4 of pages, just to clarify that this is a 5 discussion on patent owner's District Court 6 allegations, right? 7 A. Yes. That is the heading for this 8 section. 9 Q. Okay. Great. So, Paragraph 32, you 10 say that, "Patent owner has taken the view that 11 the claimed router, bridge, and port can be 12 commensurate in scope." 13 So, based on your explanation of the 14 router, bridge, and port in Seshadri, are you 15 saying that you agree with patent owner's 16 District Court interpretation? 17 A. What I am saying is that the router, 18 bridge, and port, it says can be commensurate in 19 scope but can have the same boundaries. 20 I'm not providing an opinion on 21 whether, you know, the patent owner has shown 22 that in the prior art.
51 1 perform the functionality of enabling 2 communication between the router and the client 3 configurable circuit in Seshadri. 4 For Atsatt-113, I have analyzed the 5 port. Port is the circuitry of the global 6 resources, other than the network, which includes 7 port functionality to enable communication 8 between the global resources and the second 9 region. Second region being the programmable 10 sectors. 11 I am done. 12 Q. Okay. So, in Seshadri, you are 13 saying that the router, bridge, and port, are all 14 the shell logic circuitry? 15 A. I am saying that the, yes, the -- 16 sorry. 17 What I am saying is that the shell 18 logic circuitry, other than the network, is the 19 router, bridge, and port for Seshadri. 20 Q. Okay. Would you turn to 21 Paragraph 32 of your declaration. And let me 22 know when you are there.	53 1 Q. Well, patent owner's explanation 2 isn't based on the prior art, right? It is based 3 on their infringement allegations? 4 A. Yeah. Sorry. I might have 5 misspoken. Could we go back to the previous 6 question? 7 Q. That is okay. How about I re-ask 8 the question. Would that be helpful? 9 A. Yes, that would be. 10 Q. Okay. Let me find it. Okay. Well, 11 I guess my question is, in Paragraph 32, you are 12 saying that patent owner has taken the view that 13 the claimed router, bridge, and port can be 14 commensurate in scope. 15 So, based on your explanation of the 16 router, bridge, and port in Seshadri, where you 17 are claiming that it is all in the circuitry of 18 the shell logic, are you agreeing with patent 19 owner's interpretation in the District Court 20 litigation? 21 A. I am saying that the router, bridge, 22 and port can be commensurate in scope. They can

54 1 have the same boundaries. 2 I'm not offering an opinion about 3 whether the patent owner's analysis of the 4 accused products is correct. 5 Q. I guess, why did you include that in 6 your declaration, then? 7 A. This is here just as a summary of 8 some of the interpretations that the patent owner 9 has applied. 10 And in this case, I'm just 11 explaining that, my understanding of their 12 contentions is that the router, bridge, and port 13 can be commensurate in scope. 14 Q. Okay. And then based on your 15 understanding of those interpretations, that is 16 consistent with how you are interpreting 17 Seshadri, right? 18 A. I am interpreting Seshadri that the 19 router, bridge, and port are commensurate in 20 scope. 21 Q. Okay. 22 A. What I am not agreeing with here --	56 1 Q. Okay. And if you flip to the end of 2 that paragraph which I think is after that first 3 figure where you have a Figure 2 and a Figure 9 4 which correspond to Seshadri and Atsatt. 5 Do you see that? 6 A. Yes, I see those two figures, the 7 first one for Seshadri and the second one on the 8 right for Atsatt. 9 Q. Great. So, I'm just curious, how 10 did you draw these red and blue boxes in there? 11 And to be clear, I'm not asking what 12 program you used. I will assume it is Microsoft 13 Paint or something similar. 14 But, how did you select which region 15 to include in each box? 16 A. Generally, in looking at the prior 17 art references, I recognize that they did perform 18 the functions of the bridge, router, and port. 19 And in particular in communicating 20 between the external I/O and the user 21 programmable circuits which were for Seshadri, 22 the client configurable circuit, and for Atsatt,
55 1 I'm not offering an opinion, is whether the 2 analysis of the accused products was correct and 3 proved that they are, in fact, all present and 4 commensurate in scope. 5 Q. Sure. Completely understand that 6 you haven't reviewed the accused products so you 7 are not offering an opinion on that. 8 However, your application to 9 Seshadri is interpreting them as commensurate in 10 scope. 11 A. I have identified of the shell logic 12 circuitry, other than the network for Seshadri, 13 to be the router, bridge, and port. 14 And because I have identified the 15 functionality within that shell logic, that 16 satisfies the requirements of a router, bridge, 17 and port. 18 Q. Okay. Great. Let's turn back a few 19 paragraphs to Paragraph 7 of your declaration. I 20 think we were there earlier talking about the 21 FPGAs. 22 A. Okay. I am at Paragraph 7.	57 1 the programmable sectors 48. 2 And, so, I identified the sandboxes, 3 in particular the second region, as being the 4 portions of Seshadri and Atsatt that were 5 identified as being user definable, and, so that 6 is the blue box. 7 And I put the red box around the 8 global circuitry, the shell logic for Seshadri or 9 the global resources for Atsatt that performed 10 the, the functions that would be required to get 11 the information from the outside of the chip, 12 over to the client configurable circuit and the 13 programmable sectors. 14 I am done. 15 Q. Okay. Do FPGAs always have these 16 two regions? 17 For example, is this example 18 applicable to other FPGAs in the art? 19 A. I would say that this is an 20 application. It shows two applications of the 21 FPGA, but there could be other applications that 22 wouldn't necessarily have two regions like this.

58 1 Q. Okay. Let's jump to Paragraph 74 of 2 your declaration and get more specifically into 3 Seshadri. 4 So, just let me know when you are 5 there. 6 A. Okay. I am at Paragraph 74. 7 Q. Okay. And Paragraph 74 corresponds 8 to your analysis of claim limitation 1B, which 9 discusses that the first region comprises the 10 hardware-based or firmware-based router with a 11 port, enabling communication between the router 12 and second region, right? 13 A. Yes. That is listed right before 14 the paragraph. 15 Q. Uh-huh. So, I would like your help 16 understanding the different parts of Seshadri. 17 So, we have already been discussing a little bit 18 the shell logic. 19 What is the difference between the 20 static shell and reconfigurable shell in 21 Seshadri? 22 A. I think I remember the question.	60 1 configured at the power on or reset. 2 And the reconfigurable portion may 3 be reconfigured while the power remains on, and 4 according to, potentially, the requirements of a 5 new client configurable circuit. 6 Q. So, I guess, I'm still not sure I'm 7 understanding what the reconfigurable circuit -- 8 the reconfigurable shell is. 9 I think a lot of your explanation 10 sort of described what the static shell is doing 11 in relation to the reconfigurable shell. 12 But, I'm not sure I understand what 13 the reconfigurable shell is and why there are 14 these two different shells in the shell logic. 15 A. I was going to point to Figure 5 -- 16 Q. Sure. 17 A. -- in Seshadri, which shows the 18 shell logic 570 and then a portion of that is 19 static shell, SL, 572 and another portion is 20 reconfigurable shell, RL, 590. 21 And, so, the reconfigurable shell is 22 shown, for example, as communicating with the
59 1 But, if you can just complete it again. 2 Q. Sure. I'm just curious. 3 What is the difference between the 4 static shell and reconfigurable shell in 5 Seshadri? 6 A. In Seshadri, the shell logic 7 includes a static portion and a reconfigurable 8 portion. 9 The static shell is the portion that 10 controls access to the configuration access port, 11 because the reconfigurable shell is disabled and 12 isolated during the reconfiguration of the client 13 configurable circuits which can include 14 reconfiguration of the reconfigurable shell. 15 Well, the static shell is 16 implemented on a PLD static shell 342 may not be 17 modified unless an externally controlled reset 18 signal or power cycle occurs. 19 Q. So, I think you are -- 20 A. So, I was just going to say, the 21 static shell is a portion of the shell that 22 remains. It is configurable but it is only	61 1 client configurable circuit. And so when the 2 programming of the client configurable circuit is 3 changed, for example, there could be different 4 functions that are accelerated for the virtual 5 machine. 6 Then it may be necessary to make 7 some modifications in the reconfigurable shell to 8 allow the client configurable circuit to operate 9 according to new requirements. 10 Q. What do you mean by modifications to 11 the reconfigurable shell? 12 A. Well, the reconfigurable shell is 13 part of the programmable fabric of the FPGA. And 14 so, it is hardware circuit that is programmable 15 or configurable, either term. 16 And, the function for those circuits 17 is related to the communication with the client 18 configurable circuit. 19 And so, the programming in the FPGA 20 would change the physical hardware circuits for 21 the reconfigurable shell when necessary, in 22 particular when necessary if the client

62 1 configurable circuit is modified. 2 Q. So, if we jump back to Paragraph 7 3 of your declaration where we were discussing the 4 different diagrams. And the example on the left, 5 which is Seshadri, why did you omit the 6 reconfigurable shell from the region that is user 7 configurable? 8 A. With that question, I was going to 9 ask, can we introduce Seshadri as an exhibit? 10 Q. Sure. 11 A. I would want to do some searching in 12 there. 13 Q. I should have done that earlier, so, 14 thank you for flagging that. 15 MR. JACOBS: I'm going to drop that 16 into the Chat now. So, that will be 17 Exhibit 1004. 18 (Whereupon, previously marked 19 Exhibit 1004, 20 first referral.) 21 BY MR. JACOBS: 22 Q. And I will also note that in your	64 1 illustrate aspects of its exemplary computing 2 systems which are all consistent with the general 3 configuration of Figure 2. 4 And so, in pointing to Figure 2 as 5 being a simplified diagram of the How Host device 6 card in this particular figure. And, in general, 7 Seshadri's teaching that the shell logic is a 8 separate portion of the FPGA than the client 9 configurable circuit. 10 Q. In that shell logic that you are 11 identifying, that includes the reconfigurable 12 shell which is a client configurable circuit? 13 MR. LIANG: Objection to form. 14 THE WITNESS: Shell logic does 15 include a reconfigurable circuit. A portion 16 of it is reconfigurable. It is implementing 17 a portion of the router, bridge and port 18 functionality. 19 BY MR. JACOBS: 20 Q. So, in Seshadri, that first region, 21 it also includes programmable electronic 22 circuits?
63 1 declaration, around Paragraph 69, that diagram 2 with the boxes is also there. 3 I think I referenced you back to the 4 background section. 5 But, in case it is easier from 6 having to flip back and forth between lots of 7 paragraphs, we can kind of say in that Seshadri 8 section for now. 9 A. Okay. Thank you for pointing that 10 out. 11 Q. Mr. Alpert, do you recall what 12 question you are trying to answer right now? 13 A. The question is why is the 14 reconfigurable logic shell logic not part of the 15 user definable programmable circuits; is that 16 right? 17 Q. That is right. 18 A. Seshadri teaches that in some 19 embodiments the shell logic 340 and client 20 configurable circuit 350 may be implemented on an 21 FPGA residing on a peripheral device. 22 Seshadri uses a number of figures to	65 1 A. In Seshadri, the first region does 2 include programmable electronic circuits as does 3 the first region in the patent for some 4 embodiments. 5 Q. So, in this example, why did you 6 decide to draw the boundary there? Why is it not 7 flipped? 8 Why is the client configurable 9 circuit not in the first region and the 10 reconfigurable shell is in the second region if 11 you are saying that they are in both? 12 A. The client configurable shell -- 13 sorry. 14 The client configurable circuit is 15 performing the user defined functions for 16 accelerating an application running on the host. 17 And that is, that is what I have 18 identified to be the second region, one or more 19 sandboxes with user definable programmable 20 electronic circuits of the PLD. 21 Q. Where are you reading in the claim 22 language that region aligns with accelerating

66 1 applications running on the host? 2 A. That is not in the -- it is not in 3 the claim requirements. 4 So, I have mapped this first region, 5 which includes reprogrammable circuits, as it 6 does for the '943 patent, to the router, bridge, 7 and port. That is the shell logic with -- other 8 than the network. 9 And that is the mapping that I have 10 done in order to analyze the prior art for the 11 claim. 12 MR. JACOBS: Okay. Let's go off the 13 record and take a break. 14 (Recess taken -- 11:13 a.m.) 15 (After recess -- 11:24 a.m.) 16 BY MR. JACOBS: 17 Q. Okay. Dr. Alpert, let's stick 18 around Paragraph 74 'ish where we were before 19 discussing the shell logic. 20 What is the difference between the 21 shell and the logic in the shell logic? 22 A. I'm not sure I understand the	68 1 So, what that is saying is that 2 where Seshadri is referring to logic, that that 3 logic can be implemented using a circuit or 4 optionally a processor for executing software. 5 And so, when Seshadri refers to 6 shell logic, such as we have been talking about 7 in Figure 2, person of ordinary skill in the art 8 would understand that that logic would be 9 implemented as circuitry, and then option that 10 perhaps a processor could be used to execute 11 software. 12 Q. So, what is a logic? What is -- 13 what does logic mean in this context? 14 A. Logic means, in this context it 15 means, where Seshadri refers to logic, it can be 16 implemented using a circuit. 17 Q. Okay. If we move back to 18 Paragraph 76 of your declaration, I think we 19 talked a decent amount about the router and the 20 bridge. 21 But, what is the function of the 22 port in the '943 patent and how are you applying
67 1 question. 2 Q. So, I'm not sure I understand the 3 difference, either. 4 But, if you go to Column 2 of 5 Seshadri, Line 44 is where the discussion begins. 6 It clearly defines that the logic and the shell 7 are different things. 8 And I'm interested how a person of 9 ordinary skill understands logic, how that makes 10 up the shell logic. 11 A. I think the portion that you are 12 referring to, I think you said 2, 44. Is that 13 correct? 14 Q. Column 2 of Seshadri, at Line 44 is 15 where the discussion begins. 16 A. Yes. Okay. And so, that discussion 17 is explaining the use of some of the terms, 18 particularly logic, in Seshadri. 19 It says, "As used herein, a logic 20 may be implemented using a circuit and/or an 21 associated software or firmware for performing 22 certain functions."	69 1 that to Seshadri? 2 A. The port enables communication 3 between the router and the client configurable 4 circuits. 5 And the port is the shell logic 6 circuitry other than the network in Seshadri. 7 Q. So, does the port sit between the 8 router and the sandboxes? 9 A. The port is a -- is part of the 10 router that enables communication for Seshadri 11 between the shell logic and the client 12 configurable circuits. 13 Again, if we go back to the, kind of 14 home networking, then the port is on a network 15 box. Could be the kind of connector, the point 16 where a cable can connect to a router. 17 Q. Okay. Let's move on to Paragraph 88 18 of your report. 19 And, here starting at Paragraph 86, 20 you are discussing Limitation 1D. 21 However, I think that your 22 discussion of the lockable and unlockable

70 1 functionality begins at Paragraph 88. 2 So, just let me know when you are 3 there. 4 A. Yeah, I am there. 5 Q. Okay. You say in Paragraph 88 that, 6 "Seshadri discloses the lockable and unlockable 7 limitation because the shell logic includes 8 functionality to isolate a configuration access 9 port." 10 What does that mean, isolate? 11 A. It is not the end of the paragraph, 12 but later in that paragraph there is a citation 13 to Seshadri which says, "For example, the shell 14 logic may isolate a configuration access port so 15 that the customer logic cannot cause the client 16 configurable circuit to be reprogrammed without 17 using services provided by the computing service 18 provider, e.g., the shell logic." 19 Q. Okay. So, isolating the port means 20 preventing the customer logic from reprogramming 21 unless it uses the shell logic? 22 A. Let me just clarify something from	72 1 following you. 2 What do you mean by it is a 3 different port, then? What clarification are you 4 making here to my question? 5 A. I'm trying to clarify that this 6 configuration access port that is talked about in 7 the context of locking is not the same as the 8 router port for enabling communication between 9 the router and the second region. 10 Q. Okay. So, that is not -- you are 11 not mapping that configuration access port to the 12 claim language? 13 A. Not to the claim port. 14 Q. Okay. What are you mapping to the 15 claim port? 16 A. The claim port is the shell logic 17 circuitry, other than the network, that enables 18 communication between the shell logic and the 19 client configurable circuit. 20 Q. So, in this configuration, is access 21 port part of the shell logic? Or are you saying 22 this is a totally different port?
71 1 the question. 2 Q. Sure. 3 A. Seshadri is talking about isolating 4 a configuration access port here. 5 But, I would point out that that 6 port is not the same as the claimed port. It 7 just happens to be using that term in this 8 context. 9 And so, I don't know if, maybe -- 10 I don't know if your question was 11 trying to relate this configuration access port 12 to the claim port or if I was just speculating on 13 what you might have thought or meant. 14 Q. I guess how is -- you are saying 15 that this is a different port. So, I guess, how 16 is it relevant to the discussion at all then? 17 A. It is relevant because this port is 18 related to locking and unlocking the bridge which 19 is what the claim -- actually lockable and 20 unlockable, that the bridge is lockable and 21 unlockable as Claim 1D requires. 22 Q. So, I'm sorry. I'm truly just not	73 1 A. I am just saying in this context, 2 the configuration access port relates to the 3 capability for locking and unlocking the bridge. 4 It does not relate to the entirety 5 of the communication between the shell logic and 6 the client configurable circuit. 7 Q. Okay. The claim language is that 8 the port comprises a bridge being lockable. 9 So, is -- this is not the port that 10 is lockable? 11 A. So, the claim requires a port, this 12 claim requires a port that comprises a bridge 13 being lockable. 14 So, the bridge is part of the port. 15 And this, configuration access port relates to 16 the locking, the capability to lock and unlock 17 the bridge. 18 So, the configuration access port is 19 part of the, is part of the bridge. And so, 20 therefore, according to the claim, it would also 21 be part of the claimed port. 22 Q. Okay. So, now it is part of the

74 1 port or it is the port? 2 A. It is a part of the claimed port for 3 Claim 1. 4 Q. So, I'm looking for your exact 5 language. But, I think a minute ago you said 6 that this configuration access port is not the 7 port in the claim language, right? 8 A. I believe I said something to that 9 effect, yes. 10 Q. Okay. So, the configuration access 11 port is what is being locked, but that is 12 different from the port in the claim language? 13 MR. LIANG: Objection to form. 14 THE WITNESS: So, let me clarify or 15 maybe even correct what I said before. 16 So, the configuration access port is 17 what is used to -- the functionality to lock 18 and unlock the bridge, and the bridge is part 19 of the claim port for Claim 1. 20 BY MR. JACOBS: 21 Q. So, a few minutes ago you said, but 22 I would point out that the port, and you are	76 1 information are passed between the first region 2 and the second region. 3 "In summary, Seshadri teaches the 4 port that comprises the functionality in the 5 shell logic from enabling communication with the 6 client configurable circuits. 7 "For Element 1d, where it tells us 8 that the port comprises a bridge, Seshadri 9 teaches that the port comprises a bridge. For 10 example, Seshadri explains how the shell logic 11 includes functionality to perform bridging 12 functions between the PCI interface and the 13 client configurable logic." 14 It says, I guess, in Seshadri 341 15 to 64, I am at Paragraph 87 now, "The shell logic 16 can perform bridging function between the local 17 interconnect, e.g., the PCI interconnect and the 18 client configurable circuit." 19 So, then the portion we are looking 20 at, beginning at Paragraph 88, relates to the 21 function where the port comprises a bridge being 22 lockable to prevent user access and unlockable to
75 1 referring to the configuration access port, is 2 not the same as the claim port. It just happens 3 to be using that term in this context. 4 So, are you saying that is wrong? 5 Or, is your answer still consistent with that 6 interpretation? 7 A. My answer still is consistent. The 8 configuration access port is not the claim port, 9 but it is a portion of the claim port. 10 Q. Okay. Where do you discuss the 11 other portion? 12 A. Well, for example, Claim 1B requires 13 the port enabling communication between the 14 router and the second region. 15 And I say, "To facilitate routing of 16 messages with the second client configurable 17 circuit region, the routing functionality further 18 includes a port that enables communication with 19 the second region. 20 "This includes, for example, 21 management functions and data path, such as 22 mailbox function, through which messages and	77 1 enable user access. 2 Q. Okay. I mean I think you just 3 listed a lot of functions of the shell logic. 4 But, the sentence I'm looking at is, 5 "For example, the shell logic includes 6 functionality to isolate a configuration access 7 port. This functionality is locked and unlocked 8 by the shell logic to disallow or allow 9 configuration of the client configurable 10 circuit." 11 So, is that isolation of a 12 configuration access port, that is different than 13 the claimed port that is doing the locking and 14 unlocking? 15 A. This configuration access port, 16 Seshadri teaches is used to lock, lock and unlock 17 by the shell logic to disallow configuration of 18 the client configurable circuit. 19 So, this one is related -- it says 20 configuration access port. It is for 21 configuration of the client configurable circuit. 22 But the port also has the function

78 1 of enabling communication between the shell and 2 the client configurable circuit for purposes 3 other than configuration. 4 Q. Okay. But the -- let me clarify. 5 The way that the way that the client 6 configuration is locked or unlocked is by locking 7 or unlocking this configuration access port? 8 A. Let me just hear the question again. 9 Q. I'm just trying to clarify that the 10 configuration of the client configurable circuit 11 is either locked or unlocked by locking or 12 unlocking this configuration access port? 13 A. I believe, as I'm looking here, that 14 Seshadri actually calls it isolating or 15 de-isolating configuration access port, making it 16 accessible or not. 17 Q. Is isolating the same thing as 18 locking to a POSITA? 19 A. In this context, isolating would 20 mean the same thing as locking. 21 It does mean that when the 22 configuration access port is isolated, that it	80 1 configuration access port would enable user 2 access. 3 And so, therefore, that would be 4 reading on the unlockable requirement for the 5 bridge. 6 Q. In Figure 4 of Seshadri, is the port 7 identified at all? 8 A. In Figure 4, it is hard to describe 9 it. 10 But, there is some lines indicating 11 a correction and -- a connection and a flow of 12 information. That is on the left side. There is 13 a line coming into the shell logic 411, passing 14 through the shell logic, and then over to the 15 client configurable circuit 414. 16 And the portion of the shell logic 17 that enables the communication between the shell 18 logic and the client configurable circuit is the 19 port. 20 Q. And where would that configuration 21 access port be? 22 A. The configuration access --
79 1 does prevent user access for configuration. 2 Q. So, I guess in other contexts, 3 isolating doesn't mean the same thing as locking. 4 I'm trying to understand the plain 5 and ordinary meaning of that term. 6 A. Well, it is not a claim term, so, I 7 haven't -- I'm not prepared to offer, you know, 8 an opinion sitting here right now on what that 9 might mean. 10 What I'm just saying is that the 11 claim requires that the bridge is lockable to 12 prevent user access and unlockable to enable user 13 access. 14 And the way Seshadri teaches that 15 requirement, the bridge being lockable and 16 unlockable is through use of this configuration 17 access port which is isolated in order to prevent 18 user access that would be lockable. 19 And I don't remember what the term 20 that Seshadri used, if it was de-isolated or 21 unisolated. 22 But, another state for the	81 1 configuration access port would be within 2 Seshadri's shell logic circuitry, other than the 3 network. 4 Q. Okay. Do you see it as a block on 5 that diagram? 6 A. And this diagram, which one are we 7 talking about? 8 Q. Figure 4. 9 A. Figure 4. I don't see a box with 10 that specific, with that specific label. 11 Seshadri does teach that the 12 functionality is present in the shell. 13 Q. Okay. So, I guess just to 14 summarize. 15 What is the difference between the 16 configuration access port and the port that you 17 are mapping to the claim language? 18 A. The port that I'm mapping to the 19 claim language has requirements of enabling 20 communication between the router and the second 21 region. 22 It comprises a bridge and then that

82 1 bridge is lockable and unlockable. 2 So, the port has additional 3 functionality that is part of the shell logic, 4 other than this configuration access port which 5 is used to lock and unlock the bridge for 6 configuration of the client configurable circuit. 7 Q. Okay. Let's go on to Paragraph 89, 8 which is the next paragraph. 9 So, you are saying here, "As a first 10 step, the user requests reconfiguration through 11 the management virtual machine on the host 12 server." 13 What is the management virtual 14 machine? 15 A. Looking, for example, at Figure 1, 16 Seshadri explains at Column 5, beginning at 17 Line 20, "Computing device 100A within the host 18 domain 101 may include hardware components 118, 19 which may be used to implement a host privileged 20 virtual machine 120, also referred to as a 21 management virtual machine, and one or more 22 client virtual machines on a hypervisor 112 to	84 1 "A client may upload a configuration 2 file, e.g., firmware, hardware, description 3 language, file, bit streams, et cetera, with 4 customer defined logic to the -- to a logic 5 repository service, 312, for use by computing 6 system 300. 7 "Through management virtual machine 8 332, the customer defined logic can be downloaded 9 from logic repository service 312 and sent to 10 peripheral device 315 for programming or 11 configuring client configurable circuit 350. 12 "The programming of client 13 configurable circuit 350 may be controlled and 14 managed by shell logic." 15 My understanding that Seshadri is 16 explaining that the client virtual machine can 17 reconfigure the client configurable circuit but 18 not the reconfigurable shell. 19 Q. So, is it your opinion that the 20 reconfigurable shell is not part of the 21 programmable fabric of the FPGA? 22 A. No. It is not my opinion.
83 1 provide services to one or more clients." 2 And so, what Seshadri is explaining 3 is that there is a host management, a management 4 virtual machine that has more privileges than the 5 client virtual machine. 6 Q. Okay. And when a user requests 7 through that management virtual machine to make a 8 reconfiguration, what are they seeking to 9 reconfigure? 10 A. What they are seeking to reconfigure 11 is loading of the, of the customer defined logic 12 onto a client configurable circuit. 13 Q. Okay. Not the reconfigurable shell? 14 A. My understanding of Seshadri is that 15 the client virtual machine requests 16 reconfiguration of the client configurable 17 circuit, but not of the reconfigurable shell. 18 And I'm looking over here in 19 Seshadri, Column 12, Line 10. It says, "Client 20 configurable circuit 350 may be reconfigured and 21 controlled by a client associated with client 22 virtual machine 330 running on a host 310.	85 1 The programmable -- the 2 reconfigurable shell is part of the programmable 3 fabric. 4 But, it would be the management 5 virtual machine that would control the 6 reconfiguration of the reconfigurable shell, not 7 the client virtual machine. 8 Q. But, you did say that at 9 Paragraph 89, the user requests reconfiguration 10 through the management virtual machine. 11 So, the user is the one who is using 12 the management virtual machine. 13 Are you saying that there are 14 separate client virtual machines and that is who 15 would be requesting to reconfigure the client 16 configurable circuit? 17 A. Yes, I better just hear that again. 18 I don't know -- I think I need it rephrased. I 19 just want to make sure I have it in my head. 20 Q. Okay. Sure. I'm just pointing out 21 that at Paragraph 89, the user requests 22 reconfiguration through the management virtual

86 1 machine, is what your opinion is. 2 So, the user is the one who is using 3 the management virtual machine. 4 So, are you saying that there are 5 separate client virtual machines and those would 6 be the ones that are requesting to reconfigure 7 the client configurable circuit? 8 A. For example, on Figure 500, we can 9 see multiple client virtual machines interacting 10 with the management virtual machine, actually on 11 300 as well. 12 So, there are multiple client 13 virtual machines on the host. And in the 14 paragraph that I just read it says, "The client 15 configurable circuit may be reconfigured and 16 controlled by a client associated with the client 17 virtual machine running on a host. 18 "The client may upload the 19 configuration file with," and then it gives some 20 examples, "with customer defined logic to the 21 logic repository service 312." That is in 22 Figure 3.	88 1 that block quote, for example, it talks about the 2 client virtual machine loading new customer 3 logic. 4 So, I'm just trying to understand 5 how that first sentence in the paragraph where 6 you are discussing the user requesting 7 reconfiguration through the management virtual 8 machine, how that is related. 9 A. I'm confused about what the issue 10 is. 11 Let me add something in the hopes 12 that it will provide some clarification. 13 Q. Sure. 14 A. After that first sentence, I do cite 15 to another explanation from Seshadri which is at 16 15 -- what is it? 15, 9 to 17. 17 It is talking here about, "An FPGA 18 configuration and management block 476 in shell 19 logic 411 on peripheral device 410 may include 20 functions related to managing and configuring 21 programmable circuits, e.g., FPGA, on peripheral 22 device 410, such as client configurable circuit
87 1 "For use by computing system 300, 2 through management virtual machine 332, the 3 customer defined logic can be downloaded from 4 logic repository service 312." 5 So, that explanation is what I was 6 considering when I said that the user requests 7 reconfiguration through the management virtual 8 machine on the host server. 9 Q. So, I -- you quoted a lot in your 10 answer. So, I'm just clarifying that I 11 understand what you are saying. 12 So, that first sentence in 13 Paragraph 89 where you are discussing the user 14 requesting reconfiguration for the management 15 virtual machine on the host server, that is a 16 separate occurrence than what you are talking 17 about later with the client virtual machine? 18 A. I probably need you to be a little 19 bit more specific when you say that I am talking 20 about something else later. 21 What was later? 22 Q. Well, you are talking later -- in	89 1 414 and a reconfigurable shell of shell logic 2 411." 3 "For example, host 412, e.g., 4 management virtual machine, may send a 5 transaction to FPGA configuration and management 6 block to initiate loading of the customer defined 7 logic on client configurable circuit." 8 So, it is my understanding that in 9 Seshadri, the user requests reconfiguration can 10 provide a reconfiguration file to the repository. 11 But then it is the management block 12 that directs the FPGA to load the new 13 configuration. 14 Q. What happens if a customer's account 15 permissions are checked and deemed invalid? 16 A. Seshadri at, what are we at, 9, 17 Line 63 says, "A response can be generated to 18 inform the client virtual machine that the load 19 request is accepted. 20 And then the sequence for 21 configuring the customer logic will proceed. 22 So, I believe a POSITA would

90 1 understand that if the permission is not allowed, 2 then the reconfiguration will not proceed and 3 potentially some type of error message is 4 returned, rather than a response indicating that 5 the load request has been accepted. 6 Q. If you go to Paragraph 88, 7 Footnote 8, it discusses that patent owners 8 allege that this limitation is satisfied by 9 logging in to a development kit to a device. 10 And this act of logging in means 11 that the user does not have access. 12 Are you agreeing with that 13 interpretation of the claim limitation? 14 A. What I'm saying is that Seshadri 15 disclosure relates to customer account 16 permissions can be checked. A check may then be 17 performed to determine whether an appropriate 18 reconfigurable shell is already loaded. And if 19 so, then customer logic can be loaded. 20 Otherwise, a check can be made to 21 ensure that the load of the new customer logic 22 can be performed.	92 1 Q. So, I guess just at a high level, 2 what is the mask in Atsatt? 3 A. The mask in Atsatt controls which 4 portions of Atsatt's partition can be updated. 5 Q. And what is a partition? 6 A. In Atsatt Figure 3, it illustrates 7 the allocation of groupings of sectors called 8 partitions across programmable logic sectors. 9 "Some partition such as partition 10 120 are entirely within and fully encompass a 11 sector. The programmable fabric 100 may also 12 include partitions, such as partition 126, that 13 spans multiple sectors. 14 "Some partitions such as partition 15 131 extend beyond and/or do not fully encompass 16 sectors in which the partition is located. 17 MR. JACOBS: And before I forget I'm 18 just going to drop Exhibit 1006 which is 19 Atsatt. 20 (Whereupon, previously marked 21 Exhibit 1006, 22 first referral.)
91 1 So, I'm saying that Seshadri, by 2 going through these account permissions and 3 additional checks, is teaching the -- that the 4 bridge is lockable and unlockable to enable -- to 5 prevent user access and enable user access. 6 MR. JACOBS: Okay. Let's take maybe 7 a five-minute break before I move to a 8 different topic. 9 THE WITNESS: Sure. 10 (Recess taken -- 12:11 p.m.) 11 (After recess -- 12:19 p.m.) 12 BY MR. JACOBS: 13 Q. Okay, Dr. Alpert, let's talk about 14 the Atsatt reference a bit and let's jump to 15 Paragraph 196 of your declaration. 16 A. Okay. I am at Paragraph 196 in the 17 paper copy. 18 Q. Okay. In this section you are 19 discussing the lockable and unlockable claim 20 limitations, right? 21 A. Yes, that is definitely included in 22 this paragraph.	93 1 BY MR. JACOBS: 2 Q. And then I'm just going to -- 3 processing your answer, I'm not sure that 4 actually describes what a partition is. 5 I understand that Atsatt has sectors 6 and it also has partitions, and then a mask 7 controls which portions of a partition can be 8 updated. 9 But I'm not clear on the 10 relationship between those three things. 11 A. Okay. I kind of lost track. What 12 is the question? 13 Q. Let's start with this, what is the 14 difference between a sector and a partition? 15 A. Okay. A sector would be a region of 16 the FPGA that can be modified through -- well, 17 let's just take a look. 18 We've got this figure, just looking 19 at the paper copy. 20 Q. Sure. 21 A. So, in Figure 2 shows generally the 22 FPGA fabric for Atsatt.

94 1 And it does show these sectors or 2 these rectangular regions that include the 3 programmable logic devices that are user 4 programmable. 5 A partition would be either a part 6 or the entirety of one or more sectors. 7 Q. Okay. So, a partition could be a 8 sector? 9 A. Yes. A partition can be one sector. 10 It can be a part of a sector. It can be multiple 11 sectors. And it can be multiple parts of 12 sectors. 13 Q. Do you map a sector to anything in 14 Claim 1? 15 A. In Element 1a, a first region and a 16 second region, the second region is mapped to the 17 sectors, the programmable logic sectors. 18 I don't know if that answered your 19 question. 20 Q. That does. 21 So, it is mapped to the sectors. 22 Is it not mapped to the partitions?	96 1 "The masks describe this ownership." 2 That is block 204 of the flow chart. 3 "The mask may include allowed and 4 not allowed masks to indicate resource ownership 5 for the partition. 6 "In short, the mask mechanism is 7 used to enable or disable user access to each 8 partition." 9 Q. Which paragraph were you referencing 10 in your declaration? 11 A. This is Paragraph 196 on Page 123. 12 Q. So, are masks specific to a user? 13 A. The masks are specific to a 14 partition. 15 Q. Okay. And then, the user provides 16 the mask defining the partition when they provide 17 their configuration data? 18 A. Can I just hear that question again? 19 Q. Sure. So, the user provides the 20 mask defining the partition when they provide 21 their configuration data? 22 A. Well, Atsatt explains that it is, "A
95 1 A. In my analysis for Element 1c, I 2 explain that the -- there are groupings called 3 partitions across programmable logic sectors and 4 that those are the sandboxes of Element 1c. 5 Q. So, then what is this sector? 6 A. A sector is a physical region of the 7 FPGA where the programmable devices would be 8 located. 9 Q. Okay. So, a sector is the second 10 region and then a partition is the sandbox? 11 A. The collection of sectors, all 12 together, is the second region. 13 And -- 14 Q. Okay. 15 A. And a partition, which would be a 16 grouping of logic circuits from those sectors, 17 would be a sandbox. 18 Q. Okay. So, how does the mask operate 19 in relation to the partitions? 20 A. In Atsatt, the "mask for a partition 21 that indicates resources to which the partition 22 is associated.	97 1 configuration controller, before or during 2 runtime, that may generate a mask for a partition 3 that indicates resources to which the partition 4 is associated. 5 "The configuration controller may 6 use the masks to reconfigure the partition 7 without changing other partitions." 8 So, Seshadri is indicating that 9 there is a configuration controller that 10 determines the mask which is then associated with 11 the, what is it called here, the configuration 12 source 212, that is shown in Figure 9. 13 Q. So, the configuration controller 14 generates the mask? 15 A. That is what Seshadri says. "A 16 configuration controller, before or during 17 runtime, may generate a mask or a partition that 18 indicates resources for which the partition is 19 associated." 20 Q. Okay. I'm going to refer to 21 Figure 16 in Atsatt. And at Figure 16, the first 22 block in this flow diagram says, "Received

98 1 configuration data, a mask, a first 2 authentication key and a second authentication 3 key." 4 Considering that includes receiving 5 configuration data which would come from a user, 6 that also means that the mask comes from the 7 user, correct? 8 A. In, it looks like Paragraph 52 of 9 Atsatt, does explain a little bit more about how 10 the masks are generated. "The generation of 11 masks can occur on a certified server or on the 12 programmable device, either at runtime or before 13 runtime. 14 "For example, in some embodiments, 15 the device, e.g., a configuration controller, 16 performs the merging of masks, assigns the masks 17 and stores them off chip in a flash memory. 18 "Additionally or alternatively, the 19 configuration controller can fetch the masks for 20 all regions that intersect a sector and 21 dynamically generate a new mask. The new mask 22 can be generated in a system data manager for the	100 1 that is where my confusion is coming from. 2 Because, when we look at 3 Paragraph 94, it says the device controller may 4 receive the mask. 5 A. Well, I was providing that in 6 response to your question, I believe, of whether 7 the user specifies the masks. 8 And I was trying to clarify that it 9 is, in fact, not the user that specifies the 10 masks, but it is a server or device controller 11 that has access to all of the information about 12 which sectors are being used for different 13 partitions. 14 So, you asked the question. I gave 15 the best answer I could. 16 Q. Okay. So, your position is that 17 before runtime, the configuration controller can 18 generate a mask? 19 A. I believe that Seshadri is saying it 20 can happen at runtime. What I am particularly 21 saying is it is not the user that specifies the 22 masks, but it is the overall management of the
99 1 programmable device. 2 "Additionally or alternatively the 3 masks may be generated in place in the data 4 register by sending masks in the data register 5 one at a time utilizing the arithmetic operations 6 of the data register." 7 So, there is a, what Atsatt is 8 calling a certified server that would be used to 9 generate the masks or on the programmable device, 10 but the specification of the masks involves 11 allocating particular sectors or portions of 12 sectors to a sandbox, to a particular user. 13 And the determination of the masks 14 is not made by the user. It is done by the -- 15 for the overall management of the FPGA. 16 Q. Okay. So, how did that answer, 17 explain how a configuration controller, "before 18 or during runtime, may generate a mask for a 19 partition that indicates resources to which the 20 partition is associated." 21 And I will note that in the report 22 you don't cite anything for this sentence. So,	101 1 FPGA and security of the FPGA that is involved in 2 determining what would be the mask associated 3 with the partition. 4 Q. But a user would provide a mask with 5 their configuration data, right? 6 A. Looking at Seshadri again. At 7 Paragraph 50, Seshadri says, "Figure 7 8 illustrates a block diagram view of the masks/or 9 process of partially reconfiguring the 10 programmable device in the region 141 from the 11 reconfigured mask, image 160, according to an 12 embodiment of the present disclosure. 13 "The reconfigured mask image 160 is 14 zeroed out using the zero mask 142 and in 162 15 with the reconfigured mask image 160. 16 "This AND results in the zeroed out 17 configuration mask that is ORed with the Y mask 18 146 to result in the Y-configured image." 19 So, there is a number of 20 disclosures. There are several paragraphs there 21 where Seshadri does explain how the masks are 22 determined.

102 1 And that is determined for the FPGA 2 as a whole. That meaning the mask values for a 3 partition rather than by the user. 4 The user may specify configuration 5 for the values for a partition, but the mask 6 associated with how the partition is assigned to 7 the sectors would not be provided by the user. 8 It would be determined by the -- for the global 9 management of the FPGA. 10 Q. Okay. So, you were citing Figure 7 11 for that explanation, right? 12 A. Yes. 13 Q. Okay. Why don't we jump to 14 Figure 7, then. 15 And then in your answer you were 16 explaining how the masks are contributing to the 17 reconfiguration of the programmable device? 18 A. Sorry. They are what? 19 Q. In your answer, you were explaining 20 how the masks contribute to the reconfiguration 21 of the programmable device. 22 But, I was asking you how the masks	104 1 Q. Okay. Well, looking at 2 Paragraph 52. 3 I'm reading that, "The generation of 4 masks can occur on a certified server or on the 5 programmable device either at runtime or before 6 runtime?" 7 And then, the configuration 8 controller could merge them but the user is still 9 providing a mask with their configuration data, 10 right? 11 A. In my declaration, Paragraph 123, I 12 cite to Seshadri. It says it is Paragraph 5. It 13 says, "For instance the server" -- 14 Q. Just to be clear, you said Seshadri. 15 We are talking about Atsatt. So, 16 and I think you said paragraph, I think you said 17 a paragraph in Seshadri. 18 I just want to make sure that we are 19 in the right place. Because you said 123. I 20 thought we were in the 190s? 21 A. This is Page 123. It looks like 22 Paragraph 196.
103 1 themselves are generated. 2 You were discussing how certain 3 portions are zeroed out or one'd out. 4 So, I am confused how that relates 5 to the configurable device receiving masks. 6 A. Well, Paragraph 52, that I believe I 7 read before, talks about the generation of masks 8 can occur on a certified server or on the 9 programmable device, either at runtime or before 10 runtime. 11 For example, in some embodiments the 12 device, e.g., configuration controller, performs 13 the merging of masks, assigns the masks, and 14 stores them off chip in flash memory. 15 So, the generation of the masks is 16 done, in this case, it says by a certified server 17 or, for example, a configuration controller. 18 It is not done by the user. The 19 user doesn't allocate which parts of the 20 programmable logic go to a partition. That has 21 to be done across the entire device, the entire 22 FPGA.	105 1 Q. Oh, okay. 2 A. Thank you for pointing that out, 3 because it was a misstatement. I am talking 4 about Atsatt. 5 And there is a citation to 6 Paragraph 5 of Atsatt which says, "For instance, 7 a server having multiple virtual machines may 8 enable a user to change a region allocated to the 9 user, without enabling the user to change other 10 regions. 11 "A configuration controller, before 12 or during runtime, may generate a mask for a 13 partition that indicates resources to which the 14 partition is associated. 15 "The configuration controller may 16 use the mask to reconfigure the partition without 17 changing other partitions." 18 And, if the user were specifying the 19 mask, then the type of operation and security 20 that is explained in this reference and others 21 that I have cited would not be available, would 22 not be the teachings of Atsatt.

106 1 So, the user does not provide the 2 mask, because if the user provided the mask, then 3 the user could modify other partitions. 4 Q. I'm not suggesting that the user is 5 the one who is generating the mask and deciding 6 which region that user would necessarily want to 7 modify, because I agree with you that means that 8 they could decide that they want to modify other 9 partitions. 10 But, we look at Figure 16 and its 11 discussion, it says that the system is receiving 12 the mask along with the configuration data, which 13 to me indicates that the mask is sent by the 14 user, even if it is not originally generated with 15 them, because the purpose of the mask is to 16 narrow which area the user wants to configure? 17 A. Looking at Paragraph 93 on Atsatt, 18 it explains that, "Figure 6 is a flow diagram 19 illustrating a process 380 for partially 20 reconfiguring a programmable fabric while 21 maintaining reconfigurable partitions using this 22 system 210 of Figure 9 according to an embodiment	108 1 A. The configuration source, it tells 2 us is -- 3 Where is it? Memory, for example, 4 memory storage device instruction received from a 5 processor. 6 So, the configuration source is not 7 the user. I would expect that it includes 8 information from the user about the, how to 9 configure the partition. 10 But, it includes other information 11 that relates to the masking, decompression, 12 authentication, and decryption. 13 Q. You mentioned the programmable 14 fabric a few times. 15 I'm curious, what is that? 16 A. The programmable fabric is depicted 17 as 100 in Figure 3. 18 And the programmable fabric 100 19 includes global resources 112, 114, 116 and 118, 20 as well as the sectors, the programmable sectors 21 that are shown, 102, 102A, 102B, 102C, and so on. 22 THE WITNESS: I was going to suggest
107 1 of the present disclosure." 2 In Figure 9, the configuration, the 3 configuration information comes from a 4 configuration source 212. 5 And it looks like in Paragraph 59 6 explains about configuration source 212. It 7 sends data, e.g., a data stream 214 associated 8 with configuring or programming the FPGA 40. 9 It goes on to explain that it may be 10 a, for example, a memory storage device, 11 instructions received from a processor or any 12 other suitable form. 13 So, the flow chart that you pointed 14 to does relate to accessing configuration data 15 including masks from a configuration source. 16 My understanding is that would be 17 prepared from user data and from decisions about 18 how to allocate the user configuration to a 19 partition to various sectors in the programmable 20 fabric. 21 Q. So, is the configuration source the 22 user?	109 1 when we get to a breaking point, it is 2 1 o'clock now. 3 If we can take a lunch -- 4 MR. JACOBS: Actually, at this 5 point, I think I will pass the witness. 6 So, let's go off the record. 7 (Recess taken -- 1:01 p.m.) 8 (After recess -- 1:01 p.m.) 9 EXAMINATION 10 BY MR. LIANG: 11 Q. Dr. Alpert, I just have some quick 12 questions. 13 At the start of the deposition, 14 counsel had asked you about materials that you 15 have with you. And there was a discussion of 16 your binders. 17 Do you recall that? 18 A. Yes, I do recall that. 19 Q. Other than your binders, are there 20 any other materials that you have with you today? 21 A. Yes. I should have mentioned that 22 there is a list of errata to the declaration that

110 1 I prepared. 2 And my understanding that was 3 provided to the opposing counsel. 4 MR. LIANG: Okay. I'm going to 5 upload an exhibit and I would ask the court 6 reporter if you could please mark this as 7 Exhibit 1053. 8 (Whereupon, previously marked 9 Exhibit 1053, 10 first referral.) 11 BY MR. LIANG: 12 Q. And Dr. Alpert, is Exhibit 1053 the 13 errata that you are referring to? 14 A. Yes, that is -- anyway, I do have 15 that in front of me. And now we have an 16 electronic copy as well. 17 Q. Okay. 18 MR. LIANG: Thank you, Dr. Alpert. 19 No further questions. 20 Are we going off the record? 21 MR. JACOBS: Yes. I am good to go 22 off the record.	112 1 CERTIFICATE OF NOTARY 2 * * * * * 3 I, LORI J. GOODIN, RPR, CRR, RSA, 4 CA CSR # 13959 the Notary for this proceeding, do 5 hereby certify that the witness whose testimony 6 appears in the foregoing proceeding was sworn by 7 me; that I am neither counsel for, related to, 8 nor employed by any of the parties to the action 9 in which this deposition was taken; and, further, 10 that I am not a relative or employee of any 11 attorney or counsel employed by the parties 12 hereto, or financially or otherwise interested 13 in the outcome of this action. 14 15 <u>LORI J. GOODIN, RPR, CRR, RSA</u> 16 <u>CA CSR# 13959</u> 17 Notary Public in and for: 18 STATE OF FLORIDA, COUNTY OF SARASOTA 19 Notary Commission Number: GG987804 20 My Commission expires: May 12, 2028 21 STATE OF CALIFORNIA, CA CSR# 13959 22 My Commission expires: February 22, 2026 DISTRICT OF COLUMBIA, WASHINGTON DC My Commission expires: June 1, 2026
111 1 (Whereupon, signature not having been waived, 2 the deposition suspended at 1:03 p.m.) 3 * * * 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	113 1 Case: Advanced Micro Devices, Inc., et al. vs Concurrent Ventures, LLC, et al. 2 Witness Name: Donald Alpert, Ph.D. 3 Deposition Date: 01/16/2026 4 5 6 Please be advised that the transcript in the above 7 referenced matter is now complete and ready for signature. 8 The deponent may come to this office to sign the transcript, 9 a copy may be purchased for the witness to review and sign, 10 or the deponent and/or counsel may waive the option of 11 signing. Please advise us of the option selected. 12 Please forward the errata sheet and the original signed 13 signature page to counsel noticing the deposition, noting the 14 applicable time period allowed for such by the governing 15 Rules of Procedure. If you have any questions, please do 16 not hesitate to call our office at (202)-232-0646. 17 18 Sincerely, 19 Digital Evidence Group 20 Copyright 2026 Digital Evidence Group 21 Copying is forbidden, including electronically, absent 22 express written consent.

114 1 Digital Evidence Group, L.L.C. 1730 M Street, NW, Suite 812 2 Washington, D.C. 20036 (202) 232-0646 3 4 SIGNATURE PAGE 5 Case: Advanced Micro Devices, Inc., et al. vs Concurrent Ventures, LLC, et al. 6 Witness Name: Donald Alpert, Ph.D. 7 Deposition Date: 01/16/2026 8 I do hereby acknowledge that I have read 9 and examined the foregoing pages 10 of the transcript of my deposition and that: 11 (Check appropriate box): 12 ☐ The same is a true, correct and 13 complete transcription of the answers given by 14 me to the questions therein recorded. 15 ☐ Except for the changes noted in the 16 attached Errata Sheet, the same is a true, 17 correct and complete transcription of the 18 answers given by me to the questions therein 19 recorded. 20 _____ DATE WITNESS SIGNATURE 21 22 _____ DATE NOTARY	
115 1 Errata Sheet 2 NAME OF CASE: Advanced Micro Devices, Inc., et al. vs Concurrent Ventures, LLC, et al. 3 DATE OF DEPOSITION: 01/16/2026 4 NAME OF WITNESS: Donald Alpert, Ph.D. 5 Reason Codes: 1. To clarify the record. 6 2. To conform to the facts. 7 3. To correct transcription errors. 8 Page _____ Line _____ Reason _____ 9 From _____ to _____ 10 Page _____ Line _____ Reason _____ 11 From _____ to _____ 12 Page _____ Line _____ Reason _____ 13 From _____ to _____ 14 Page _____ Line _____ Reason _____ 15 From _____ to _____ 16 Page _____ Line _____ Reason _____ 17 From _____ to _____ 18 Page _____ Line _____ Reason _____ 19 From _____ to _____ 20 21 _____ 22 DONALD ALPERT, PH.D.	