

Deposition of
Todd Mowry, Ph.D.
February 11, 2025

Qualcomm
vs.
Network System Technologies



www.aptusCR.com | 866.999.8310

1 UNITED STATES PATENT AND TRADEMARK OFFICE 2 _____ 3 4 BEFORE THE PATENT TRIAL AND APPEAL BOARD 5 _____ 6 7 QUALCOMM INCORPORATED 8 Petitioner 9 v. 10 NETWORK SYSTEM TECHNOLOGIES, LLC 11 Patent Owner 12 13 U.S. Patent No. 7,373,449 14 _____ 15 16 Inter Partes Review No. IPR2024-00338 17 18 DEPOSITION OF TODD MOWRY, PH.D. 19 VIA ZOOM VIDEOCONFERENCE 20 Pittsburgh, Pennsylvania 21 Tuesday, February 11, 2025 22 23 24 Reported By: Lynden J. Glover, CSR No. 5510 25 Job No. 10158402	1 APPEARANCES: 2 3 For the Petitioner: 4 NIXON PEABODY LLP 5 Attorneys at Law 6 BY: ANGELO J. CHRISTOPHER 7 BENJAMIN HOLT 8 70 West Madison 9 Suite 5200 10 Chicago, Illinois 60602-4378 11 achristopher@nixonpeabody.com 12 bholt@nixonpeabody.com 13 For the Patent Owner: 14 CARLSON CASPERS VANDENBURGH & LINDQUIST, P.A. 15 Attorneys at Law 16 BY: PETER M. KOHLHEPP 17 NATHAN D. LOUWAGIE 18 225 South Sixth Street 19 Suite 4200 20 Minneapolis, Minnesota 55402 21 pkohlhepp@carlsoncaspers.com 22 nlouwagie@carlsoncaspers.com 23 Video Monitor: 24 CHRIS LANDRUM 25 Aptus Court Reporters
1 UNITED STATES PATENT AND TRADEMARK OFFICE 2 BEFORE THE PATENT TRIAL AND APPEAL BOARD 3 4 5 6 7 QUALCOMM INCORPORATED,) 8) 9 Petitioner,) 10) 11 vs.) Inter Partes Review No. 12) IPR2024-00338 13) Patent No. 7,373,449 14 NETWORK SYSTEM) 15 TECHNOLOGIES, LLC,) 16) 17 Patent Owner.) 18) 19 _____) 20 21 22 23 24 25 DEPOSITION OF TODD MOWRY, PH.D., taken on behalf of the Petitioner, via Zoom videoconference, Pittsburgh, Pennsylvania, commencing at 9:00 a.m. EST, on Tuesday, February 11, 2025, reported by LYNDEN J. GLOVER, CSR No. 5510, a Certified Shorthand Reporter for the State of California, pursuant to Notice.	1 I N D E X 2 3 EXAMINATION BY: 4 Mr. Christopher 5 6 7 8 9 10 11 12 E X H I B I T S 13 (None) 14 15 16 17 18 19 20 21 22 23 24 25

Page 5 1 Pittsburgh, Pennsylvania, Tuesday, February 11, 2025 2 9:00 a.m. EST 3 4 THE STENOGRAPHER: Good morning. My name is 5 Lynden J. Glover. I'm licensed in the state of 6 California. My license number is CSR 5510. I'm also 7 licensed in the state of Washington and Oregon. 8 Would you please raise your right hand, 9 Dr. Mowry? 10 11 TODD MOWRY, PH.D., 12 produced as a witness by and on behalf of the Petitioner, 13 and having been first duly sworn, was examined and 14 testified as follows: 15 16 EXAMINATION 17 BY MR. CHRISTOPHER: 18 Q Good morning. Nice to see you again. Can you 19 please state your name for the record? 20 A Todd Carl Mowry. 21 Q Thank you. Is there any reason why you cannot 22 give complete, truthful, and accurate testimony today? 23 A No. 24 Q Okay. Where are you physically located for 25 today's deposition, Dr. Mowry?	Page 7 1 Q All right. If you can scroll all the way to the 2 last page, it's page 97 of the PDF. 3 A Yes. 4 Q And this declaration is dated January 27th, 5 2025; correct? 6 A Yes. 7 Q And is that your signature that appears on 8 page 97 of the PDF? 9 A Yes, it is. 10 Q And just so we're on the same page today, 11 because we're going to be talking about two declarations, 12 potentially, is it understandable to you if we refer to 13 this declaration, Exhibit 1043, as your second 14 declaration? 15 A Yes. 16 Q Okay. And I just alluded to it. You had 17 previously prepared a declaration in connection with this 18 proceeding; correct? 19 A That's correct. 20 Q I'm going to introduce a copy of Exhibit 1003 in 21 the Zoom chat so we have that available. Please let me 22 know when you have that open. 23 A Yes, I have that open. 24 Q Do you recognize Exhibit 1003 as a copy of your 25 first declaration in this proceeding?
Page 6 1 A I'm in Pittsburgh, Pennsylvania. 2 Q Is that your home office you're doing the 3 deposition out of? 4 A Yes, that's right. 5 Q Okay. Is there anyone else in the room with you 6 today? 7 A No. 8 Q And we're doing this remotely so, obviously, 9 you're in front of a computer; correct? 10 A Yes. 11 Q And you don't have any messaging applications or 12 anything like that opened currently? 13 A That's correct. 14 Q Great. You understand you're here today about a 15 deposition you authored in connection with an 16 inter partes review proceeding? 17 A Yes. 18 Q Okay. Let's do a little housekeeping. I'm 19 going to introduce a copy of Exhibit 1043, which has been 20 previously submitted in the proceeding, in the Zoom chat. 21 Let me know when you have that open. 22 A Yes, I have it open. 23 Q Great. Do you recognize Exhibit 1043 as a copy 24 of your declaration? 25 A Yes, I do.	Page 8 1 A Yes. 2 Q Okay. Did you do anything to prepare for 3 today's deposition? 4 A Yes. I went back and reviewed my declarations 5 and other references that I referred to in my 6 declarations. 7 Q Which references are you referring to? 8 A Well, I didn't take notes on exactly which ones 9 I looked at; but I, for example, looked at the two 10 Goossens references, Goossens2002 and Goossens2003, and 11 I looked at the Drake patent, for example. 12 Q Okay. Did you have any meetings with anyone to 13 prepare for today's deposition? 14 A Yes. 15 Q Okay. And I'm not asking for substance of any 16 discussions during the meetings, but were those meetings 17 with one or more counsel for Qualcomm? 18 A Yes, that's correct. 19 Q Approximately -- sorry. Let me back up. 20 How many times did you meet with counsel in 21 preparation for today's deposition? 22 A I believe three times. 23 Q Okay. Do you recall approximately how long each 24 of those three meetings were? 25 A Roughly speaking, yes.

Page 9 1 Q And how long were, approximately, each of those 2 meetings? 3 A Well, in total it was on the order of maybe 4 11 hours over the three meetings. 5 Q Okay. Again, I'm not looking for the substance 6 of any discussions you had, but can you tell me which 7 attorneys you met with during the course of those three 8 meetings? 9 A I met with Peter Kohlhepp and Nate Louwagie and, 10 I believe, Aaron Pederson was on one of those calls, as 11 well. 12 Q Okay. Anyone else? 13 A I believe that was it. 14 Q Okay. Let's talk about your second declaration. 15 Did you personally write your second declaration? 16 A I drafted my second declaration in collaboration 17 with the Samsung -- sorry. Not the Samsung -- the 18 Qualcomm attorneys, and I directed them to help me draft 19 the text to -- to represent my opinions. 20 Q Would it be fair to say, then, that at least 21 some of the text in your second declaration was written 22 by counsel for Qualcomm? 23 MR. KOHLHEPP: Object to form. 24 THE WITNESS: All of the text in my second 25 declaration is my opinion, and I directed the attorneys	Page 11 1 accurate sense of the amount of time I spent preparing 2 it. It was a nontrivial amount of time. 3 BY MR. CHRISTOPHER: 4 Q Okay. In the course of preparing your second 5 declaration, did you speak to anyone other than the 6 attorneys for Qualcomm regarding the substance of your 7 opinions? 8 A No, I did not. 9 Q You can actually turn now to the very first page 10 of the PDF, Exhibit 1043. Let me know when you're there. 11 A Okay. 12 Q Do you see towards the top where it says, 13 "Qualcomm Incorporated, and Samsung Electronics Co., 14 Limited"? 15 Do you see that? 16 A I do see that. 17 Q You understand that Samsung Electronics has been 18 terminated from this proceeding; correct? 19 A That's my understanding. 20 Q Okay. You were retained on behalf of Qualcomm 21 to prepare the second declaration; correct? 22 A Yes, that's correct. 23 Q In your first declaration, you stated that you 24 were being compensated at \$650 per hour for your time on 25 this case. Do you recall that?
Page 10 1 to help put -- put the words down in the document; and 2 then I reviewed all of the documents and made changes, if 3 necessary. So everything in the document is my opinion. 4 BY MR. CHRISTOPHER: 5 Q How long did you spend preparing your second 6 declaration? 7 A I don't recall an exact number off the top of my 8 head, but I would guess that it was somewhere in the 9 ballpark of maybe 60 hours, something like that. 10 Q Can you give an estimate in terms of how that 11 compares to the time you spent preparing your first 12 declaration? 13 MR. KOHLHEPP: Object to form. 14 THE WITNESS: Well, I prepared my first 15 declaration quite a while ago. I don't remember that 16 very accurately. I would say it was at least the same -- 17 similar amount of time, at least. 18 BY MR. CHRISTOPHER: 19 Q So would it be fair to say you spent 20 approximately the same amount of time preparing your 21 second declaration as you spent preparing your first 22 declaration in this proceeding? 23 MR. KOHLHEPP: Object to form. 24 THE WITNESS: It's been long enough since I 25 prepared my first declaration that I don't really have an	Page 12 1 A Yes, I recall that. 2 Q Is your compensation for this second declaration 3 the same \$650 an hour rate as the first declaration? 4 A Yes, that's correct. 5 Q Let's turn now to Section 3 of your second 6 declaration. This is on page three, which is page six of 7 the PDF, if that helps you. Let me know when you're 8 there. 9 A Okay. I'm there. 10 Q In Section 3 of your second declaration, you 11 discuss certain claim constructions that were proposed by 12 Patent Owner and its expert in this proceeding; correct? 13 A Yes, that's correct. 14 Q And you do not have any opinions on Patent 15 Owner's proposed claim constructions; correct? 16 (Stenographer clarification.) 17 BY MR. CHRISTOPHER: 18 Q Do you need me to re-ask that, or were you 19 thinking? 20 A Yes, please. If you can ask the question again, 21 that would be great. 22 Q You do not have any opinions on Patent Owner's 23 claim constructions; correct? 24 A Well, in this section here, I am discussing 25 Dr. Bagherzadeh's opinions which are related to claim

Page 13 1 construction, but I was not asked to provide claim 2 construction opinions myself. 3 Q Okay. You were not asked to provide any claim 4 construction opinions; correct? 5 A That's correct. 6 Q If you could turn to paragraph 11, this is on 7 page seven of the PDF, page four of the document. Let me 8 know when you're there. 9 A Okay. I'm there. 10 Q In paragraph 11 -- 11 (Stenographer clarification.) 12 MR. CHRISTOPHER: I'll start again. 13 BY MR. CHRISTOPHER: 14 Q In paragraph 11 you wrote: 15 "I see that Dr. Bagherzadeh was asked 16 to apply the definition of 'independently 17 configurable' from the Qualcomm litigation, 18 which was 'able to be configured with 19 connection properties that do not depend on 20 those of another configuration.'" 21 Do you see that? 22 A I see that. 23 Q And then the second sentence you wrote: 24 "I have not been asked to provide an 25 opinion on the specific construction of	Page 15 1 construction. And that construction does not change my 2 opinions. 3 (Simultaneous talking.) 4 (Stenographer clarification.) 5 THE WITNESS: I said I applied that 6 construction. 7 BY MR. CHRISTOPHER: 8 Q Okay. In paragraph 11 of your second 9 declaration, you wrote that you have not been asked to 10 apply the construction from the Qualcomm litigation; 11 correct? 12 A It's correct that I was not asked to apply that 13 construction; but as I stated in my first declaration, 14 I applied a construction that was the same as that 15 construction, and I discussed that that construction did 16 not change my opinions. 17 Q So you did apply the claim construction from the 18 Qualcomm litigation; is that your testimony? 19 A As I stated two questions ago, the -- my 20 understanding is that the ruling in that separate 21 litigation regarding claim construction adoption had not 22 taken place when I wrote my first declaration. 23 But there was a proposed declaration from the 24 Patent Owner, and I applied that claim construction in my 25 first declaration. And the wording of it is the same as
Page 14 1 this term or to apply the construction 2 for the Qualcomm litigation." 3 Do you see that? 4 A I see that, yes. 5 Q So you understand that there was an agreed-upon 6 claim construction for the phrase "independently 7 configurable" in parallel litigation; right? 8 A Yes, that's my understanding. 9 Q Okay. And you state here in paragraph 11 that 10 you have not been asked to provide any opinions on the 11 correctness of that construction; correct? 12 A Yes. That's what it says here, yes. That's 13 correct. 14 Q You also state here in paragraph 11 that you did 15 not apply the agreed construction from the Qualcomm 16 litigation in forming your opinions; correct? 17 MR. KOHLHEPP: Object to form. 18 THE WITNESS: In my first declaration, I applied 19 a construction which has identical wording to the 20 construction that was adopted in that Qualcomm 21 litigation. 22 So I did, in fact, apply the same construction, 23 but I believe that the ruling on adopting it had not 24 happened at the time when I wrote my first construction. 25 But as I recall it is a word-for-word identical	Page 16 1 what was adopted in that separate litigation. 2 Q You understand that that construction was agreed 3 upon prior to the execution of your second declaration; 4 right? 5 A I believe that that was the case. 6 Q Okay. And you wrote in your second declaration: 7 "I have not been asked to apply the 8 construction from the Qualcomm litigation." 9 That's what it says; right? 10 A Yes, that's what it said. I was not explicitly 11 asked to apply the construction from the Qualcomm 12 litigation, but I had already applied a construction with 13 identical wording to that construction in my first 14 declaration. 15 Q In your second declaration, did you apply the 16 claim construction from the Qualcomm litigation; yes or 17 no? 18 MR. KOHLHEPP: Object to form. 19 THE WITNESS: In both of my declarations -- the 20 first declaration and the second declaration -- I applied 21 a claim construction for independently configurable that 22 had identical wording to the one that was adopted in the 23 Qualcomm litigation. 24 But it's true that I was not explicitly asked to 25 apply the construction from the Qualcomm litigation.

Page 17 1 BY MR. CHRISTOPHER: 2 Q All right. Let me see if I understand what 3 you're saying. 4 You were not explicitly asked to apply the claim 5 construction from the Qualcomm litigation, but, in your 6 view, you applied an identical construction in your 7 analysis; is that fair? 8 A Yes, that's fair. 9 Q Okay. I'm going to put a copy of Exhibit 1006 10 in the chat. Let me know when you have that open. 11 A Okay. I have it open. 12 Q Do you recognize Exhibit 1006 as a copy of the 13 Drake reference? 14 A Yes, that's correct. 15 Q Okay. I'm just introducing that now in case we 16 need it, but I want to go back now to your second 17 declaration, Exhibit 1043, in particular paragraph 15. 18 Let me know when you're there. 19 A Okay. I am at paragraph 15 in my second 20 declaration. 21 Q I want to ask you about the third sentence that 22 starts with the phrase, "for example." Let you scroll 23 down, and then I'll ask my question. Let me know when 24 you see that sentence. 25 A I see that.	Page 19 1 A Yes, I see that. 2 Q Would a POSITA understand that QoS allocator 20 3 could be something like a server? 4 MR. KOHLHEPP: Object to form. 5 THE WITNESS: Not necessarily. 6 BY MR. CHRISTOPHER: 7 Q When you say "not necessarily," are you saying 8 that QoS allocator 20 cannot be a server? 9 MR. KOHLHEPP: Object to form. 10 THE WITNESS: The QoS allocator is something -- 11 in this figure, it's something that is connected to the 12 LAN, and it's performing the role of the resource 13 manager. 14 BY MR. CHRISTOPHER: 15 Q That's not my question. My question was are you 16 saying that the QoS allocator 20 cannot be a server. 17 MR. KOHLHEPP: Object to form. 18 THE WITNESS: I did not say that. I said that 19 it's something that's attached to the LAN, and it's 20 performing the role of a resource manager. 21 BY MR. CHRISTOPHER: 22 Q You agree that the QoS allocator 20 could be a 23 server; correct? 24 MR. KOHLHEPP: Object to form. 25 THE WITNESS: From the context of the '449
Page 18 1 Q You wrote in paragraph 15: 2 "For example, a POSITA would understand 3 source station 10 could be something like a 4 server." 5 Do you see that? 6 A Yes, I see that. 7 Q Okay. If we could turn now to Drake, Figure 1. 8 Let me know when you're there. 9 A Yes, I'm there. 10 Q All right. The source station 10 in Figure 1 11 that's in the upper left corner, do you see that? 12 A Yes, I see that. 13 Q That's the component you stated in paragraph 15 14 that a POSITA would understand to be something like a 15 server; right? 16 MR. KOHLHEPP: Object to form. 17 THE WITNESS: I think you misstated my sentence. 18 I think you said it would be something like a server, but 19 what I said is that it could be something like a server. 20 I'm not saying that it is a server. It could be 21 a number of other things. That was just one example of 22 something it might be. 23 BY MR. CHRISTOPHER: 24 Q Okay. Do you see on the bottom part of Figure 1 25 the QoS allocator box 20?	Page 20 1 patent, I'm applying the teachings of Drake to the two 2 Goossens references, Goossens2002 and Goossens2003. 3 And in that context everything here would be 4 integrated onto a single chip in a system on chip. In 5 that case it would not be what we would call a server. 6 What is disclosed here in Figure 1 is that the 7 QoS allocator is some component that is connected to the 8 LAN, and it's performing the role of a resource manager. 9 BY MR. CHRISTOPHER: 10 Q That's not my question. Move to strike. 11 Let's back up. Let's go back to paragraph 15 12 here of your second declaration, and we'll go back to 13 that third sentence. It starts with "for example." Let 14 me know when you're there. 15 A Okay. 16 Q In paragraph 15 you wrote: 17 "A POSITA would understand source station 18 10 could be something like a server." 19 Right. 20 A That's what it says, yes. 21 Q You're giving an example in paragraph 15 -- 22 strike that. 23 You agree that a POSITA reading Drake would 24 understand that the source station 10 could be 25 implemented as a server; correct?

Page 21 1 MR. KOHLHEPP: Object to form. 2 THE WITNESS: Well, you used the word "POSITA." 3 A POSITA who is reading the '449 patent in this 4 combination where we're using the teachings of Drake and 5 applying them to either Goossens2002 or Goossens2003, the 6 POSITA would understand that the -- the QoS allocator 20 7 would be integrated onto the same chip for the system on 8 chip. So it would not be a stand-alone server in that 9 context. 10 BY MR. CHRISTOPHER: 11 Q Again, not my question, and I move to strike as 12 nonresponsive. 13 I'm just focusing on this sentence in paragraph 14 15 of your second declaration. 15 That sentence, when you refer to "a POSITA would 16 understand," you were referring to a POSITA's 17 understanding reviewing Drake; right? 18 A The sentence is in the context of Drake, yes, 19 that's correct. 20 Q Right. And so my question is in the context of 21 Drake with respect to the QoS allocator 20. What would a 22 POSITA reviewing Drake understand the QoS allocator 20 to 23 be? 24 MR. KOHLHEPP: Object to form. 25 THE WITNESS: A POSITA would understand that the	Page 23 1 source station could be something like a server; right? 2 A Yes, that's correct. 3 Q Okay. And my question for you -- and this 4 has -- this is in the context of Drake; not the proposed 5 combinations. 6 Would a person of ordinary skill in the art 7 reviewing Drake also understand that the QoS allocator 20 8 could be something like a server? 9 MR. KOHLHEPP: Object to form, scope. 10 THE WITNESS: My opinions related to Drake in my 11 two declarations are in the context of the teachings of 12 Drake being applied to the Goossens2002 and Goossens2003 13 references. 14 And a person of ordinary skill in the art 15 reading Drake would understand that the QoS allocator 20 16 would be a component integrated onto the system on chip 17 that is connected to the interconnect, which in this case 18 is labeled as LAN 17. 19 BY MR. CHRISTOPHER: 20 Q Again, that's not my question. Move to strike 21 as nonresponsive. 22 Would a person of ordinary skill in the art 23 reviewing Drake understand that the QoS allocator 20 24 could be something like a server; yes or no? 25 MR. KOHLHEPP: Same objection; form, scope.
Page 22 1 QoS allocator 20 is a component that is connected to 2 what's labeled in this case the LAN 17 and that it's 3 performing the role of being a resource manager. 4 BY MR. CHRISTOPHER: 5 Q Would a POSITA understand that a QoS allocator 6 in Drake could be something like a server, like the 7 source station 10; yes or no? 8 MR. KOHLHEPP: Object to form. 9 THE WITNESS: In the context of applying the 10 teachings of Drake to either Goossens2002 or 11 Goossens2003, a POSITA would understand that the QoS 12 allocator 20 would be integrated onto the same system on 13 chip, and it would be a component that is connected to 14 the interconnect fabric. In this figure that's labeled 15 as LAN 17. 16 BY MR. CHRISTOPHER: 17 Q Again, not my question. Move to strike as 18 nonresponsive. 19 Let's try to take this in pieces. My question 20 is what a person with ordinary skill in the art would 21 understand based on the Drake reference. 22 Do you understand that? 23 A I'm familiar with the Drake reference. 24 Q Okay. And you have opined in your declaration 25 that a POSITA reviewing Drake would understand that the	Page 24 1 THE WITNESS: My opinions in the first and 2 second declarations are in the context of applying the 3 teachings of Drake to the Goossens2002 and Goossens2003 4 references. 5 And a person of ordinary skill in the art 6 reviewing Drake in that context would understand that the 7 QoS allocator 20 is a separate component that is 8 connected through the interconnect and integrated onto 9 the same system on chip. 10 MR. CHRISTOPHER: Move to strike as 11 nonresponsive. 12 BY MR. CHRISTOPHER: 13 Q Would a person of ordinary skill in the art 14 reviewing the Drake reference by itself understand that 15 the QoS allocator 20 could be something like a server; 16 yes or no? 17 MR. KOHLHEPP: Same objection; form, scope. 18 THE WITNESS: I believe that question's 19 identical to the previous question, so I refer to my 20 previous answer. 21 BY MR. CHRISTOPHER: 22 Q You don't have any opinions with respect to 23 whether -- strike that. 24 You don't have an opinion as to whether a person 25 of ordinary skill in the art would understand that the

Page 25 1 QoS allocator in Drake could be something like a server, 2 correct? 3 A My analysis in my first and second declarations 4 was using the teachings of Drake and applying them to the 5 Goossens2002 and Goossens2003 references, and in that 6 context the QoS allocator 20 is a separate component that 7 is integrated onto the same system on chip. 8 Q So the answer to the last question was yes; 9 correct? 10 A Sorry. Could you repeat the previous question? 11 I don't remember the exact wording of the previous 12 question. 13 Q You do not have an opinion as to whether a 14 person of skill in the art would understand that the QoS 15 allocator 20 in Drake could be something like a server; 16 correct? 17 A That's the same question that I answered two 18 questions ago, so I refer to my previous answer to that 19 same question. 20 Q And the answer to that question is yes; correct? 21 A I refer to my answer from the previous question. 22 Q Okay. I'm going to ask it one more time. 23 I'm trying to understand your opinions because 24 you've offered an opinion that a person of skill in the 25 art reviewing Drake would understand that the source	Page 27 1 And in that context, a person of ordinary skill 2 in the art would realize that QoS allocator 20 is a 3 component connected to the interconnect, which in this 4 case is labeled as LAN 17, that would be integrated onto 5 the same system on chip. 6 MR. CHRISTOPHER: Move to strike as 7 nonresponsive. We'll move on. 8 BY MR. CHRISTOPHER: 9 Q Let's go to paragraph 31 of your second 10 declaration. Let me know when you're there. 11 A Okay. 12 Q All right. In paragraph 31, in the first 13 sentence you wrote: 14 "Dr. Bagherzadeh appears to suggest that 15 everything inside of source station 10 is 16 software running on a common processing module. 17 That is not what a POSITA would understand 18 Drake to disclose." 19 Do you see that? 20 A Yes, I see that. 21 Q And then in the next sentence you wrote: 22 "A POSITA would understand Drake to be 23 disclosing and describing application 11 and QoS 24 requestor manager 12 and separate components." 25 Do you see that?
Page 26 1 station 10 could be something like a server. That's 2 paragraph 15; right? 3 A Yes. 4 Q Okay. And a server is one example of how a 5 person skilled in the art reviewing Drake would 6 understand that the source station 10 could be 7 implemented; correct? 8 A Yes, that's correct. 9 Q Okay. And so my question for you is would a 10 person of skill in the art reviewing Drake understand 11 that the QoS allocator 20, like the source station 10, 12 could be implemented as a server. 13 MR. KOHLHEPP: Object to form, scope. 14 THE WITNESS: I believe that's exactly the same 15 question I've been asked several times, so I refer to my 16 same answer to that question. 17 BY MR. CHRISTOPHER: 18 Q I'm going to try it one more time. 19 Would a person of ordinary skill in the art 20 reviewing Drake understand that the QoS allocator 20 21 could be something like a server; yes or no? 22 MR. KOHLHEPP: Object to form, scope. 23 THE WITNESS: My opinions in my first and second 24 declarations are in the context of applying the teachings 25 of Drake to the Goossens2002 and Goossens2003 references.	Page 28 1 A Yes, I see that. 2 Q What do you mean by "components"? 3 A I'm not sure, I mean, if you're asking me for a 4 dictionary definition of components; but, I mean, these 5 are separate entities, separate things. That's -- 6 they're labeled with -- in separate boxes in Drake. 7 So a POSITA would understand that these were 8 separate components. They're -- they're notated, they're 9 illustrated as being separate things. 10 Q Well, earlier in the first sentence of paragraph 11 31, you disagree that everything inside of source station 12 10 is software running on a common processing module. 13 Do you see that? 14 A Yes. 15 Q And so when you say that application 11 and QoS 16 requestor manager 12 are separate components, your 17 opinion is that the QoS requestor manager 12 and 18 application 11 are separate hardware components; correct? 19 A Well, in applying the teachings of Drake to 20 Goossens2002 and Goossens2003, in that context a POSITA 21 would understand application 11 and QoS requestor manager 22 12 to be separate hardware components. 23 Now, the hardware sometimes runs software. So 24 when you say, "Are they hardware?" I'm not providing an 25 opinion on whether there is no software involved.

Page 29 1 But I -- my opinion is that they are -- in that 2 context of applying Drake to the two Goossens references, 3 application 11 and QoS requestor manager would be 4 separate hardware components. 5 Q Okay. My question is about Drake by itself. Do 6 you understand that? 7 A My opinions in my first and second declaration 8 are in the context of taking the teachings from Drake and 9 applying them to Goossens2002 and Goossens2003. 10 Q You reviewed the Drake reference when preparing 11 your opinions; correct? 12 A Yes, I did. 13 Q You understood the Drake reference; correct? 14 A That's correct. 15 Q Okay. So focusing on Drake, the four corners of 16 Drake, is it your opinion that a person of skill in the 17 art would understand that the application 11 in the QoS 18 requestor manager 12 that are shown in Figure 1 would be 19 separate hardware components in Drake? 20 A Well, in the context of applying Drake, the 21 teachings of Drake to the Goossens2002 and Goossens2003 22 references, the application 11 and the QoS requestor 23 manager would be separate hardware components in that 24 context. 25 I'm not providing an opinion on Drake in	Page 31 1 a POSITA would understand QoS requestor manager 2 12 to be software." 3 Do you see that? 4 A I see that. 5 Q So your opinion is that a POSITA would 6 understand that the requestor manager 12 in Drake is not 7 software; correct? 8 A I disagree with that statement. The -- 9 Dr. Bagherzadeh is suggesting that the QoS requestor 10 manager is only software. 11 What I'm saying is that I do not agree -- agree 12 that a POSITA would understand that it is necessarily 13 just software. 14 What I'm saying is that the POSITA would 15 understand Drake to be disclosing and describing 16 application 11 and QoS requestor manager 12 as separate 17 components. 18 Q You said that a person of skill in the art would 19 understand that the QoS requestor manager is not 20 necessarily just software. 21 Do you recall that? 22 A That -- yes. I believe I said that, yes. 23 Q Would you agree that the QoS requestor manager 24 12 could be just software? 25 MR. KOHLHEPP: Object to form.
Page 30 1 isolation. My opinions are applying the teachings of 2 Drake to the combinations that build upon the 3 Goossens2002 and Goossens2003 references. 4 Q You do not have an opinion as to whether a 5 person of skill in the art reviewing Drake by itself 6 would understand that the application 11 and QoS 7 requestor manager 12 are separate hardware components. 8 Is that your testimony? 9 MR. KOHLHEPP: Object to form. 10 THE WITNESS: What I said here in my declaration 11 is a POSITA would understand Drake to be disclosing and 12 describing application 11 and QoS requestor manager 12 as 13 separate components. 14 BY MR. CHRISTOPHER: 15 Q Okay. And when you referred to that 16 understanding that application 11 and QoS requestor 17 manager are separate components, you were referring to 18 separate hardware components; correct? 19 A Not necessarily. 20 Q Okay. Let's go to paragraph 56 of your second 21 declaration. Let me know when you're there. 22 A Okay. 23 Q Count the sentences. Second sentence. You 24 state: 25 "As I explain above, I do not agree that	Page 32 1 THE WITNESS: Well, the answer to that would 2 depend upon the context. And in the context of applying 3 the teachings of Drake to either the Goossens2002 or 4 Goossens2003 references, the QoS requestor manager 12 in 5 that context would not simply be software. 6 BY MR. CHRISTOPHER: 7 Q In the context of Drake by itself, would a 8 person of ordinary skill in the art understand that the 9 QoS requestor manager 12 could just be software? 10 A I have not formed an opinion on whether -- I was 11 not asked to form an opinion that is on -- and I have not 12 formed an opinion on whether Drake is, say, necessarily 13 hardware, necessarily software. 14 What is clear is that the application 11 and the 15 QoS requestor manager 12 are separate components. 16 And in the context of applying the teachings of 17 Drake to either the Goossens2002 or Goossens2003 18 references in that context, the QoS requestor manager is 19 a separate component separate from application 11, and it 20 would be a different -- it would involve hardware in that 21 case -- in that particular context. 22 Q In that context you just mentioned at the end of 23 your last answer in combination, what type of hardware 24 would it be involved in implementing the QoS requestor 25 manager 12?

Page 33 1 A I don't think I understand the question. It 2 would be some type of logic integrated onto the system on 3 chip, some type of functionality. 4 There's a wide range of possibilities, so I 5 don't -- I don't quite understand what you mean when you 6 say "what type of hardware." There are many 7 possibilities. 8 Q Can you list what those possibilities would be 9 in the proposed combination you referenced? 10 A I mean, I don't understand the question because 11 it's circuitry integrated onto the system on chip. 12 There's almost an unbounded set of possible ways to 13 design that hardware. 14 Q We'll go back to paragraph 15 of your second 15 declaration. 16 A Do you know what page that's on in the PDF? 17 Q One second. 18 This is pages eight and nine of the PDF. And, 19 actually, my question is on page nine of the PDF if you 20 want to go there. 21 A Okay. 22 Q Okay. Do you see the sentence that starts "a 23 POSITA would understand" about halfway down? 24 A I think so. 25 Q You wrote in paragraph 15:	Page 35 1 processor; correct? 2 MR. KOHLHEPP: Object to form. 3 THE WITNESS: No, not necessarily. 4 BY MR. CHRISTOPHER: 5 Q Why not? 6 A These components can be implemented with fixed 7 function hardware that it would not be a general purpose 8 processor. 9 Q When you mentioned "fixed function hardware," 10 would that be something like an ASIC application specific 11 integrated circuit? 12 A The term "ASIC" is a general term that can refer 13 to a number of things. Sometimes processors or 14 specialized processors are built using ASICs. 15 I believe in your original question you asked 16 whether the interfacing components required a process- -- 17 their own processor. 18 And what I was pointing out is that you don't 19 necessarily need a processor to perform that 20 functionality. You can have dedicated hardware. 21 Sometimes the term "ASIC" is used to refer to 22 hardware that is not a processor, but it's a general term 23 that can also refer to hardware that does include 24 processing elements. 25 Q But you agree -- you would agree, wouldn't you,
Page 34 1 "A POSITA would understand the application 2 running on the server to be a component (such 3 as the main processor) that is separate from 4 the interfacing components that are also part 5 of the server." 6 Do you see that? 7 A Yes, I see that. 8 Q Okay. And the application running on the server 9 that you mentioned in that sentence is the application 11 10 in the source station 10 in Drake; right? 11 A Yes, that's correct. 12 Q And in the sentence, you're opining that a 13 person of skill in the art would understand that the 14 application 11 would be a component such as the main 15 processor; correct? 16 A Yes, that's correct. 17 Q And in that sentence you also mentioned "the 18 interfacing components that are also part of the server." 19 Do you see that? 20 A Yes, I see that. 21 Q Your opinion is that the interfacing components 22 are separate from the application 11; correct? 23 A Yes, they are separate components. 24 Q The interfacing components that are separate 25 from the main processor would need their own dedicated	Page 36 1 that one way to implement what you refer to as the 2 interfacing components in Drake would be to use a 3 dedicated processor; correct? 4 A That is one possibility in some contexts, but 5 it's also equally possible to use fixed function 6 hardware. In the case of a system on chip, it's more 7 likely that you would use fixed function hardware, but 8 it depends on the context. 9 Q Drake is not directed to a system on chip; 10 correct? 11 A Drake is not designed solely for a system on 12 chip environment, but it is -- it is not -- it's a much 13 older patent before system on chip technology became 14 popular. But the teachings of Drake apply directly to 15 systems on chip. 16 Q And you agree that Drake does not expressly 17 address whether the components you have referred to as 18 interfacing components are implemented using a dedicated 19 processor or fixed function hardware; correct? 20 A I believe Drake does not spell that out one way 21 or the other. It does provide fairly detailed -- 22 detailed flow charts in the figures which are described 23 in the specification. 24 And those -- those algorithms shown in those 25 flow charts could be implemented either in fixed function

Page 37 1 hardware or in dedicated -- or dedicated processors. 2 Both are possibilities. 3 MR. CHRISTOPHER: Before I go to a new topic, 4 why don't we take a short break. We've been going about 5 an hour. Let's go off the record. 6 (Recess.) 7 BY MR. CHRISTOPHER: 8 Q Dr. Mowry, can you please turn to Drake column 9 four starting around line 39, and let me know when you're 10 there? 11 A Okay. I'm there. 12 Q Do you see the sentence that reads: 13 "LAN transport protocol 15 and MAC 16 14 are standard parts of all stations attached 15 to a LAN, the details of which are determined 16 by the LAN itself"? 17 Do you see that? 18 A Yes, I see that. 19 Q Drake teaches that the details of LAN transport 20 protocol 15 and MAC 16 are determined by the LAN itself; 21 correct? 22 A Well, the sentence you just referred to says 23 that the details are determined by the LAN itself, yes, 24 that's correct. 25 Q And a person of skill in the art would	Page 39 1 MR. KOHLHEPP: Object to form. 2 THE WITNESS: The use of your -- the term 3 "directly" in your question is confusing. 4 Networks are implemented with a set of layers 5 that allow communication that a QoS requestor manager 12 6 can communicate across the LAN. 7 Networking experts typically wouldn't use the 8 word "directly" in the way that you've used it in your 9 question, so it's -- it's a bit confusing. 10 BY MR. CHRISTOPHER: 11 Q You would agree that the transport protocol 12 stack 15 and MAC 16 are required to allow the QoS 13 requestor manager 12 to communicate with the LAN 17; 14 correct? 15 A In the example architecture illustrated in 16 Figure 1, the transport protocol stack 15 and the MAC 16 17 are facilitating the communication, allowing the QoS 18 requestor manager to communicate with the LAN. 19 In your question you asked whether this was 20 required. That's a more open-ended discussion 21 potentially. 22 One could potentially design alternative 23 components possibly to enable a connection with a LAN; 24 but as illustrated here in this example, the transport 25 protocol stack 15 and the MAC 16 are the things that are
Page 38 1 understand that the details of LAN transport protocol 15 2 and MAC 16 are determined by the LAN so that those 3 components can communicate with the LAN; correct? 4 A It's true that those components need to 5 communicate with the LAN, and they need to understand how 6 to do that, yes. 7 Q Drake does not disclose that the details of the 8 QoS requestor manager 12 are determined by the LAN 9 itself; correct? 10 A I don't recall a discussion of that issue in 11 Drake. It's possible that I mis- -- I don't recall it -- 12 discussing the details of that being determined by the 13 LAN. 14 Q Okay. We can go back now to Figure 1 of Drake. 15 Let me know when you're there. 16 A Okay. 17 Q Okay. You would agree that the transport 18 protocol stack 15 and MAC 16 allow the QoS requestor 19 manager 12 to communicate with the LAN 17; correct? 20 A The role of the transport protocol stack 15 and 21 the MAC 16 is to facilitate that communication over the 22 LAN, yes, that's true. 23 Q You would agree that the QoS requestor manager 24 12 in Drake cannot communicate directly with the LAN 17; 25 correct?	Page 40 1 enabling the QoS requestor manager 12 to communicate 2 successfully across the LAN 17. 3 Q Drake does not disclose any way for the QoS 4 requestor manager 12 to communicate with the LAN 17 other 5 than by using transport protocol stack 15 and MAC 16, 6 correct? 7 A That's correct. It does not discuss other 8 alternative designs. 9 Q Okay. Drake also teaches that the LAN 10 transport -- strike that. 11 Drake teaches that the transport protocol stack 12 and MAC components are standard parts of all stations; 13 correct? 14 A In column four, beginning at line 39 of Drake, 15 which is what you pointed me to earlier, it does say: 16 "LAN transport protocol 15 and MAC 16 17 are standard parts of all stations attached 18 to a LAN." 19 It goes on and says more than that, but, yes, it 20 says what -- as I recall -- if I'm recalling your 21 question correctly, the line that I just referred to is 22 saying what you just stated in your question. 23 Q Let's look at Figure 1. Let me know when you 24 scroll back up. 25 A Okay.

Page 41 1 Q The QoS allocator 20 includes transport protocol 2 stack 22 and MAC 21; correct? 3 A That's correct. 4 Q In the top right corner, the target station 29 5 includes transport protocol stack 27 and MAC 28; correct? 6 A That's correct. 7 Q So the source station, the target station, and 8 the QoS allocator, each of those components includes a 9 transport protocol stack and a MAC component; correct? 10 A Yes, that's correct. 11 Q Okay. In the source station 10, there's a -- we 12 discussed this. There's a QoS requestor manager 12 and a 13 QoS protocol machine 13; correct? 14 A Yes, that's correct. 15 Q Those, in your view, are QoS components; 16 correct? 17 MR. KOHLHEPP: Object to form. 18 THE WITNESS: In my second declaration, in 19 paragraph 15, at the end of that paragraph, I have an 20 annotated version of Figure 1. 21 And I'm referring to QoS requestor manager 12, 22 QoS protocol machine 13, transport protocol stack 15, and 23 MAC 16 as network interface components. 24 I believe in your question you said "quality of 25 service components." I don't -- so I think maybe there	Page 43 1 communication manager; and a communication manager is 2 involved in quality of service requests. 3 Q So the QoS requestor manager 12 in Drake is a 4 QoS component; correct? 5 A Can you repeat the question, please? 6 Q Sure. The QoS requestor manager 12 in Drake is 7 a QoS component; correct? 8 A It is a -- it is a component that's involved 9 with quality of service. 10 Q Okay. And the QoS allocator 20 in Drake is also 11 a component that's involved with quality of service; 12 correct? 13 A Yes, that's correct. 14 Q Okay. Now I want to focus on the target station 15 29 in Drake. There are no QoS components shown in target 16 station 29 in Figure 1 of Drake; correct? 17 A It is true that target station 29 in Figure 1 18 does not contain QoS requestor manager 12 or QoS protocol 19 machine 13, and the reason for that is they are simply 20 illustrating what's necessary to send something from a 21 particular source to a particular target. 22 In practice, if the target station was also able 23 to initiate quality of service communication requests, 24 then it would also contain those same components. 25 But they only need to be actively used by the
Page 42 1 was a mistake in your question, but I refer to those four 2 items -- boxes 12, 13, 15, and 16 -- as network interface 3 components. 4 BY MR. CHRISTOPHER: 5 Q No. My question was -- was directed to whether 6 there are QoS components. You would consider the QoS 7 requestor manager 12 and the QoS protocol machine 13 to 8 be QoS components; correct? 9 A Are you referring to a particular part of my 10 declaration? 11 Q Let's go to paragraph 23 of your second 12 declaration. Do you see -- let me know when you're 13 there. That's page 15 of the PDF. 14 A Okay. I'm on page 15. 15 Q In the very last line on page 15, you refer to 16 "two QoS components from Drake (QoS requestor manager and 17 QoS allocator)." 18 Do you see that? 19 A I see that sentence, yes. 20 Q So you would agree that the QoS requestor 21 manager 12 in Figure 1 of Drake is a QoS component; 22 correct? 23 A Well, in my combination where I apply the 24 teachings of Drake to the Goossens2002 and Goossens2003 25 references, I identify the QoS requestor manager 12 as a	Page 44 1 source of a communication that involves quality of 2 service. And that's why they are shown -- that's why 3 I believe they're illustrated only in source station 10. 4 Q Understood. You agree that there are no QoS 5 components shown in target station 29 in Figure 1; 6 correct? 7 MR. KOHLHEPP: Object to form. 8 THE WITNESS: Can you please repeat the 9 question? 10 BY MR. CHRISTOPHER: 11 Q Sure. I just wanted to follow up on my last 12 question and confirm there are no QoS components shown in 13 target station 29 in Figure 1 of Drake; correct? 14 MR. KOHLHEPP: Object to form. 15 THE WITNESS: I believe that's the same question 16 that I just answered, unless I'm missing some difference 17 in the question. So I refer to my same answer to that 18 question. 19 BY MR. CHRISTOPHER: 20 Q Okay. I'll ask it this way: 21 The components of the target station 29, which 22 include the application receiving data stream 26, 23 transport protocol stack 27, and MAC 28, those components 24 are not QoS components. 25 Would you agree with that?

Page 45 1 A Yes, that's -- that's correct, because -- 2 because the target station in this example is only 3 receiving communication. It does not need to actively 4 use any quality of service components. 5 So for that reason, I believe that that's the 6 reason why it's not illustrated in target station 29. 7 However, as I stated before, if -- in many cases 8 these things would be designed symmetrically. So if 9 target station 29 is able to initiate quality of service 10 communication with another module, then it would also 11 have QoS requestor manager 12 and QoS protocol machine 12 13. 13 But as the target only, it does not need to use 14 such components, and I believe that that's the reason why 15 they are not shown in -- in box 29 in Figure 1. 16 Q The transport protocol stack 27 and the MAC 28 17 allow the target station 29 to interface with the LAN 17; 18 correct? 19 MR. KOHLHEPP: Object to form. 20 THE WITNESS: Well, you're using the term 21 "interface" as a verb, and that could mean multiple 22 things. 23 It's -- if the target station -- when it 24 receives communication from the source station, the 25 transport protocol stack 27 and MAC 28 are involved with	Page 47 1 target station 29, yes, that's correct. 2 Q Are there any other network interface components 3 shown in Figure 1 for target station 29? 4 A The Figure 1 does not illustrate any other 5 network interface components in the illustration. 6 But as I mentioned earlier, I believe that that 7 is because they're simply showing things that are active 8 for particular communication from a -- the source station 9 10 to the target station 29. 10 If target station 29 is also able to initiate 11 communication involving quality of service requests, then 12 it would also have QoS requestor manager 12 and QoS 13 protocol machine 13 components in its network interface, 14 as well. 15 Q Let's turn to column four of Drake. This is 16 towards the bottom around line 63. Let me know when 17 you're there. 18 A Okay. 19 Q All right. Do you see the sentence that reads: 20 "The QoS requestor manager 12 interacts 21 with application 11 using internal messages 22 as is well-known in the art"? 23 Do you see that? 24 A Yes. 25 Q So Drake teaches that the QoS requestor manager
Page 46 1 successfully performing that communication of information 2 that's flowing across the LAN into the application 3 receiving data stream component 26. 4 In that scenario, that's -- those are the 5 components that are active. 6 BY MR. CHRISTOPHER: 7 Q You have opined in your second declaration that 8 boxes 12, 13, 15, and 16 in the source station 10 9 constitute a network interface. 10 Do you recall that? 11 MR. KOHLHEPP: Object to form. 12 THE WITNESS: I believe that what I said is, for 13 example, in the figure where I annotate Figure 1 from 14 Drake at the end of paragraph 15 in my second 15 declaration, I have labeled those four components that 16 you just mentioned QoS requestor manager 12, QoS protocol 17 machine 13, transport protocol stack 15, and MAC 16, I've 18 labeled them as network interface components. 19 BY MR. CHRISTOPHER: 20 Q Understood. 21 With respect to the target station 29, would you 22 agree that the transport protocol stack 27 and the MAC 28 23 are network interface components? 24 A Yes. The transport protocol stack 27 and the 25 MAC 28, those are some network interface components in	Page 48 1 12 interacts with application 11 using internal messages; 2 correct? 3 A Yes, that's what it says. 4 Q And those messages are internal to the source 5 station 10; correct? 6 A Yes. Figure 1 illustrates both application 11 7 and the QoS requestor manager 12 as being within source 8 station 10, yes, that's correct. 9 Q The internal messages between the application 11 10 and the QoS requestor manager 12 would not be understood 11 by the LAN 17; correct? 12 MR. KOHLHEPP: Object to form. 13 THE WITNESS: That's a very confusing question. 14 Possibly; possibly not. 15 BY MR. CHRISTOPHER: 16 Q Well, you would agree that Drake does not 17 disclose sending the internal messages from application 18 11 to the LAN 17; correct? 19 A Well, what this -- column four beginning in line 20 63 part of Drake that you're pointing me to, what it's 21 saying is that application 11 and requestor manager 12 22 are communicating directly with each other. It's not 23 discussing LAN in that sentence. 24 Q Would you agree that the LAN 17 disclosed in 25 Drake is a packet-based network?

Page 49 1 A I'm trying to locate where that's -- all the 2 places where that's discussed in Drake. It certainly is 3 discussed as being a packet-based network. 4 I don't recall whether it discusses other 5 possibilities, but it certainly discusses that -- it 6 discusses it being a packet-based network, yes. 7 Q If you scroll up in column four, somewhere 8 around -- around line 37, column four of Drake. Let me 9 know when you're there. 10 A Yes. 11 Q Drake states: 12 "Using a standard LAN transport protocol 15 13 to format a request packet, the packet is launched 14 on LAN 17 through a medium access control (MAC) 15 entity 16." 16 Do you see that? 17 A Yes. 18 Q So the packet that is sent over the LAN 17 is 19 not prepared until LAN transport protocol stack 15; 20 correct? 21 MR. KOHLHEPP: Object to form. 22 THE WITNESS: I wouldn't characterize it that 23 way. When communication occurs over a network, there are 24 many different layers involved in the communication and 25 different steps are involved.	Page 51 1 and QoS requestor manager. There are many possible ways 2 that an engineer could design that communication. It may 3 or may not involve packets. 4 BY MR. CHRISTOPHER: 5 Q Let's go back to line 63 and column four. Let 6 me know when you're there. 7 A Okay. I'm there. 8 Q I'll re-read it so we reorientate ourselves. Do 9 you see the sentence that states: 10 "The QoS requestor manager 12 interacts 11 with application 11 using internal messages 12 as is well-known in the art and utilizes QoS 13 protocol machine 13 to format the QoS 14 request"? 15 Do you see that? 16 A Yes, I see that. 17 Q Drake teaches -- strike that. 18 Drake teaches that the QoS requestor manager 12 19 utilizes QoS protocol machine 13 to format a QoS request; 20 correct? 21 A Yes, that's what that sentence says. It says 22 "the QoS request." I think you said "a QoS request," but 23 that's a trivial difference. But, yes, that's what it 24 says. 25 Q And if we scroll up the same column, line 34.
Page 50 1 So the LAN transport protocol 15 and MAC 16 have 2 specific roles that they play, but they are sending 3 information that was initiated prior to that that came 4 from, for example, application 11 and the QoS requestor 5 manager 12. 6 As I recall, in the wording of your question, it 7 would be incorrect to attribute preparing the packet only 8 to component 15, the transport protocol stack. 9 It plays a particular role in the communication, 10 but it's passing along something that it received from 11 other components. 12 BY MR. CHRISTOPHER: 13 Q I understand. Let me ask it this way: 14 The internal messages that are exchanged between 15 application 11 and the QoS requestor manager 12 are not 16 packets; correct? 17 MR. KOHLHEPP: Object to form. 18 THE WITNESS: Their format is not specified. 19 They may or may not be packets. 20 BY MR. CHRISTOPHER: 21 Q Drake does not disclose that the internal 22 messages are packets. Do you agree with that? 23 MR. KOHLHEPP: Object to form. 24 THE WITNESS: Drake does not provide details on 25 the format of the communication between application 11	Page 52 1 A Okay. 2 Q Do you see the sentence that reads: 3 "Together, components 12 and 13 assemble 4 a request to reserve a QoS connection for a 5 multimedia data stream on that path through 6 the LAN 17 between source station 10 and 7 target station 29"? 8 Do you see that? 9 A Yes, I see that. 10 Q Drake teaches that components 12 and 13 work 11 together to assemble a request; correct? 12 A Well, you inserted the words "work together." 13 It does say together they assemble a request. It's 14 likely that they cooperate. So you added some extra 15 words there, but that's not an unreasonable 16 interpretation of what it says here. 17 Q All right. Would it be fair to say that 18 components 12 and 13, in your words, cooperate to 19 assemble a request to reserve a QoS connection? 20 A Well, it says the components -- that together 21 they assemble a request. 22 Sometimes the word "cooperate" has particular -- 23 suggests particular forms of cooperation, but I would 24 probably prefer to just stick with the wording here in 25 the patent, which it says, "Together, components 12 and

Page 53

1 13 assemble the request."

2 **Q Drake does not disclose that the QoS requestor**

3 **manager 12 can independently assemble a request without**

4 **the QoS protocol machine 13; correct?**

5 MR. KOHLHEPP: Object to form.

6 THE WITNESS: Well, what it says is between the

7 two components 12 and 13, they're able to assemble a

8 request.

9 It does not provide specific details in the

10 sentence about the nature of how that occurs, but through

11 the combination of those two components they assemble the

12 request.

13 BY MR. CHRISTOPHER:

14 **Q Drake teaches that both components 12 and 13 are**

15 **required to assemble a request; correct?**

16 A Drake is suggesting that -- Drake is saying,

17 rather, that through the combination of the two

18 components 12 and 13, they're able to assemble the

19 request.

20 **Q And Drake does not disclose that the QoS**

21 **requestor manager 12 by itself can assemble the request;**

22 **correct?**

23 MR. KOHLHEPP: Object to form.

24 THE WITNESS: Can you repeat the question,

25 please?

Page 54

1 BY MR. CHRISTOPHER:

2 **Q Sure. Drake does not disclose that the QoS**

3 **requestor manager 12 by itself can assemble the request;**

4 **correct?**

5 MR. KOHLHEPP: Same objection; object to form.

6 THE WITNESS: Drake says that together the

7 components 12 and 13 assemble the request.

8 BY MR. CHRISTOPHER:

9 **Q The only way that Drake teaches assembling the**

10 **request is by using both components 12 and 13; correct?**

11 MR. KOHLHEPP: Object to form.

12 THE WITNESS: Drake simply says that together

13 components 12 and 13 assemble the request.

14 BY MR. CHRISTOPHER:

15 **Q And that's the only way that Drake discloses for**

16 **assembling the request; correct?**

17 MR. KOHLHEPP: Object to form.

18 THE WITNESS: Sorry. Given how you phrase your

19 question, it's going to take me a number of minutes --

20 possibly tens of minutes -- to look through Drake to see

21 there are references to how this is assembled, so please

22 bear with me.

23 BY MR. CHRISTOPHER:

24 **Q Well, I'll withdraw the question and ask it this**

25 **way:**

Page 55

1 **You have not offered any opinions as to whether**

2 **there is a way to assemble a request in Drake using the**

3 **QoS requestor manager 12 alone; correct?**

4 MR. KOHLHEPP: Object to form.

5 THE WITNESS: My opinions related to Drake and

6 the QoS requestor manager 12 are in the -- in the context

7 of taking the teachings of Drake and applying them to the

8 Goossens2002 and Goossens2003 references.

9 And in that combination, the QoS requestor

10 manager 12 serves the role of the communication manager.

11 BY MR. CHRISTOPHER:

12 **Q Not my question. My question is about Drake by**

13 **itself.**

14 **You have not offered any opinions in your**

15 **declaration that Drake by itself teaches using the QoS**

16 **requestor manager 12 alone to assemble a request;**

17 **correct?**

18 MR. KOHLHEPP: Object to form.

19 THE WITNESS: As I believe I just stated, my

20 opinions in my two declarations are taking the teachings

21 of Drake and applying them to the Goossens2002 and the

22 Goossens2003 references as two combinations.

23 And in those combinations the -- the QoS

24 requestor manager 12 from Drake corresponds to the

25 communication manager described in the '449 patent.

Page 56

1 BY MR. CHRISTOPHER:

2 **Q Based on your answer, I understand the answer to**

3 **my last question which was you have not offered any**

4 **opinions in your declaration that Drake by itself teaches**

5 **using the QoS requestor manager 12 alone to assemble**

6 **requests.**

7 **I understand the answer is yes, you haven't**

8 **offered that opinion; correct?**

9 A I disagree with that characterization. I refer

10 to my previous answer.

11 **Q So you did -- your testimony is that you did**

12 **offer an opinion that Drake alone discloses using the**

13 **requestor manager 12 by itself to assemble a request.**

14 **Is that your testimony?**

15 MR. KOHLHEPP: Object to form.

16 THE WITNESS: My testimony is, as I said,

17 earlier I applied the teachings of Drake to the

18 Goossens2002 and the Goossens2003 references; and in that

19 context the QoS requestor manager 12 corresponds to the

20 communication manager in -- in that combination.

21 BY MR. CHRISTOPHER:

22 **Q My question isn't about the combination with**

23 **either of the Goossens references. Do you understand**

24 **that?**

25 A The opinions in my declaration are regarding

Page 57 1 taking the teachings of Drake and applying them to the 2 Goossens2002 and Goossens2003 references. 3 And my understanding is that I'm here to answer 4 questions related to my opinions in my declarations. 5 Q Have you expressed opinions in either of your 6 declarations about what Drake alone discloses to a person 7 of skill in the art? 8 A Are you referring to something specific in my 9 declarations? 10 Q Well, you reviewed the Drake reference; right? 11 A Yes, I reviewed the Drake reference. 12 Q And you would agree that in order to offer 13 opinions on a combination, you would need to review Drake 14 to understand what it discloses; fair? 15 A I reviewed Drake carefully, yes. 16 Q Okay. And my question for you is, in the course 17 of reviewing Drake by itself, the only way that Drake 18 discloses for assembling a QoS request is by using the 19 QoS requestor manager 12 and QoS protocol machine 13 20 together; correct? 21 MR. KOHLHEPP: Object to form. 22 THE WITNESS: I believe I've answered this 23 question several times now. 24 My analysis of Drake is in the context of 25 applying its teachings to the Goossens2002 and	Page 59 1 MR. KOHLHEPP: Object to form. 2 THE WITNESS: I refer to my previous answers to 3 the same question. 4 BY MR. CHRISTOPHER: 5 Q Can you answer my question yes or no? 6 A I have already answered your question. 7 MR. CHRISTOPHER: Well, why don't we take a 8 short break here. 9 (Recess.) 10 MR. CHRISTOPHER: Back on the record. 11 BY MR. CHRISTOPHER: 12 Q Dr. Mowry, did you discuss the substance of your 13 testimony during our break? 14 A No, I did not. 15 Q Okay. Let's go back to column four, line 34. 16 We had discussed this at length before the break. I just 17 want to come back to this momentarily. Let me know when 18 you're at line 34. 19 A I'm at line 34. 20 Q All right. At line 34 Drake says: 21 "Together, components 12 and 13 assemble 22 a request." 23 You see that; correct? 24 A Yes, I see that. 25 Q And then if we scroll down to line -- well, it's
Page 58 1 Goossens2003 references. And in those combinations, the 2 QoS requestor manager 12 corresponds to the communication 3 manager in the '449 patent. 4 MR. CHRISTOPHER: Okay. Move to strike as 5 nonresponsive. 6 BY MR. CHRISTOPHER: 7 Q You understand my question is not about the 8 combinations with the Goossens references; right? 9 A My understanding is that I'm here to discuss the 10 opinions that I discussed in my two declarations, and in 11 those declarations I'm discussing applying the teachings 12 of Drake to the Goossens2002 and Goossens2003 references. 13 Q Okay. There is no teaching in Drake regarding 14 using the QoS requestor manager 12 alone to assemble a 15 request; correct? 16 MR. KOHLHEPP: Object to form. 17 THE WITNESS: I refer to my previous answers to 18 the same question. 19 BY MR. CHRISTOPHER: 20 Q And the answer to the question is yes; correct? 21 MR. KOHLHEPP: Object to form. 22 THE WITNESS: I refer to my previous answers to 23 the same question. 24 BY MR. CHRISTOPHER: 25 Q The answer is yes; correct?	Page 60 1 really 63. Yeah, 63. Around line -- well, if you read 2 it in combination between line 63 and line 64, Drake 3 discloses that the QoS requestor manager 12 utilizes the 4 QoS protocol machine to format the QoS request. 5 Do you see that? 6 A Yes, I see that. 7 Q So would you agree that the QoS protocol machine 8 13 is involved in formatting the QoS request? 9 A Yes. The Drake reference discusses QoS protocol 10 machine 13 as that it is utilized in order to format the 11 QoS request. 12 Q Okay. Let's go to a new column, column five, 13 around line five. Let me know when you're there. 14 A I'm at line five in column five. 15 Q Okay. At line five Drake states: 16 "Allocator station 20 also includes a QoS 17 requestor manager 23 which, together with QoS 18 protocol machine 24 receives, decodes and acts 19 upon the QoS request from source station 10." 20 Do you see that? 21 A Yes, I do. 22 Q Drake discloses that the QoS requestor manager 23 23 acts upon the QoS request; correct? 24 A Yes, it does say that. It says -- that sentence 25 included those words.

Page 61 1 Q Okay. And the QoS request that is referenced 2 here in Drake is referring to the QoS request that is 3 assembled by the QoS requestor manager 12 in the QoS 4 protocol machine 13 in the source station 10; correct? 5 A Yes. In this example, communication that's 6 illustrated in Figure 1, that's correct. 7 Q The QoS requestor manager 12 and QoS protocol 8 machine 13 in the source station assemble and format the 9 QoS request so that it can be understood by the QoS 10 requestor manager 23 in the allocator station 20; 11 correct? 12 A Well, the goal is to communicate with the 13 allocator station -- QoS allocator station 20. So, yes, 14 that is the intention, is to assemble and format the 15 request so that it can be understood by QoS allocator 20. 16 Q In this passage you're reading at line five, 17 column five of Drake, Drake is disclosing that the QoS 18 requestor manager 23, together with the QoS protocol 19 machine 24, receives, decodes, and acts upon the QoS 20 request from source station 10; correct? 21 A That -- that particular sentence contains those 22 words, yes, that's correct. 23 Q We can go back to your second declaration, 24 paragraph 15, and I'll direct you to page 10 of the PDF. 25 A Okay.	Page 63 1 formed any opinions as to whether the QoS requestor 2 manager 23 and the QoS protocol machine 24 are network 3 interface components; correct? 4 A I'll need to go back and spend some time looking 5 through my declarations to answer that question 6 accurately. 7 Q Well, sitting here today, without studying your 8 declaration -- declarations, you don't know whether 9 you've opined whether the QoS requestor manager 23 and 10 QoS protocol machine 24 would be considered by a person 11 of skill in the art to be network interface components? 12 MR. KOHLHEPP: Object to form. 13 THE WITNESS: So I don't believe in answering 14 questions of "I don't remember" when the answer is 15 somewhere in my declaration potentially, so I'm going to 16 just take the time to see if I can locate this in my 17 declarations. 18 BY MR. CHRISTOPHER: 19 Q Just to confirm while you're doing that, the 20 PDFs of your declarations are text searchable; correct? 21 A Yes. 22 Q Okay. 23 A Can you please repeat the question? 24 Q If I understood your prior answer correctly, you 25 have not formed any opinions as to whether the QoS
Page 62 1 Q All right. We talked about this earlier. In 2 the annotated figure below paragraph 15, you have 3 identified boxes 12, 13, 15, and 16 as network interface 4 components in the source station 10; correct? 5 A Yes, that's correct. 6 Q And if we turn to Figure 1 of Drake, since it's 7 cut off, below paragraph 15, can you turn to Figure 1 of 8 Drake? 9 A Okay. 10 Q Actually, let me withdraw it and ask a better 11 question. 12 Which components in the QoS allocator 20 would a 13 person of ordinary skill in the art understand to be 14 network interface components? 15 A I haven't formed an opinion on that because 16 that's not part of the -- those are not end points in the 17 illustrated communication between the source station and 18 the target station. 19 The MAC 21 and transport protocol stack play 20 the same role as in source station 10 and target station 21 29, but QoS allocator is not -- is a different component. 22 It's not a source or a target of a quality of service 23 communication like source station 10 and source station 24 29. 25 Q If I'm understanding you correctly, you haven't	Page 64 1 requestor manager 23 and the QoS protocol machine 24 2 would be considered by a person of skill in the art to be 3 network interface components; correct? 4 A In my two declarations, I'm applying the 5 teachings of the Drake patent to the Goossens2002 and 6 2003 references. 7 And I identified how the components of Drake map 8 onto the -- how they combine with the -- those two 9 Goossens references. 10 And the -- I've -- the issue of whether what one 11 considers to be a network interface component or not in 12 QoS allocator 20 doesn't affect my opinions about how the 13 teachings -- the fact that the teachings of Drake 14 satisfy -- in combination with those two Goossens 15 references, that they satisfy the claims of the '449 16 patent. 17 Q I understand all that. I'm asking you a very 18 specific question. 19 You have not formed any opinions in either of 20 your declarations as to whether the QoS requestor manager 21 23 and the QoS protocol machine 24 are network interface 22 components; correct? 23 MR. KOHLHEPP: Object to form. 24 THE WITNESS: I believe that's the same question 25 that I just answered, so I refer to my previous answer.

Page 65

1 BY MR. CHRISTOPHER:

2 **Q And the answer to my question is yes, you have**

3 **not formed any opinions on whether requestor manager 23**

4 **and QoS protocol machine 24 are never interface**

5 **components; correct?**

6 MR. KOHLHEPP: Object to form.

7 BY MR. CHRISTOPHER:

8 **Q You can answer.**

9 A I refer to my same previous answer to the

10 question.

11 **Q Why won't you answer my question yes or no?**

12 MR. KOHLHEPP: Object to form.

13 THE WITNESS: As I explained, I mapped the

14 teachings of Drake onto the Goossens2002 and Goossens2003

15 references.

16 And whether or not specific elements in QoS

17 allocator 20 are considered to be network interface

18 components or not has no bearing on the fact that my

19 conclusion is that the teachings of Drake in combination

20 with the two Goossens references satisfy the claims of

21 the '449 patent.

22 BY MR. CHRISTOPHER:

23 **Q Let's try it this way:**

24 **All of your opinions that you've rendered in**

25 **this case are contained in your declarations; correct?**

Page 66

1 A That sounds like the kind of question that one

2 would need to go to law school to answer accurately.

3 I mean, all of the opinions that I've submitted

4 are in the declarations. But as I'm being deposed, I'm

5 responding to things that may have been -- you know.

6 I mean, yes, I think so; but as you ask questions, I'm

7 responding to your questions.

8 **Q Okay. Maybe I can clear it up this way:**

9 **All of the opinions that you have formed in this**

10 **case prior to today's declaration -- deposition are**

11 **contained in your two declarations; correct?**

12 A That's my understanding.

13 **Q Go to paragraph 51 of your second declaration.**

14 A Okay.

15 **Q I'm going to ask you about the second sentence.**

16 **You wrote:**

17 **"As I discussed above, network interfaces**

18 **decouple computation from communication by**

19 **enabling their host/IP module to communicate**

20 **without requiring specific knowledge of the**

21 **low level network details."**

22 **Do you see that?**

23 A Yes.

24 **Q And you use quotation marks around the phrase**

25 **"decouple computation from communication." Do you see**

Page 67

1 **that?**

2 A Yes.

3 **Q Are you referring to the phrase "decouple**

4 **computation from communication" as it is used in the**

5 **'449 patent?**

6 MR. KOHLHEPP: Object to form.

7 BY MR. CHRISTOPHER:

8 **Q Let me withdraw it and ask it perhaps more**

9 **directly.**

10 **Why did you put the phrase "decouple computation**

11 **from communication" in quotation marks in paragraph 51 of**

12 **your second declaration?**

13 A Well, I don't have them -- I don't actually

14 have the '449 or the Goossens references available at the

15 moment, so it's difficult for me to answer that question.

16 **Q So you believe that you put the phrase "decouple**

17 **computation from communication" in quotation marks**

18 **because you're referring to that phrase as it's used in**

19 **either the '449 patent, Goossens2002, or Goossens2003?**

20 MR. KOHLHEPP: Object to form.

21 THE WITNESS: I would need to refresh my memory

22 by looking at those references to answer the question

23 accurately.

24 BY MR. CHRISTOPHER:

25 **Q Go to Drake Figure 4. Are you there?**

Page 68

1 A Okay.

2 **Q Okay. Figure 4 is a flow diagram showing the**

3 **process for allocating a QoS transmission path; correct?**

4 A Sorry. Can you please repeat the question?

5 **Q Yeah. Why don't we do it this way. Let's go to**

6 **column 10.**

7 A Okay.

8 **Q Line nine.**

9 A Okay.

10 **Q All right. Drake says at line nine, column 10**

11 **in Figure 4:**

12 **"There is shown a flow chart of the process**

13 **of allocating a QoS transmission path between a**

14 **source of multimedia data and a user of such data."**

15 **Do you see that?**

16 A Yes, I see that.

17 **Q Actually, let me just move to my next question.**

18 **If you could turn to line 18.**

19 A Line 18 of what?

20 **Q Column 10, same column.**

21 A Okay.

22 **Q So at line 18 Drake states:**

23 **"Starting in Figure 4 at box 60, box 61 is**

24 **entered where a source, such as source station**

25 **10 of Figure 1, formats in QoS protocol machine**

Page 69 1 13 a request to be registered in QoS allocator 2 station 20 for the transmission of a multimedia 3 file supplied by application 11." 4 Do you see that? 5 A Yes, I see that. 6 Q And then the next sentence reads: 7 "Such preregistration is important in that 8 it allows the identification of the data source 9 station to be registered in QoS allocator 20 10 prior to the actual transmission of the data." 11 Do you see that? 12 A Yes. 13 Q So box 61 in Figure 4 of Drake relates to a 14 preregistration process; correct? 15 A The patent specification is using this word 16 "preregistration" here. This is part of this process of 17 allocating a connection with quality of service 18 properties. 19 Q Okay. And for box 61 in Figure 4, Drake 20 discloses that the source station 10 formats in QoS 21 protocol machine 13 a request to be registered in QoS 22 allocator station 20; correct? 23 A I believe you've accurately read that line in 24 the patent spec, yes. 25 Q Okay. Drake does not disclose that the QoS	Page 71 1 requests. 2 Now, QoS manager 12 is inside source station 10, 3 so this text that we've been looking at in column 10 is 4 accurate. It is a component within source station 10 5 that is initiating this request, and that specific 6 component is QoS requestor manager 12. 7 Q Okay. Let's back up. Let's go back to column 8 10 and box -- the description in box 61. Box 61 involves 9 a request to register the source station 10 in the QoS 10 allocator station 20; correct? 11 A Can you repeat the question, please? 12 Q Yes. Box 61 in Figure 4 of Drake involves a 13 request to register the source station in the QoS 14 allocator station 20; correct? 15 A Yes. And the reason for this is that, for 16 example, if you look at the -- if you look at Figure 1, 17 the end point for the interconnect, which in this case is 18 LAN 17, those are stations or modules in the '449 19 terminology. 20 And so, for example, from the perspective of the 21 LAN, one of the end points is source station 10, which is 22 going to be the source of this quality of service 23 communication, and another end point is target station 24 29. 25 But both target -- sorry. Both source station
Page 70 1 requestor manager 12 is involved in this registration 2 process for box 61; correct? 3 A That's incorrect. 4 Q Where does Drake disclose that the QoS requestor 5 manager 12 is involved in the registration process 6 described for box 61 in Figure 4? 7 A The patent specification is clear that Figure 4 8 is a flow chart referring to the components in Figure 1. 9 That's -- appears both in column 10 and in the 10 description of Figures 4 and 5. 11 And column -- I'm sorry -- Figure 1 in the 12 illustration of the components within source station 10 13 shows that the QoS requestor manager works in combination 14 with -- it receives a request from application 11 to 15 initiate quality of service communication -- or 16 communication with quality of service properties. 17 QoS requestor manager 12 then works together 18 with QoS protocol machine 13 to create a request for 19 reserving a connection with quality of service 20 properties, and this is then communicated eventually to 21 the QoS allocator 20. 22 And earlier today we've also talked explicitly 23 about -- we've discussed places in the patent 24 specification where Drake explicitly discusses the fact 25 that it's QoS requestor manager that is initiating these	Page 72 1 10 and target station 29 have internal components. It's 2 actually the application 11 that's trying to communicate 3 with the application receiving data stream 26. 4 And this communication to the QoS allocator is 5 actually initiated -- it's coming from the QoS requestor 6 manager, is the thing that has generated this request, 7 this message that's going to the QoS allocator 20 to 8 reserve communication with quality of service guarantees. 9 But when QoS allocator 20 is doing its 10 bookkeeping, it's keeping track of end points in the 11 interconnect. And that is done at the granularity of an 12 entire station such as source station 10 or target 13 station 29. 14 MR. CHRISTOPHER: Okay. I'm going to move to 15 strike as nonresponsive. 16 BY MR. CHRISTOPHER: 17 Q I'm just trying to walk through each of the 18 boxes in Figure 4 and talk about what steps they 19 correspond to. Can you turn to column 10, line 41? Let 20 me know when you're there. 21 A Okay. 22 Q At line 41 Drake states: 23 "In box 70, the source station receives the 24 selection and, in box 71, the source station 10 25 actually sends a request to the allocator 26 to

Page 73 1 determine if the QoS parameters required for the 2 data stream is available on the transmission path 3 between source station 10 and target station 29." 4 Do you see that? 5 A I see that sentence, yes. 6 Q And so in box 71, the source station is 7 requesting -- sending a request to the allocator 26 which 8 is inside the QoS allocator 20; correct? 9 A This request is originating from QoS requestor 10 manager 12 which is inside source station 10. So it is 11 true that the request is coming from a component inside 12 source station 10. 13 Q Okay. Understood. I think I see where the 14 confusion is. 15 Do you recall earlier we talked about Drake 16 disclosing that the QoS requestor manager 12 and the QoS 17 protocol machine 13 assemble and format a request? 18 Do you recall that? 19 A I remember that we -- there was a discussion of 20 that, yes. 21 Q Okay. And so in this description of box 71, its 22 reference to a request was referring to the request that 23 is assembled by the QoS requestor manager 12 and QoS 24 protocol machine 13 in the source station 10; correct? 25 A Yes, that's correct.	Page 75 1 is a different request than the request associated with 2 box 71; correct? 3 MR. KOHLHEPP: Object to form. 4 THE WITNESS: There are -- this example is 5 discussing a scenario that involves multiple requests 6 being sent to QoS allocator 20. It describes a specific 7 scenario of there being a set of multimedia data files. 8 BY MR. CHRISTOPHER: 9 Q Okay. And one of those multiple requests is a 10 request to register the source station 10 in the QoS 11 allocator 20; correct? 12 MR. KOHLHEPP: Object to form. 13 THE WITNESS: Well, it's a little unclear what 14 you mean by "one of those requests." 15 There's -- there's a part of this that's 16 described in the -- near the top of column 10 in, like, 17 lines nine through 34; and then there's a paragraph after 18 that starting at line 35 which discusses some additional 19 things that are happening with the scenario. 20 BY MR. CHRISTOPHER: 21 Q Okay. The step associated with box 61 occurs 22 prior to the step associated with box 71; correct? 23 A That's how it's described in Figure 4, yes. 24 Q Okay. And in the step associated with box 61, 25 Drake only discloses that the QoS protocol machine 13 is
Page 74 1 Q Okay. So if we back up and go back up to 2 column 10, line 19, and the description of box 61, the 3 functionality associated with box 61 occurs prior to the 4 functionality described for box 71; correct? 5 MR. KOHLHEPP: Object to form. 6 THE WITNESS: So I think I may have lost track 7 of the point of the question, but Figure 4 is showing 8 arrows between boxes in a flow chart. So I'm not -- can 9 you please repeat the question? 10 BY MR. CHRISTOPHER: 11 Q Yeah. Let's try it this way: 12 So in the description for box 61, there is a 13 request to be registered in the QoS allocator station 20; 14 correct? 15 A Yes, that's correct. Yes, that's correct. 16 Q Line 21. 17 A Uh-huh. Yes, I see that. 18 Q And then if we go down to the description of box 19 71 -- this is at line 42 -- for box 71 Drake is 20 describing a request to determine if the QoS parameters 21 required for the data stream is available on the 22 transmission path; correct? 23 A That's -- that sentence does indeed contain 24 those words, yes. 25 Q Okay. And so the request associated with box 61	Page 76 1 involved in that request; correct? 2 MR. KOHLHEPP: Object to form. 3 THE WITNESS: I don't understand your question 4 because I don't know what you mean by only the QoS 5 protocol machine 13. 6 It's used together with the QoS allocator 12, so 7 it would be inaccurate -- it would be incorrect to say 8 that it was somehow QoS protocol machine 13 and not QoS 9 request manager 12. That's -- that's incorrect. 10 BY MR. CHRISTOPHER: 11 Q Okay. If you could return to column 10, line 12 18, the sentence reads: 13 "Starting in Figure 4 at box 60, box 61 is 14 entered where a source, such as source station 15 10 of Figure 1, formats (in QoS protocol machine 16 13) a request to be registered in QoS allocator 17 20." 18 Do you see that? 19 A I see that sentence, yes. 20 Q That sentence doesn't mention QoS manager 12; 21 correct? 22 MR. KOHLHEPP: Object to form. 23 THE WITNESS: A person of skill -- ordinary 24 skill in the art understands that this -- well, this 25 sentence only is talking about the formatting of the

Page 77 1 request. 2 And as we discussed earlier, QoS requestor 3 manager 12 assemble -- working together with QoS protocol 4 machine 13, they assemble and format the request. 5 So the QoS protocol machine 13 is helping 6 with -- it's utilized for formatting the request; but it 7 is clear that the QoS requestor manager 12 is assembling 8 this request, again, working together with QoS protocol 9 machine 13. And that is what's being described in box 10 61. 11 BY MR. CHRISTOPHER: 12 Q Would a person skilled in the art reviewing 13 Drake understand that in order to send a request -- let 14 me withdraw that. Let's move on. 15 Go back to Figure 1 in Drake. 16 A Okay. 17 Q And if you can draw your attention to the QoS 18 requestor manager 12 and QoS protocol machine 13. 19 A Okay. 20 Q Do you see there's a dashed line between the 21 text "QoS requestor manager" and "QoS protocol machine"? 22 A Yes, I see that. 23 Q Would that dashed line suggest to a person of 24 skill in the art that the QoS requestor manager 12 and 25 QoS protocol machine 13 constitute one component?	Page 79 1 You have opined that the QoS requestor manager 2 12 in Drake corresponds to the claimed communication 3 manager; correct? 4 A Which combination are you talking about, the one 5 with Goossens2002 or the one with Goossens2003? 6 Q Let's start with Goossens2002. You've opined 7 that the QoS requestor manager 12 in Drake corresponds to 8 the claimed communication manager; correct? 9 A Yes. In Goossens2002, yes, that's correct. 10 Q Okay. In your first declaration, Exhibit 1003, 11 you opine that it would've been obvious to implement 12 Drake's QoS requestor manager 12 as a circuit on the same 13 integrated circuit chip as Goossens2002's IP box; 14 correct? 15 A In paragraph 122 of my first declaration, I say 16 that a person of ordinary skill in the art would've been 17 motivated to implement the functionality of Drake's QoS 18 requestor manager as a circuit on the same integrated 19 circuit chip as Goossens2002's IP blocks and network on 20 silicon. 21 Q Okay. And, again, I'm just -- sorry. Were you 22 finished with your answer? 23 A Well, I guess we're still talking about 24 Goossens2002, but I also have another part of my initial 25 declaration in paragraph 173 where I discuss this for the
Page 78 1 MR. KOHLHEPP: Object to form. 2 THE WITNESS: The patent specification describes 3 the QoS requestor manager and the QoS protocol machine 4 separately as having their own particular roles. 5 It also discusses that they work together to 6 assemble and format requests that are sent to the QoS 7 allocator, so they are described with their own distinct 8 roles. 9 BY MR. CHRISTOPHER: 10 Q Would the dashed line between 12 and 13 in 11 Figure 1 suggest to a person of skill in the art that 12 components 12 and 13 work together? 13 MR. KOHLHEPP: Object to form. 14 THE WITNESS: Well, the patent specification 15 talks about that together those two components assemble 16 and format requests. 17 And -- but, in any event, whether it's a dashed 18 line or a solid line does not in any way change my 19 opinions that the teachings of Drake, when combined with 20 the Goossens2002 and the -- or the Goossens2003 21 references, that -- that these satisfy the asserted 22 claims. 23 BY MR. CHRISTOPHER: 24 Q All right. Let's -- let's talk about the 25 combinations and -- to orientate ourselves.	Page 80 1 combination with Goossens2003. 2 Q Right. And that was actually my next question. 3 Just to orientate ourselves for ground two, you 4 opined in connection with ground two that it would've 5 been obvious to implement Drake's QoS requestor manager 6 12 as a circuit on the same integrated circuit chip as 7 Goossens2003's IP box [sic]; correct? 8 A Sorry. Did you say "IP block" or "IP box"? 9 Q Block. 10 A Yes, that's correct. 11 Q Let's turn to paragraph 29 of your second 12 declaration. Let me know when you're there. This is 13 page 20 of the PDF. 14 A Okay. 15 Q All right. Direct your attention to the last 16 sentence on that page, you wrote: 17 "Thus Drake and the Goossens references, as 18 well as the general understanding in the art, 19 would all teach a POSITA that a natural place to 20 put components corresponding to the network 21 interface (such as Drake's QoS requestor 12) 22 would have been in the network interfaces of the 23 Goossens references." 24 Do you see that? 25 A I see that.

Page 81 1 Q Okay. So in your second declaration, you are 2 opining that it would have been obvious to implement 3 Drake's -- (indecipherable). 4 (Stenographer clarification.) 5 MR. CHRISTOPHER: I'll re-ask the question. 6 BY MR. CHRISTOPHER: 7 Q In your second declaration, you have opined that 8 it would have been obvious to implement Drake's QoS 9 requestor manager 12 in the network interfaces of the 10 Goossens references; correct? 11 MR. KOHLHEPP: Object to form. 12 THE WITNESS: I'm saying that that's a natural 13 place to put it. That's not necessarily the only place, 14 but that -- I'm saying that that's a natural place to 15 locate it. It's one of the options. 16 BY MR. CHRISTOPHER: 17 Q What are the other options? 18 A Not in the network interface and not -- I mean, 19 somewhere else connected to the interconnect. 20 Q Would it be fair to say that your opinion is 21 that Drake's QoS requestor manager 12 could be 22 implemented anywhere on the chips so long as it is 23 attached to the network? 24 A Can you repeat the question, please? 25 Q Yes.	Page 83 1 page 12 specifies exactly what the cloud is. 2 BY MR. CHRISTOPHER: 3 Q Do you, as a person of skill in the art, have an 4 understanding as to what the cloud-shaped object is in 5 Figure 4.5 of Goossens2003? 6 A So clouds often represent a communication 7 subsystem, and that's -- that's presumably some form of 8 that, is what it's -- what it's showing here. 9 Q Can you actually open up -- let's do it this 10 way: Will you open up Exhibit 1001, the '449 patent? 11 A Okay. 12 Q All right. You have Figure 1 in front of you? 13 A Yes. 14 Q Do you see the, kind of, cloud-shaped object in 15 the center of Figure 1 labeled "N"? 16 A I see a cloud-shaped object in Figure 1, yes. 17 Q That is a network; correct? 18 A For column nine on the '449 patent starting at 19 around line four, it's discussing Figure 1. It says each 20 module is connected to a network and via network 21 interface. And I respectively -- 22 Q Can you actually open a copy of 1003, your first 23 declaration, and turn to paragraph 170, in particular 24 page 94 of the PDF? 25 A Okay.
Page 82 1 Would it be fair to say that your opinion is 2 that Drake's QoS requestor manager 12 could be 3 implemented anywhere on the chips in either of the 4 Goossens references so long as it is attached to the 5 network? 6 A Yes, that's correct. As I said in that sentence 7 we're looking at, a natural place would be to put it in 8 the network interface, but it -- but that's not the only 9 possibility. It would need to be attached to the 10 network. 11 Q Okay. I put a copy of Goossens -- well, both 12 Goossens references in our Zoom chat. Can you start by 13 opening up Exhibit 1007? And when you have that open, if 14 you could turn to page 12 of the PDF. 15 A Okay. 16 Q Do you see Figure 4.5? 17 A Yes, I do. 18 Q And Figure 4.5 is showing a narrowcast 19 connection; correct? 20 A Yes, that's -- that is the label on the figure, 21 yes. 22 Q And the, kind of, cloud-shaped object in the 23 center represents the network; correct? 24 MR. KOHLHEPP: Object to form, scope. 25 THE WITNESS: I don't believe the text on	Page 84 1 Q All right. Do you see in paragraph 170 you have 2 an annotated version of Figure 4.5 from Goossens2003? 3 A Yes, I see that. 4 Q And in paragraph 170 you have annotated three 5 IPs in Figure 4.5 of Goossens2003; correct? 6 A That's correct. 7 Q All right. Now, if we could go to paragraph 200 8 of your first declaration, page 101 of the PDF. 9 A I'm sorry. What paragraph number again? 10 Q 200. 11 A 200. You said page 101 of the PDF? 12 Q 110 of the PDF. 13 A Okay. Yes. 14 Q In paragraph 200 of your declaration, you 15 annotated in yellow three network interfaces in 16 Figure 4.5 of Goossens2003; correct? 17 A Yes. 18 Q All right. And we talked about this a few 19 minutes ago. You have opined that one place to put 20 Drake's QoS requestor manager 12 in Goossens2003 would be 21 in a network interface. 22 Do you recall that? 23 A Yes. 24 Q Using Figure 4.5 of Goossens2003 as an example, 25 which of these three network interfaces would a person of

Page 85 1 skill in the art implement Drake's QoS requestor manager 2 12? 3 MR. KOHLHEPP: Object to form. 4 THE WITNESS: So the communication manager would 5 go into each -- each module that can be initiating 6 quality of service-based communication with another 7 module would need to have access to a communication 8 manager. 9 In -- I believe in this specific narrowcast 10 example, they -- in Goossens2003, they're discussing a 11 scenario where it's the microprocessor on the left side 12 of the figure that's initiating the communication; 13 although it could go in both directions potentially. 14 There is also DMA -- and there are often DMA 15 engines associated with storage that could initiate 16 communications that require quality of service 17 properties. 18 But in any module that can initiate 19 communication that could be a source station, it would 20 need to have access to a communication manager. 21 So one natural place to put the communication 22 managers for them would be in their -- in their network 23 interfaces. 24 BY MR. CHRISTOPHER: 25 Q Let me see if I understand your answer.	Page 87 1 the communication manager which is already in the -- 2 already disclosed in Goossens2003 in its network 3 interface. 4 So it's not -- just to be clear, it's not 5 building yet another communication manager. 6 Instead, Drake is providing additional detail on 7 how the existing communication manager within 8 Goossens2003's network interfaces, how that can be 9 implemented. 10 Because Drake goes into additional detail -- it 11 zooms in on more detail of how to implement the 12 communication manager and resource manager successfully. 13 BY MR. CHRISTOPHER: 14 Q Let me unpack that. 15 It's your opinion that each of the network 16 interfaces shown in Figure 4.5 already contains a 17 communication manager; correct? 18 MR. KOHLHEPP: Object to form. 19 BY MR. CHRISTOPHER: 20 Q Are you reviewing your declarations to answer 21 that question? 22 A Yes. In paragraphs 185, 186, 187, I'm 23 discussing this issue. 24 Q Are you still reviewing? 25 A Yes, I'm still reviewing.
Page 86 1 In this particular example in Figure 4.5, a 2 person of skill in the art, in your opinion, would place 3 Drake's QoS requestor manager 12 in each of the network 4 interfaces; is that correct? 5 MR. KOHLHEPP: Object to form. 6 THE WITNESS: Can you please repeat the 7 question? 8 BY MR. CHRISTOPHER: 9 Q Sure. Is it your opinion -- strike that. 10 In this example, Figure 4.5 of Goossens2003, is 11 it your opinion that a person of skill in the art would 12 have been motivated to place Drake's QoS requestor 13 manager 12 in each of the three network interfaces shown 14 in the figure? 15 MR. KOHLHEPP: Object to form, asked and 16 answered. 17 THE WITNESS: Okay. Just to be clear, 18 Goossens2003, which is what we're looking at, already 19 discloses communication managers in their network 20 interfaces. 21 So what I'm -- in my combination of Goossens2003 22 with Drake, what I'm doing is applying the teachings of 23 Drake to Goossens2003. The communication manager -- 24 sorry. What's it called again? 25 Drake's QoS requestor manager 12 corresponds to	Page 88 1 So, for example, in paragraph 186, I say that: 2 "Therefore, in my opinion, a POSITA would've 3 understood that Goossens2003's network interfaces 4 manage the communication between different modules. 5 Additionally, in my opinion, Goossens2003's 6 interface discloses the communication manager under 7 Patent Owner's proposed construction." 8 Q Okay. And what I'm trying to understand, using 9 Figure 4.5, is it your opinion that the teachings from 10 Drake regarding the QoS requestor manager 12 would be 11 implemented in each of the network interfaces? 12 A Not necessarily all of them. 13 Q Earlier you testified that each of the modules 14 would require a communication manager component. Do you 15 recall that? 16 A I recall -- 17 MR. KOHLHEPP: Object to form. 18 THE WITNESS: What I recall that you've just 19 mischaracterized my testimony, I said that they may or 20 may not have them. 21 What I was discussing was that a module that 22 wants to initiate communication, if it's a source 23 station, then in that case it needs to have a 24 communication manager; but if its role is only being a 25 target, it does not need to have one.

Page 89 1 I discussed that if they were all symmetrical 2 and could all be source stations, then they would all 3 have them. But if something is only a target station, it 4 does not need to have one. 5 BY MR. CHRISTOPHER: 6 Q Okay. I think I understand. 7 If we were to assume that each of the modules in 8 Figure 4.5 could act as an initiator module, each of the 9 network interfaces would need to include a communication 10 manager; correct? 11 A Well, as I said before, the network interface is 12 the natural place -- is a natural place to put the 13 communication manager. And in order to -- there are 14 other possibilities for where it's located. 15 If a source station wants to initiate 16 communication and have guaranteed quality of service 17 properties, it needs to interact with a communication 18 manager, which a natural place for it would be in its own 19 network interface, but that's not necessarily the only 20 possibility. 21 Q Is it your opinion that -- strike that. 22 Would you agree that a person of skill in the 23 art would not have been motivated to implement the 24 communication manager inside one of the modules, for 25 example, shown in Figure 4.5 of Goossens2003?	Page 91 1 Q Let's turn to paragraph 155 of your second 2 declaration. 3 By the way, feel free to stop me if you want to 4 take your lunch break. Actually, I was just -- I guess 5 we've been going over an hour 15. Do we want to go off 6 the record and take a short break and talk about lunch? 7 THE WITNESS: Sounds fine to me. 8 MR. CHRISTOPHER: All right. Let's go off the 9 record. 10 (Lunch recess.) 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Page 90 1 A So to be clear, in Goossens2003 you're talking 2 about the microprocessor on the left and the two memory, 3 M-1 and M-2, on the right. That's what you mean by 4 module; is that correct? 5 Q Yes, that's what I mean. 6 A Well, the two Goossens references both discuss 7 the fact that it's -- they both discuss that it is not 8 desirable to modify an IP block in order to support low 9 level details of communication. 10 So that's -- that's something that is discussed 11 in both of the Goossens references, I believe. 12 Q You agree that a person skilled in the art would 13 not have been motivated to implement the communication 14 manager inside an IP block in Goossens2003, correct? 15 A Well, yes. A person of ordinary skill in the 16 art would prefer to implement the communications manager 17 outside of the IP block, that's correct. 18 Q Same question for Goossens2002. You agree that 19 a person skilled in the art would not have been motivated 20 to implement the communication manager inside an IP block 21 in Goossens2002; correct? 22 A Yes. I believe -- just as a technicality, 23 I think that Goossens2002 just uses the term "IP" rather 24 than "IP block," but I understand those to mean the same 25 thing.	Page 92 1 Pittsburgh, Pennsylvania, Tuesday, February 11, 2025 2 (Afternoon session.) 3 4 BY MR. CHRISTOPHER: 5 Q Welcome back, Dr. Mowry. Did you discuss your 6 testimony with anyone during our lunch break? 7 A No, I did not. 8 Q Okay. I'd like to discuss the section of your 9 second declaration starting at paragraph 155. This is 10 page 93 of the PDF. 11 A Okay. 12 Q All right. Are you there? 13 A Yes. 14 Q In this section of your second declaration, you 15 testified that Patent Owner's brief mischaracterizes your 16 testimony from your first deposition; is that correct? 17 A That's correct. 18 Q Okay. And your first deposition in this case 19 occurred on November 4th, 2024; correct? 20 A That sounds correct. I don't have a way to 21 verify the date as I sit here since I don't have any 22 devices with me, but I believe you. That sounds correct. 23 Q Okay. And I'll -- for the record, I'll 24 represent to you that it was, in fact, November 4th, 25 2024.

Page 93 1 A Uh-huh. 2 Q Your testimony in your first deposition was 3 under oath just like today's deposition; correct? 4 A Yes. 5 Q All right. Let's look at paragraph 156 of your 6 second declaration. In the first sentence you wrote: 7 "I actually testified that Drake shows its 8 QoS requestor manager (communication manager) 9 'in the network interface' and 'that would be 10 the natural place to put it' in Goossens' system." 11 Did I read that correctly? 12 A That's -- you read that correctly, yes. 13 Q And you cite Exhibit 2078, pages 203, line 24 14 through page 204, line nine? 15 Do you need me to re-ask the question? 16 A Oh, yes. I -- I'm sorry. Yeah, I lost track of 17 the question. Please -- please re-ask the question. 18 Q Sure. 19 In the sentence we just read in paragraph 156, 20 you cited page 203, line 24 through page 204, line nine 21 from your first deposition transcript; correct? 22 A That's correct, yes. 23 Q And your testimony in paragraph 156 is that you 24 said the exact words quoted in that first sentence during 25 your first deposition; correct?	Page 95 1 transcript, so I believe that the recording of the 2 transcript was accurate as far as I know. 3 So it appears that there was a typo in trying to 4 reproduce that quote in the first line of paragraph 156. 5 It should be, "That would be a natural place to 6 put it," which is actually what that's -- I agree that 7 that would be a natural place to put it. 8 Q It's your opinion that the network interface is 9 not the only place where the QoS requestor manager 12 10 from Drake could be implemented in Goossens2002; correct? 11 A Yes. I believe we discussed that earlier today, 12 also. It's -- it is a natural place to put it, but it's 13 not necessarily the only place where you could put it. 14 Q And then same question for Goossens2003. It's 15 your opinion that the network interface is not the only 16 place where the QoS requestor manager 12 for Drake could 17 be implemented in Goossens2003 in your proposed 18 combination; correct? 19 A No, that's incorrect. Goossens2003 already 20 discloses a communication manager, and it is in the 21 network interface. 22 So when I map the teachings of Drake onto the 23 Goossens2003 reference, in that case the communication 24 manager, which corresponds to the QoS requestor manager 25 in Drake, that definitely is in Goossens2003's network
Page 94 1 A Let's see. I just want to make sure I 2 understand the question. 3 So my testimony is that the deposition 4 transcript is correct in that they accurately captured 5 the words that I said. So if that's the question, then 6 yes, I reviewed the transcript. 7 Q That's not quite my question. 8 You see there's -- in the first sentence of 9 paragraph 156, there are two phrases in quotation marks? 10 Do you see those? 11 A Yes. 12 Q Is it your testimony that you said those exact 13 words during your first deposition? 14 A Well, it looks like there's possibly a small 15 typo in that it says in that first sentence -- in the 16 first sentence in paragraph 156, near the end of it, it 17 says, quote, "That would be the natural place to put it." 18 When I looked at the transcript, it said, "That 19 would be a natural place to put it." That looks like 20 that's a difference if that -- that looks like that was 21 a typo. 22 Q Okay. That's exactly what I was getting at. 23 You didn't say in your first deposition, quote, "That 24 would be the natural place to put it"; correct? 25 A Well, I don't have a recording of the	Page 96 1 interface. 2 Q Let me make sure I understand you. It's your 3 opinion -- strike that. 4 In the combination of Goossens2003 and Drake 5 that you have proposed, you are only proposing to 6 implement Drake's QoS requestor manager 12 in a network 7 interface in Goossens2003; correct? 8 MR. KOHLHEPP: Object to form. 9 THE WITNESS: The Goossens2003 reference already 10 discloses a communication manager in its network 11 interface. 12 So I'm simply relying on the teachings of Drake 13 to provide further detail on the implementation of the 14 communication manager and how it -- and how it interacts 15 with a resource manager. 16 BY MR. CHRISTOPHER: 17 Q In connection with ground two, you are not 18 proposing to implement Drake's QoS requestor manager 12 19 in Goossens2003 anywhere other than a network interface; 20 correct? 21 MR. KOHLHEPP: Object to form. 22 THE WITNESS: Well, I think there's a flaw in 23 how the question is structured, because I'm not 24 implementing as a separate entity the Drake QoS requestor 25 manager as a new thing inside of the Goossens2003

Page 97 1 reference, because the Goossens2003 reference already 2 discloses a communications manager; and a resource 3 manager, for that matter. 4 So I'm simply using the teachings of Drake to 5 provide further detail on how -- on the implementation of 6 the claims of the '449 patent. 7 Well, the teachings of Drake -- simply provide 8 additional detail on how to implement the communication 9 manager and the resource manager and how they interact 10 with each other. 11 BY MR. CHRISTOPHER: 12 Q I appreciate that. Just -- I think we're close 13 to having the same understanding. 14 In connection with ground two, you're not 15 proposing to implement Drake's QoS requestor manager 12 16 as a separate entity outside of the network interfacing 17 Goossens2003; correct? 18 MR. KOHLHEPP: Object to form. 19 THE WITNESS: As I said, the Goossens2003 20 reference already discloses a communications manager. So 21 I'm simply relying on the teachings of Drake to provide 22 additional detail on how to implement the communication 23 manager and its interactions with the resource manager. 24 BY MR. CHRISTOPHER: 25 Q I appreciate all that. I'm asking a very	Page 99 1 I understand you are asserting that you opined 2 that Drake's QoS requestor manager 12 could be 3 implemented in a network interface in Goossens2003; 4 correct? 5 A I think I've already answered that question, but 6 the answer is I am taking the teachings of Drake and 7 mapping the -- the QoS requestor manager 12 from Drake 8 corresponds to the communication manager. 9 The Goossens2003 reference already has a 10 communication manager in its network interface. 11 And I'm simply using the QoS requestor manager 12 12 from Drake and the discussion of the rest of Drake to 13 shed additional light -- provide further detail on how 14 a POSITA could implement this combination of Goossens2003 15 taking advantage of the teachings of Drake. 16 Q Again, I understand all that, and so I'm going 17 to ask again. And I need you to focus on my question 18 specifically. 19 For ground two, you are not proposing to 20 implement Drake's QoS requestor manager 12 on the NoC 21 anywhere other than in a network interface; correct? 22 MR. KOHLHEPP: Object to form. 23 THE WITNESS: Well, as I've said before, it's 24 possible that network interfaces -- sorry -- a 25 communication manager could be implemented in either --
Page 98 1 specific question so that we're clear on the proposed 2 combination. So I'll ask my question again. 3 For ground two, you are not proposing to 4 implement Drake's QoS requestor manager 12 as a separate 5 entity or component outside of the network interface in 6 Goossens2003; correct? 7 MR. KOHLHEPP: Object to form. 8 THE WITNESS: So I address this question in 9 paragraphs 185 through 187 of my first declaration. 10 For example, in paragraph 186 I describe -- and 11 paragraph 185, I talk about the fact that Goossens 12 describes that its systems include network interfaces and 13 that they -- that they manage end-to-end communication 14 connection properties. 15 And in paragraph 187 I mention how Drake relates 16 to the communication manager. And I say, for example: 17 "A POSITA would have looked to Drake's 18 disclosures requesting a QoS requestor manager 19 to obtain the benefit of Drake's known solution 20 to ensuring the availability of network 21 resources for guaranteed service -- services 22 and would have had a reasonable expectation of 23 success in doing so." 24 BY MR. CHRISTOPHER: 25 Q Again, that's not my question.	Page 100 1 in a network interface or outside of a network interface. 2 The network interface is a natural place to put 3 it. In Goossens2003, as that reference describes in that 4 example, it is in the network interface. 5 But, in general, the network -- sorry. In 6 general, the communication manager could be implemented 7 in other places. It simply needs to be accessible to the 8 first module. It just needs to be able to communicate 9 with it. 10 BY MR. CHRISTOPHER: 11 Q Putting aside what's possible in general, in 12 your proposed combination of Goossens2003 and Drake, you 13 are not proposing to implement the QoS requestor manager 14 anywhere other than in a network interface in 15 Goossens2003; correct? 16 MR. KOHLHEPP: Object to form. 17 THE WITNESS: I don't understand what you mean 18 by "proposing to." I don't know if that means is it 19 possible or I don't know if you mean is this what the 20 combination actually does. 21 BY MR. CHRISTOPHER: 22 Q Well, you have proposed a combination of 23 Goossens2003 -- -2003 and Drake which, in your opinion, 24 satisfies the limitations of the challenge claims of the 25 '449 patent; correct?

Page 101 1 A Yes, that's correct. 2 Q In that proposed combination which you contend 3 meets the limitations of the challenge claims, you have 4 only proposed implementing the QoS requestor manager 12 5 from Drake in a network interface in Goossens2003; 6 correct? 7 MR. KOHLHEPP: Object to form, asked and 8 answered several times. 9 MR. CHRISTOPHER: He has not answered this 10 question. 11 THE WITNESS: That's because the question 12 contains a flaw in it. You keep saying am I implementing 13 the QoS requestor manager from Drake in Goossens2003. 14 I'm not doing that. 15 I'm taking the teachings of Drake and applying 16 them to Goossens2003, which already has a communications 17 manager which happens to be in its network interface. 18 The way you're framing the question you make it 19 sound as though we are implementing a second 20 communication manager in Goossens2003. That is not the 21 case. Goossens2003 already has -- already discloses a 22 communication manager. 23 Drake is simply providing additional detail on 24 how to implement the communication manager already 25 described by Goossens2003.	Page 103 1 to implement the Drake QoS requestor manager 12 on the 2 NoC in Goossens2003 somewhere other than a network 3 interface? 4 You're refusing that question? 5 A No. I've answered the question several times. 6 The answer is somewhat involved. I've already given you 7 the answer several times, so I'm referring you to the 8 times that I've already answered this exact question. 9 Q Sir, I disagree. It's a simple yes or no 10 question. You haven't answered it. I'm going to move 11 on. 12 Let's move to paragraph 157 of your second 13 declaration. Let me know when you're there. This is 14 page 94 of the PDF. 15 A You said page 94 of the -- this is the second 16 one; is that right? 17 Q Yes. 94 of the PDF. 18 A Okay. 19 Q All right. And you see under paragraph 157 20 you've reproduced some excerpts from your first 21 deposition transcript? 22 A Yes. 23 Q Okay. And then if we scroll up to the text of 24 paragraph 157 you state: 25 "For the subsequent deposition testimony
Page 102 1 BY MR. CHRISTOPHER: 2 Q Based on everything you just said, you are not 3 proposing for ground two to implement Drake's QoS 4 requestor manager as a separate component somewhere on 5 the NoC other than in the network interface; correct? 6 MR. KOHLHEPP: Object to form. 7 THE WITNESS: The phrasing of your question 8 contains exactly the same flawed assumption that I just 9 addressed at length. 10 BY MR. CHRISTOPHER: 11 Q No, it doesn't. I'm asking have you opined in 12 your declaration that it would've been obvious to 13 implement the Drake QoS requestor manager 12 on the NoC 14 in Goossens2003 somewhere other than in a network 15 interface; yes or no. 16 MR. KOHLHEPP: Object to form. 17 THE WITNESS: I already answered this question 18 several times. I refer to my previous answers to the 19 same question. 20 BY MR. CHRISTOPHER: 21 Q Can you answer the question yes or no? 22 A I've already answered the question, and I refer 23 you to my previous answers to the same question. 24 Q You are refusing to answer the question yes or 25 no whether you've opined whether it would've been obvious	Page 104 1 (that Patent Owner cites at pages 31-32 of its 2 brief), I was talking about the resource manager." 3 Do you see that? 4 A Yes. 5 Q I'm trying to understand paragraph 157. Is it 6 your testimony in paragraph 157 that you misunderstood 7 the questions that are reproduced below underneath 8 paragraph 157? 9 A My testimony is that the term -- in Drake the 10 term -- the phrase "QoS requestor manager" shows up 11 multiple times in Figure 1. It appears -- it's the label 12 on both box 12 and on box 23. 13 And given the context of the question about the 14 location of some- -- of something, that the question made 15 much more sense if we were discussing the QoS allocator, 16 the -- sorry -- the QoS requestor manager 23 in the QoS 17 allocator. 18 So I thought that what was being asked was about 19 the QoS allocator. That's why in the middle of -- just 20 above paragraph 157 where -- around line 10 of my -- of 21 the transcript I say, "Sorry. Resource manager." 22 That's because I thought -- I realized that you 23 were actually asking me about the resource manager. And 24 so that was what I talked about from then on. 25 And the questions after that never clarified

Page 105 1 which QoS requestor manager was being discussed, so I 2 thought we were continuing to talk about QoS requestor 3 manager 23, which is in the QoS allocator 20, which is 4 the resource manager. And that's why I kept referring to 5 resource manager. 6 Q So it's your testimony that you had understood 7 the questions reproduced under paragraph 157 as referring 8 to the QoS requestor manager 23 in Figure 1 in Drake 9 rather than the QoS requestor manager 12 in Drake; is 10 that right? 11 A That's correct. 12 Q Okay. Understood. 13 If we scroll up to paragraph 156 of your second 14 declaration, you cite to page 203 of your first 15 deposition transcript. 16 Do you see that? 17 A Yes, I see that. 18 Q Let me introduce into the chat a copy of 19 Exhibit 2078. Let me know when you have that open. 20 A Okay. I have that. 21 Q All right. And if you could turn to page 52 of 22 the PDF, and when you're there, I'll draw your attention 23 to page 203, which is in the top right corner. 24 A Yes. 25 Q All right. Do you see at line three I asked:	Page 107 1 A I have it. 2 Q Page 69 of the PDF. This is paragraph 122. 3 A Yes, I'm at paragraph 122. 4 Q All right. Do you see the sentence: 5 "Additionally, in my opinion, a POSITA would 6 have been motivated to do so by implementing the 7 functionality of Drake's QoS requestor manager as 8 a circuit on the same integrated circuit chip as 9 Goossens2002's IP blocks and NOS"? 10 Do you see that? 11 A Yes, I see that sentence. 12 Q That was the question I had asked you about 13 during your first deposition on page 203 of the 14 transcript; correct? 15 A Yes, that's correct. I think that's what you're 16 referring to. 17 Q And when you mentioned here in paragraph 122 18 "implementing the functionality of Drake's QoS requestor 19 manager," you were referring to QoS requestor manager 12; 20 correct? 21 A Yes, that's correct. 22 Q Let's go back to Exhibit 2078. 23 A Okay. 24 Q Okay. Do you see the question starting at 25 line 16 -- strike that. Let's actually move ahead.
Page 106 1 "Well, let's jump ahead, actually, to 2 paragraph 122 of your declaration"? 3 Do you see that question? 4 A Yes, I do. 5 Q And skip down to line 10 on page 203 of the 6 transcript I asked: 7 "So here you wrote here: 8 'Additionally, in my opinion, a POSITA would 9 have been motivated to do so by implementing the 10 functionality of Drake's QoS requestor manager as 11 a circuit on the same integrated circuit chip as 12 Goossens2002's IP blocks and NOS." 13 Do you see that? 14 A (No audible response.) 15 Q Do you see that question? 16 A I see the question, yes. 17 Q You opined in your first declaration that 18 Drake's QoS requestor manager corresponds to the claimed 19 communication manager; correct? 20 A I opined that the QoS requestor manager 12 21 corresponded to the communications manager in the 22 combination with Goossens2002, yes, that's correct. 23 Q All right. And if we could go to Exhibit 1003, 24 a copy of your first declaration. Let me know when you 25 have that available. And on --	Page 108 1 Do you see the question at the bottom of 2 page 203 starting at line 24: 3 "Question: You have not explicitly defined 4 in paragraph 122 where Drake's QoS requestor 5 manager would be implemented as a circuit on the 6 integrated circuit chip in Goossens2002?" 7 Do you see that question? 8 A Yes. 9 Q Okay. And you understood that question was 10 about Drake's QoS -- strike that. 11 You understood that question was about paragraph 12 122 in your first declaration; correct? 13 A We had just been talking about paragraph 122, 14 and I was looking at it, yes. 15 Q Yeah. And the question during the deposition we 16 just read starting on page 203, line 24 of the transcript 17 was about paragraph 122 of your first declaration; right? 18 A Yes. And if you look at that page in my first 19 declaration just above paragraph 122 where I've 20 reproduced that figure from Drake, I've highlighted, 21 also, the resource manager, and there's a red box around 22 both of the QoS requestor managers. 23 And as I was looking at this page, the resource 24 manager is also highlighted there. 25 And I would also point out that I believe you

Page 109 1 asked this question around 6:30 p.m. after our 2 deposition -- my deposition started at something like 3 9:00 a.m. So it was quite late in the day when we got to 4 this. 5 So I -- while I was answering the question, the 6 question, in my mind, made more sense about locating 7 something if we were talking about the resource manager. 8 So that was why I switched gears, in my mind, and began 9 focusing on the resource manager. 10 Q Let's focus on the annotation that you just 11 referenced above paragraph 122 in your first declaration. 12 You're not opining that the QoS requestor 13 manager 23 meets the requirement of the claimed 14 communication manager, are you? 15 A No, I'm not. I think we discussed this at some 16 length in my first deposition. It's QoS requestor 17 manager 12 that is the communication -- that meets the -- 18 that corresponds to the communication manager, not QoS 19 requestor manager 23. 20 Q We did discuss that. You have a good memory. 21 And you're not opining that the QoS requestor 22 manager 23 corresponds to the claimed resource manager, 23 are you? 24 A No. The resource manager is QoS allocator 20 in 25 Drake, but the QoS requestor manager 23 is shown within	Page 111 1 the questions were never clarified to specify that we 2 were discussing QoS requestor manager 12 as opposed to 3 QoS requestor manager 23. 4 So if you read the questions realizing that 5 there are two QoS requestor managers, my answers are 6 accurate for QoS requestor manager 23. 7 BY MR. CHRISTOPHER: 8 Q Okay. But you agree you've never identified QoS 9 requestor manager 23 as corresponding to any element in 10 the claims; correct? 11 A QoS requestor manager 23 is shown inside the 12 resource manager, which is an element in the claims. And 13 I was saying repeatedly "resource manager" in my answers. 14 Q And we discussed earlier how paragraph 122, 15 which is at the beginning of the line of questioning, 16 discussed your opinion about the QoS requestor manager 17 12; correct? 18 A As I mentioned, I think you asked this question 19 extremely late in the day. And right above paragraph 122 20 in the figure in the blue resource manager box, the QoS 21 requestor manager 23 is highlighted in red. 22 And between seeing that and thinking that as 23 a -- at least as a technical question, the location of 24 the resource manager was a more interesting question. 25 I assumed that that was actually what you were asking
Page 110 1 the QoS allocator 20. 2 Q In paragraph 157 of your second declaration, 3 you've identified certain testimony on page -- starting 4 at page 205, line 14 through page 209, line 13 of the 5 transcript of your first deposition; correct? 6 A Yes. 7 Q And, now, I assume you have reviewed the entire 8 deposition transcript; correct? 9 A Yes. 10 Q Were there any other question and answers in 11 your first deposition where you misunderstood -- strike 12 that. 13 Were there any other instances in your review of 14 the transcript of your first deposition where you had 15 understood -- strike that. That's also a bad question. 16 These are the -- the testimony you cite in 17 paragraph 157 is the only testimony you have identified 18 where you believe you misunderstood the question in 19 providing your answers during your first deposition; is 20 that fair? 21 MR. KOHLHEPP: Object to form. 22 THE WITNESS: To be clear, the question was not 23 answered incorrectly in the sense that "QoS requestor 24 manager" appears in multiple places. 25 I kept saying "resource manager" repeatedly, and	Page 112 1 about. So that's -- that's what happened. 2 And as I said, I then kept saying "resource 3 manager," and there was not any clarification about which 4 QoS requestor manager we were actually discussing. 5 Q If you had understood the question and 6 referred -- the line of questions to refer to the QoS 7 requestor manager 12, how would that have changed your 8 answers? 9 A Well, I'm not going to revise my first 10 deposition. I mean, my testimony was my testimony. 11 I mean, I'm here today to answer questions, so -- 12 particularly about my second declaration. 13 But my answers were given in the context of 14 discussing the resource manager, not the communications 15 manager, for those -- for those ones that I've 16 identified, that is. 17 Q Okay. But you testified earlier that you 18 misunderstood the questions and your answers related to 19 the QoS requestor manager 23; right? 20 A That's not what I said. I said that the -- 21 there's ambiguity with the term "QoS requestor manager" 22 because the term appears in multiple places in Figure 1. 23 It's in box 12 and in box 23. 24 So in the middle of my answer, I -- as I said, 25 I said, "Sorry. You're talking about the resource

Page 113 1 manager." And I was clear about that I was discussing 2 the resource manager. 3 And after that the questions were asked without 4 ever clarifying that it was resource -- QoS requestor 5 manager 12 rather than QoS requestor manager 23. 6 My answers are all accurate given if you 7 interpret QoS requestor manager to be QoS requestor 8 manager 23, meaning that we're discussing the resource 9 manager, not the communication manager. 10 Q Right. And my question a minute ago was would 11 your answers have been the same had you understood the 12 question to relate to the QoS requestor manager 12. 13 MR. KOHLHEPP: Object to form. 14 THE WITNESS: So you're asking if I had been 15 deposed with different questions, would I give the same 16 answer? I mean, I -- I don't know. I mean, I gave 17 accurate answers for the questions as I understood them. 18 BY MR. CHRISTOPHER: 19 Q Okay. Let's do it this way: 20 Can you go to paragraph 122 of your first 21 declaration? 22 A Okay. 23 Q Okay. You have not explicitly defined in 24 paragraph 122 where Drake's QoS requestor manager 12 25 would be implemented as a circuit on the integrated	Page 115 1 But that's not necessarily the only place where 2 it would need to be implemented. It could be implemented 3 in other places as long as the first module was able to 4 communicate with its communication manager. 5 Q You did not expressly propose in paragraph 122 6 of your first declaration implementing the QoS requestor 7 manager 12 from Drake in the network interface in 8 Goossens2002. 9 Do you agree with that? 10 A So in Goossens2003, I do talk about how the 11 communications manager is implemented in its network 12 interface. For example, on paragraph 185 I talk about 13 this. 14 Q Not my question. 15 A And I'm -- I'm sorry. I'm continuing to answer 16 your question. 17 Q Okay. Go ahead. 18 A There are multiple places where it could be 19 implemented in the -- the communication manager could be 20 implemented. It could be implemented. The natural place 21 for it to be would be in the network interface, but there 22 are other possibilities. I -- 23 Q Have you finished your answer? 24 A Sorry. I'm continuing to -- you're just asking 25 specifically about paragraph 122?
Page 114 1 circuit chip in Goossens2002; correct? 2 A Sorry. Can you repeat the question? 3 Q You have not explicitly defined in paragraph 122 4 of your first declaration where Drake's QoS requestor 5 manager 12 would be implemented as a circuit on the 6 integrated circuit chip in Goossens2002; correct? 7 A Okay. This is reminding me of how nonsensical 8 those questions were. As I tried to ask at the time, 9 when you say "where," I mean, that -- I don't understand 10 what that means because, presumably, you're not 11 discussing -- like, it could be -- it could be in 12 multiple places. 13 A designer could've put this in a number of 14 different places. So there's not a single place where it 15 would be located. It's -- the question doesn't really 16 make sense. 17 Q You have not identified a specific location in 18 which the QoS requestor manager 12 would have been 19 implemented on the chip in Goossens2002 in paragraph 122 20 of your first declaration; correct? 21 A I mean, as I discuss in my declarations, a 22 natural place -- if you're asking where is the 23 communication manager from Drake implemented in the 24 combination with Goossens2002, a natural place to 25 implement it would be in the network interface.	Page 116 1 Q Yes. 2 A Okay. Well, I mean, Drake shows the QoS 3 requestor manager in its network interface. 4 So a person of ordinary skill in the art looking 5 to Drake for details on how -- where to implement it 6 would naturally place it -- a natural place to place -- 7 to locate it would be in the network interface since 8 that's what is illustrated in Drake. 9 MR. CHRISTOPHER: Move to strike as 10 nonresponsive. 11 BY MR. CHRISTOPHER: 12 Q Not my question. 13 Paragraph 122 of your first declaration does not 14 tell the board where you're proposing to implement the 15 QoS requestor manager 12 as a circuit on the 16 integrated circuit chip -- (indecipherable). 17 (Stenographer clarification.) 18 MR. CHRISTOPHER: Let me withdraw the question 19 and ask it this way. 20 BY MR. CHRISTOPHER: 21 Q The term "network interface" doesn't appear 22 anywhere in paragraph 122 of your first declaration, does 23 it? 24 A Well, it doesn't literally appear in paragraph 25 122; but I do say, for example, a person of ordinary

Page 117 1 skill in the art would've been motivated to do so by 2 implementing the functionality of Drake's QoS requestor 3 manager as a circuit on the same integrated circuit chip 4 as Goossens2002's IP blocks and NOS. And in Drake the 5 QoS requestor manager is in the network interface. 6 So, therefore, when you take the teachings of 7 the Drake and map that onto Goossens2002, the natural 8 place to put it would be in the network interface in that 9 combination. 10 But, yes, it's true that that paragraph does not 11 literally contain the words "network interface." That is 12 correct. 13 Q Is it your testimony here today in the 14 deposition that paragraph 102 -- (indecipherable). 15 (Stenographer clarification.) 16 MR. CHRISTOPHER: Let's withdraw the question. 17 Why don't we take a short break. We've been going about 18 an hour. 19 (Recess.) 20 BY MR. CHRISTOPHER: 21 Q All right. Welcome back, Dr. Mowry. 22 Before the break we were discussing the 23 transcript of your first deposition in this case, 24 Exhibit 2078. 25 Could you turn to -- this is PDF page 60. And	Page 119 1 A No. I believe I thought we were still talking 2 about the resource manager in the question starting at 3 line 10. 4 It was referred -- well, at the question that 5 begins at line four, it was referencing the earlier 6 discussions about QoS requestor manager. And in that 7 context, I thought we were discussing, as I said, the 8 resource manager. 9 And that had not been clarified, so I was -- my 10 answer was still focusing on the QoS requestor manager 11 23, because the question -- the follow-up question at 12 line 10 was about whether -- you know, about -- well, you 13 can read the question, but it said: 14 "Would that have been something that was in 15 the ordinary skill of a POSITA in early 2002?" 16 Q Your second declaration did not address this 17 question and answer on page 233 of the transcript; 18 correct? 19 A I don't see a reference to it in the second 20 declaration. 21 Q Okay. Let's move to a new topic. 22 Paragraph 55 of your second declaration. I'll 23 get you the page number. Page 36 of the PDF. Let me 24 know when you are there. 25 A Okay. I'm there.
Page 118 1 direct your attention to the top left corner of page 233. 2 Let me know when you're there. 3 A Okay. I'm at page 233 in the deposition 4 transcript. 5 Q Okay. Do you see starting at line three through 6 line 23 on page 233 you were asked a couple of questions 7 by counsel for Petitioner? 8 Do you see those? 9 A Yes, I see this. 10 Q All right. And then at line 10 on page 233, you 11 were asked: 12 "Is deciding where specifically to implement 13 the QoS requestor manager within the chip of 14 Goossens2002 -- would that have been something 15 that was within the ordinary skill of a POSITA in 16 early 2002?" 17 Did I read that correctly? 18 A Yes. 19 Q Okay. And in counsel's question, particularly 20 at line 11, he did not specify a reference number after 21 the term "QoS requestor manager"; correct? 22 A That's correct. 23 Q In responding to this question, did you 24 understand that the term "QoS requestor manager" referred 25 to QoS requestor manager 12 in Drake?	Page 120 1 Q Okay. Actually, it's page -- the question I 2 have for you is on page 37, the next page. It's a long 3 paragraph. 4 All right. Do you see about two-thirds of the 5 way down on this page there's a sentence that starts with 6 the phrase "in the combination"? 7 A I see that sentence, yes. 8 Q All right. In that sentence you wrote: 9 "In the combination a POSITA would understand 10 the resource manager (Drake's QoS allocator 20) 11 could be implemented as single piece of 12 centralized hardware on the NoC in Goossens' 2003." 13 Did I read that correctly? 14 A I believe so. 15 Q What type of hardware would be used to implement 16 Drake's QoS allocator 20 as a single piece of centralized 17 hardware on the NoC in Goossens2003? 18 A That's a very confusing question because on a 19 system on chip, it's all the same type of hardware. 20 I mean, it's -- it's circuitry on the chip. 21 Perhaps you meant something more specific than 22 that? I don't understand the question. 23 Q Well, maybe I'll ask it this way: 24 When you say "on the NoC in Goossens2003," is it 25 your opinion that the QoS allocator 20 could be

Page 121 1 implemented anywhere on the NoC in Goossens2003? 2 A Again, this is a confusing question, because 3 when you start the design, if you're talking about the 4 specific coordinates on the surface of the chip, I can 5 arrange the design probably to put it almost anywhere. 6 But if you're talking about more functionally 7 where -- where is it located, the only requirement is 8 that it would need to have conductivity so that the 9 communication managers could communicate with it. 10 Otherwise, there isn't a constraint on where 11 it's located. It just needs to be something on the chip 12 that they can communicate with. 13 And that's very analogous to Figure 1 where we 14 see QoS allocator 20 as being connected to the LAN. So 15 the -- exactly the same concept would apply to -- to how 16 it would be arranged on a network on chip. 17 Q And I think you make a fair point about 18 coordinates on a chip, so I'll ask it this way: 19 Would one option be to implement the QoS 20 allocator 20 inside the network on the NoC in 21 Goossens2003? 22 A So a problem with the question is the term 23 "network" means multiple things in different contexts. 24 So sometimes it encompasses both the routing fabric -- 25 which I believe Goossens refers to sometimes as the	Page 123 1 overall network system, which includes both that and the 2 network interfaces and all the things that manage the 3 network. 4 Q I appreciate that explanation. 5 Would one option be to implement the QoS 6 allocator 20 from Drake in a network interface in 7 Goossens2003? 8 A Can you repeat the question? 9 You're asking about the QoS allocator 20 10 specifically or -- can you just repeat the question, 11 please? 12 Q Yeah, I was. I was asking would one option be 13 to implement the QoS allocator 20 from Drake within one 14 of the network interfaces in Goossens2003. 15 A It's a possibility -- it's a technical 16 possibility. I'm not sure that it's desire- -- a 17 particularly desirable way to do it. 18 There are many -- as I said, the only real 19 requirement is that the communication managers would need 20 to be able to communicate with it. 21 So one could design it that way. I'm not sure 22 if that would be considered to be -- I don't think that 23 would necessarily be the most natural way to do it, but 24 that -- that's not impossible. 25 Q We talked earlier about how Goossens2003, the
Page 122 1 hardware architecture. 2 In other words, the system of -- in some 3 interconnects, it's the set of wires and switches or 4 routers that move data from one end point to another end 5 point; but there's also the network interface and other 6 things involved in network management. 7 So sometimes the word "network" encompasses all 8 of the above. Sometimes it's used to refer specifically 9 to the routing fabric or, again, the set of wires and 10 switches. 11 So the -- it makes sense to -- that the resource 12 manager which corresponds with Drake's QoS allocator 20 13 is part of the network in the broader sense of it 14 included encompassing the routing fabric plus the network 15 interfaces. 16 It would make sense for it to be included in 17 part of that, but it would make -- it would -- I think a 18 person of ordinary skill in the art would find it not -- 19 not desirable to put it into the middle of the actual 20 routing fabric. 21 And for that reason, for example, that's why in 22 Drake it's not shown in the -- in the middle of the 23 LAN 17. 24 It's not part of the switches and wires that 25 move data between end points, but it's part of the	Page 124 1 NoC includes IP blocks. Do you recall that? 2 A Yes. 3 Q Okay. Would you agree that a person of skill in 4 the art would not have been motivated to implement 5 Drake's QoS allocator 20 inside one of the IP blocks in 6 Goossens2003? 7 A There's a little bit of subtlety to this. So on 8 the one hand, you do not want to modify -- so if we use 9 "IP block," the term, to refer to things like processors, 10 IO devices, memory modules, the normal things on the chip 11 that we want to connect together, we don't want to modify 12 those things. 13 So you don't want to take an existing processor 14 or IO device or memory unit and have to modify it to put 15 the resource manager inside of it, because that's extra 16 design work. It's not impossible, but it's not 17 attractive. 18 The -- but the other thing to -- to discuss with 19 this question is that the -- the resource -- the natural 20 way to think about designing the resource manager is that 21 it sits on the interconnect and -- as an end point 22 similar to what we see illustrated in Figure 1 in Drake, 23 is that the resource manager, the QoS allocator 20, is 24 sitting on the LAN just like some other -- any other end 25 point.

Page 125 1 So in that sense, once you do design a resource 2 manager and attach it to the -- the interconnect, in some 3 sense it's going to look like a peer of an IP block. 4 But it's not -- it would not normally be a 5 modified original IP block. This is a new thing that -- 6 and only in that narrow sense that it's -- it sits at an 7 end point in the interconnect. 8 In that way it's similar to an IP block, but it 9 is not -- it would not have been one of the original IP 10 blocks. 11 Q Understood. Let's change gears. Can you pull 12 up a copy of Goossens2003 Exhibit 20- -- sorry -- 1007? 13 A Okay. 14 Q All right. Page 16 of the PDF, please. 15 A Okay. 16 Q All right. Bottom of that page, do you see 17 Section 4.2.4, "a network interface"? 18 A Yes, I see that. 19 Q All right. And Goossens states here: 20 "Ethereal network interfaces convert the 21 OSI and network layer services of the routers 22 to transport layer services for the users." 23 Do you see that? 24 A Yes. 25 Q Goossens2003's network interfaces convert the	Page 127 1 A Yes. 2 Q The IP blocks in Goossens2003 negotiate with 3 network interfaces to obtain connections with certain 4 properties; correct? 5 A That's what the sentence says. 6 Q Okay. And then the next sentence: 7 "For this network interfaces may reserve 8 resources, such as network interface buffers 9 and credit counters, and slots in router 10 tables." 11 Do you see that? 12 A Yes. 13 Q The network interfaces disclosed in Goossens2003 14 can reserve resources; correct? 15 A That's what the sentence says. 16 Q Okay. We'll go back now to your second 17 declaration, Exhibit 1043, page 34 of the PDF. 18 A Okay. 19 Q All right. In the very first sentence of 20 paragraph 52, you wrote: 21 "A POSITA would understand that Goossens2003's 22 NoC would desirably include a component to take 23 the signal from the reused IP block and communicate 24 with the network." 25 Did I read that correctly?
Page 126 1 OSI network layer services of the routers to transport 2 layer services for the user; correct? 3 A Those are the words in the sentence, yes. 4 Q Okay. And then the next sentence states: 5 "All connection properties (cf. Section 4.1) 6 that are end-to-end are implemented by the network 7 interfaces." 8 Do you see that? 9 A Yes. 10 Q The Goossens2003 network interfaces implement 11 end-to-end connection properties; correct? 12 A Yeah. The sentence we were just looking at said 13 that the connection properties that are end to end are 14 implemented by the network interfaces. Yes, it says 15 that. 16 Q Okay. And then if you could turn to the next 17 page. 18 A Okay. 19 Q The last paragraph of the preceding section 20 starts with the word "IPs." Do you see that? 21 A Yes. 22 Q Okay. 23 "IPs negotiate with network interfaces to 24 obtain connections with certain properties." 25 Do you see that?	Page 128 1 A That's -- that's what it says, yes. 2 Q A person of skill in the art would understand 3 that the network interfaces disclosed in Goossens2003 4 would take the signal from the IP block and communicate 5 with the network; correct? 6 A Yes, I think that's -- yup. That's basically -- 7 that's -- you're more or less reading the sentence there. 8 Yes, that's correct. 9 Q Okay. And further down in paragraph -- not too 10 far, the third sentence, do you see a sentence that 11 starts with "therefore"? 12 A I think so, yes. 13 Q And you wrote: 14 "Therefore Goossens2003's NoC would have 15 been expected to use a component such as Drake's 16 QoS requestor manager 12 to assemble/format a 17 request that could be understood by the network." 18 Do you see that? 19 A Yes. 20 Q The component you're referring to in this 21 sentence would need to know information about the network 22 so that it could assemble/format a request that could be 23 understood by the network; correct? 24 A Well, yes. It needs to be able to assemble a 25 request that could be understood by the network.

Page 129 1 Now, it can cooperate with other components 2 within the network interface. It doesn't need to 3 understand all the details of the network. 4 For example, in Drake we talked about other 5 components such as the transport protocol stack 15 and 6 the MAC 16. And those -- like, it's -- it's cooperating 7 with other parts of the network interface. 8 So it doesn't need to understand all the details 9 of the network, but it needs to be able to assemble and 10 format a request that could be communicated over the 11 network. 12 Q And further down in paragraph 52, about maybe 13 around the middle, do you see where it says "a POSITA 14 would"? 15 A Yes. 16 Q All right. I'll read this. 17 "A POSITA would not expect such an interfacing 18 component would already" -- strike that. Wrong sentence. 19 Let's go further down. About one, two, three, 20 four, five, six lines up from the bottom, there's another 21 sentence that starts with "a POSITA would." 22 Do you see that one? 23 A I think so. 24 Q And that sentence reads: 25 "A POSITA would not expect that Goossens2003's	Page 131 1 that performs a QoS functionality would necessarily 2 include a communication manager? 3 MR. KOHLHEPP: Object to form. 4 THE WITNESS: That's a very open-ended 5 hypothetical. I would need a more concrete example to be 6 able to answer that question accurately. 7 BY MR. CHRISTOPHER: 8 Q Would it be possible to perform the QoS 9 functionality described in Goossens2003 without a 10 component to assemble the QoS request from the different 11 reused IP protocols? 12 MR. KOHLHEPP: Object to form. 13 THE WITNESS: Well, as I said here, a person of 14 the ordinary skill in the art would not expect that. 15 The Drake reference in the teachings of Drake 16 make it very clear how it can be combined with 17 Goossens2003. It fills in details for an example of how 18 to implement this, and that example makes a lot of sense. 19 So I think it's very natural to implement 20 Goossens2003 using these components that are described 21 here that assemble the QoS request from the different 22 reused IP protocols. 23 BY MR. CHRISTOPHER: 24 Q That's not my question. 25 My question was would it be possible to perform
Page 130 1 network would be able to perform its QoS 2 functionality without a component to assemble the 3 QoS request from the different reused IP 4 protocols." 5 Do you see that? 6 A Uh-huh. 7 Q Is it your opinion that Goossens2003 necessarily 8 discloses a component to assemble the QoS request from 9 the different reused IP protocols? 10 MR. KOHLHEPP: Object to form. 11 THE WITNESS: Sorry. Can you repeat the 12 question, please? 13 BY MR. CHRISTOPHER: 14 Q Sure. 15 Is it your opinion that Goossens 2003 16 necessarily discloses a component to assemble the QoS 17 request from the different reused IP protocols? 18 MR. KOHLHEPP: Object to form. 19 THE WITNESS: Well, it's my opinion that 20 Goossens2003 discloses a communication manager, which may 21 or may not include the components you just mentioned. 22 But my opinion is that Goossens2003 discloses a 23 communication manager. 24 BY MR. CHRISTOPHER: 25 Q Is it your opinion that any network on a chip	Page 132 1 the QoS functionality described in Goossens2003 without a 2 component to assemble the QoS request from the different 3 reused IP protocols. 4 MR. KOHLHEPP: Object to form, asked and 5 answered. 6 THE WITNESS: Well, I haven't -- I haven't 7 thought about that, but I know that the Drake 8 reference -- the teachings of Drake in combination with 9 Goossens2003, that is -- that example does teach the 10 communication manager and the other claim limitations of 11 the -- of the '449 patent. 12 BY MR. CHRISTOPHER: 13 Q You haven't formed any opinions as to whether it 14 would be technically possible to perform the QoS 15 functionality described in Goossens2003 without a 16 component to assemble the QoS request; correct? 17 A Well, as I said a person -- 18 MR. KOHLHEPP: (Indecipherable.) 19 (Stenographer clarification.) 20 MR. KOHLHEPP: Object to form. 21 THE WITNESS: A person of ordinary skill in the 22 art would not expect that that would be -- that the 23 Goossens2003 would be able to perform this functionality 24 without a component that assembles the QoS request from 25 the different reused IP protocols.

Page 133 1 But I know -- also, as I have stated, the 2 combination of the Goossens2003 with the teachings of 3 Drake, that -- that combination does implement a 4 communication manager as described in the '449 patent. 5 MR. CHRISTOPHER: Move to strike as 6 nonresponsive. 7 BY MR. CHRISTOPHER: 8 Q My question was -- I'll ask the question this 9 way: 10 Have you formed any opinions as to whether it 11 would be technically possible to perform the QoS 12 functionality in Goossens2003 without a component to 13 assemble the request? 14 MR. KOHLHEPP: Object to form. 15 THE WITNESS: Well, as I state here -- I think 16 I've already answered this a few times and I -- I have an 17 opinion here which I stated, which is that a person of 18 ordinary skill in the art would not expect that the 19 Goossens2003 would function without that. 20 It would be -- a person of ordinary skill in the 21 art would expect that it would have components that 22 assemble the QoS request from the different reused 23 IP protocols. 24 And, in any event, the teachings of Drake 25 combined with Goossens2003, that combination definitely	Page 135 1 Goossens2003 combined with the teachings of Drake, that 2 combination definitely does satisfy the claim limitations 3 of the '449, including the implementation of the 4 communication manager. 5 BY MR. CHRISTOPHER: 6 Q You did not explore or opine on whether it 7 would've been possible or not for Goossens2003's 8 network to be able to perform its QoS functionality 9 without a component to assemble the QoS request; 10 correct? 11 A Well, I think I've just answered that question 12 three times, so I refer to my previous answer. 13 Q The answer to that question is yes; correct? 14 MR. KOHLHEPP: Object to form. 15 THE WITNESS: I've answered this question 16 several times, so I refer to my previous answers to this 17 question. 18 BY MR. CHRISTOPHER: 19 Q Your answer was yes; correct? 20 MR. KOHLHEPP: Object to form. 21 THE WITNESS: I've answered the question several 22 times. I'm referring to my previous answers to this 23 question. 24 BY MR. CHRISTOPHER: 25 Q Can you answer the question with a yes or no?
Page 134 1 does satisfy the claim limitations for the -- for the 2 '449 claims. 3 BY MR. CHRISTOPHER: 4 Q Again, that's not my question. I'm asking a 5 different question, and I'll move to strike as 6 nonresponsive. 7 When you opined that a POSITA would not expect 8 that Goossens2003's network would be able to perform its 9 QoS functionality without a component to assemble the QoS 10 request, are you saying that it would be impossible to 11 perform the QoS functionality in Goossens2003 without a 12 component to assemble the QoS request? 13 MR. KOHLHEPP: Same objection; form. 14 THE WITNESS: Well, as I said, I just -- I just 15 answered that question. 16 So a person of ordinary skill in the art -- 17 I have expressed an opinion that a person of ordinary 18 skill in the art would expect that it would perform the 19 functionality with components that assemble the request 20 from different reused IP protocols. 21 That's what a person of ordinary skill in the 22 art would expect. 23 Regarding whether it's possible or not, the set 24 of hypothetical possibilities, I did not explore that 25 because what's relevant here is that the combination of	Page 136 1 A I've answered -- 2 MR. KOHLHEPP: Objection to form. 3 THE WITNESS: I've answered the question several 4 times already. I refer to my previous answer to the 5 question. 6 BY MR. CHRISTOPHER: 7 Q And I'm asking you right now, yes or no, did you 8 explore or opine on whether it would've been possible or 9 not for Goossens2003's network to be able to perform the 10 QoS functionality without a component to assemble the QoS 11 request. Yes or no? 12 MR. KOHLHEPP: Object to form. 13 THE WITNESS: That's the same question I've 14 answered many times already. I refer to my previous 15 answer to this question. 16 BY MR. CHRISTOPHER: 17 Q Okay. So you're refusing to answer my question 18 yes or no; correct? 19 MR. KOHLHEPP: Object to form. 20 THE WITNESS: I have answered the question many 21 times. I have already provided detailed answers to this 22 question. So please refer to my previous answer. 23 BY MR. CHRISTOPHER: 24 Q Okay. And I disagree that you've answered. I'm 25 asking you, yes or no, are you refusing to answer. Yes

Page 137 1 or no? 2 MR. KOHLHEPP: Object to form. 3 THE WITNESS: The answer is involved. I have 4 given the answer several times. I'm referring to my 5 previous answer to this question. 6 BY MR. CHRISTOPHER: 7 Q We'll move on. 8 Can you pull up a copy of the '449 patent? When 9 you're there, go to dependent claim 2. 10 A Okay. I am there. 11 Q Hold on because I'm not. 12 Okay. We're there. Claim two. Claim two 13 recites at least one communication manager for managing 14 the communication between different modules. 15 Do you see that? 16 A Yes, I see that. 17 Q Claim two does not require that the 18 communication manager assemble a QoS request; correct? 19 MR. KOHLHEPP: Object to form. 20 THE WITNESS: Claim two is dependent on claim 21 one, and claim one talks about connection properties and 22 that the -- so, therefore, the -- the communication 23 manager in claim two is -- 24 I'm sorry. I've lost track of the details of 25 the question. Can you please ask the question again?	Page 139 1 a person of ordinary skill in the art would understand 2 that the communication manager is reserving connections 3 with particular connection properties. That's emphasized 4 heavily throughout the patent. 5 Q Let's scroll -- while we're on the claims, 6 scroll up to claim one. I'll direct your attention to 7 around line 38. Let me know when you're there. 8 A Okay. 9 Q All right. Claim one recites, starting at 10 line 38: 11 "Wherein the at least one connection 12 comprises a set of communication channels." 13 Do you see that? 14 A Yes. 15 Q The claimed at least one connection includes at 16 least two channels; correct? 17 A It says it has a set of communication channels. 18 Q A person of skill in the art would understand 19 that "set" refers to multiple communication channels; 20 correct? 21 MR. KOHLHEPP: Object to form. 22 THE WITNESS: Well, that typically means one or 23 more. I mean, it would often mean multiple channels. 24 BY MR. CHRISTOPHER: 25 Q In the context of claim one of the '449 patent,
Page 138 1 BY MR. CHRISTOPHER: 2 Q Claim two does not require that the 3 communication manager assemble a QoS request; correct? 4 MR. KOHLHEPP: Object to form. 5 THE WITNESS: Given that claim two is dependent 6 upon claim one, reading claim one in that context, a 7 person of ordinary skill in the art would understand that 8 the communication manager discussed in claim two would be 9 assembling a -- a quality of service request because it 10 needs to reserve a connection with the desired quality of 11 service properties. 12 BY MR. CHRISTOPHER: 13 Q Claim two recites that the communication manager 14 is for managing the communication between different 15 modules; correct? 16 A That's what the -- that's what the words say, 17 yes. 18 Q And that's the only function associated with the 19 communication manager in claim two; correct? 20 A Well, in the text for claim two, that is all 21 that's described in that particular sentence, but it's a 22 dependent claim on claim one. 23 And reading claim one and then understanding 24 what the communication manager is doing, it would -- it 25 would -- also, reading the patent specification itself,	Page 140 1 the phrase "a set of communication channels" refers to 2 two or more channels; correct? 3 A Well, it typically does. 4 MR. KOHLHEPP: Object to form. 5 THE WITNESS: I mean, strictly speaking, a set 6 is usually one or more. I mean, the example they often 7 talk about is they talk about two-way communication. 8 If you had -- or -- so there could be a channel 9 in each direction, or it can also have different 10 components along the channels. But it certainly can be 11 more than one. 12 BY MR. CHRISTOPHER: 13 Q So, in your opinion, the claim set of 14 communication channels in claim one only requires one 15 communication channel; is that correct? 16 MR. KOHLHEPP: Object to form and scope. 17 THE WITNESS: Sorry. I've not been asked to 18 render opinions on this topic, but what I know is that 19 it's the combination of Goossens2002 or Goossens2003 with 20 the teachings of Drake that those combinations do 21 satisfy, for example, claim two and the claim -- the 22 asserted claims of this patent. Because they involve 23 sets of channels, multiple channels. 24 BY MR. CHRISTOPHER: 25 Q Okay. You have not opined in either of your

Page 141 1 declarations that the term "set of communication 2 channels" only requires one communication channel; is 3 that fair? 4 MR. KOHLHEPP: Object to form. 5 THE WITNESS: I identify in my combinations 6 multiple channels. So the -- my mission was to explore 7 whether there were combinations that -- that made these 8 claims obvious. So my -- my analysis addresses that. 9 I was -- so that's, sort of, independent of this 10 issue that you're discussing. I don't -- that issue 11 doesn't affect my opinions in my -- in my two 12 declarations. 13 BY MR. CHRISTOPHER: 14 Q Understood. Would it be fair to say, then, that 15 your analysis in grounds one and two has assumed, for 16 sake of your analysis, that the claim requires two or 17 more communication channels? 18 A I was not asked to provide opinions on claim 19 construction. 20 Q Understood. But for purposes of applying the 21 references against the claims of the '449 patent, would 22 it be fair to say that you assumed that the claim 23 requires two or more communication channels? 24 MR. KOHLHEPP: Counsel, I'm going to object to 25 form and scope here. If you could direct Mr. Mowry to	Page 143 1 me to something that I discussed in my declaration. I'm 2 here to answer questions about opinions that I offered in 3 my declaration. I'm not here to answer things beyond 4 that. 5 Q I understand. And my question is you did not 6 offer a claim construction opinion on the phrase "set of 7 communication channels" in either of your declarations; 8 correct? 9 A As I said, I was not asked to offer opinions on 10 claim construction. 11 But that does not change the fact that, in my 12 analysis, the combinations of Goossens2002 with Drake and 13 also Goossens2003 in combination with Drake, both of 14 those combinations satisfy the asserted claims of the 15 '449 patent. 16 Q Understood. I'm just trying to understand what 17 opinions you have and don't have. 18 Just to close the loop on this for completeness, 19 line 39, do you see your claim one writes: 20 "Each having a set of connection properties"? 21 A Yes, I see that. 22 Q So claim one of the '449 patent recites a set of 23 communication channels, each having a set of connection 24 properties; correct? 25 MR. KOHLHEPP: Object to form and scope.
Page 142 1 where in his reply declaration this is discussed, I think 2 we can continue, but this deposition is supposed to be 3 about his reply declaration. 4 MR. CHRISTOPHER: Counsel, that's a completely 5 inappropriate speaking objection. You can object to 6 scope, that's fine, but please no coaching the witness. 7 BY MR. CHRISTOPHER: 8 Q So I'll ask my question again. And I can 9 confirm. 10 Dr. Mowry, you don't have any claim construction 11 opinions on the phrase "set of communication channels"; 12 correct? 13 MR. KOHLHEPP: Object to form. 14 THE WITNESS: I mean, my understanding is that 15 I'm here to answer questions about my declarations. So 16 if you want to point me to something in my declaration, 17 I'm happy to discuss that. 18 BY MR. CHRISTOPHER: 19 Q I am pointing you to your declaration. Have you 20 offered a claim construction opinion in your 21 declaration -- strike that. 22 You have not offered a claim construction 23 opinion in your declarations regarding the phrase "a set 24 of communication channels"; correct? 25 A Well, that sounds like the opposite of pointing	Page 144 1 THE WITNESS: I don't see the relevance of this 2 question to my declarations. If you want to point me to 3 something in my declaration, I'm happy to discuss it; but 4 this seems to be out of scope. 5 BY MR. CHRISTOPHER: 6 Q Dr. Mowry, you offered an opinion on claim one; 7 correct? 8 A That's correct, I do discuss claim one in my 9 declarations. 10 Q You read claim one when you prepared your 11 declarations; correct? 12 A I read all of the claims. 13 Q You understood claim one; correct? 14 A Yes. 15 Q And my question just simply is what are the 16 words in the claim. Starting at line 39, claim one 17 recites: 18 "A set of communication channels each having 19 a set of connection properties." 20 Correct? 21 MR. KOHLHEPP: Object. Same objection; form, 22 scope. 23 THE WITNESS: I see those words there, yes. 24 BY MR. CHRISTOPHER: 25 Q And I want to focus on the latter half of that

Page 145 1 phrase. 2 Do you have any claim construction opinions on 3 the phrase "each having a set of connection properties"? 4 A I'm just curious. For today, are we -- are we 5 done asking questions that are relevant to my opinions, 6 or, you know, are there going to be more questions that 7 are based on my actual declarations? 8 This seems to be just a fishing expedition for 9 other litigation, as far as I can tell, with this 10 question. 11 So my understanding is I'm here to answer 12 questions about the opinions that I provided in my 13 declarations, and I'm very happy to do that. 14 Q Okay. I'm going to repeat my question, and 15 I move to strike that commentary. 16 I'm trying to understand. In rendering -- you 17 have rendered opinions that this claim is obvious, 18 correct? Claim one. 19 MR. KOHLHEPP: Counselor, are you talking about 20 his first declaration here, his second declaration? 21 MR. CHRISTOPHER: Counsel, please -- 22 MR. KOHLHEPP: I'm objecting to form, because 23 you're being very unclear here. 24 MR. CHRISTOPHER: You're coaching the witness 25 throughout this entire deposition with the objections.	Page 147 1 Q Understood. So if the claim were construed to 2 require two communication channels each having two 3 connection properties, that wouldn't change any of your 4 opinions; is that fair? 5 MR. KOHLHEPP: Object to form, scope. 6 THE WITNESS: Can you point me to where 7 I discuss this in my declarations, please? 8 BY MR. CHRISTOPHER: 9 Q Well, can you answer the question? Would it -- 10 strike that. I think it suffices you don't have any 11 opinions. Let's move on. Let's go to paragraph 103. 12 A In what -- 13 Q Second declaration, Exhibit 1043. I'll get you 14 the page number in a second. Page 62 of the PDF. 15 A Okay. 16 Q All right. The sentence that starts with the 17 word "while," five lines down, do you see that? 18 A I see that sentence, yes. 19 Q It's here in paragraph 103: 20 "While using a duplex channel would indeed 21 indicate two-way communication using only one 22 channel, merely using duplex communication or 23 duplex would not." 24 Do you see that? 25 A Yes, I see that.
Page 146 1 So let me re-ask. 2 BY MR. CHRISTOPHER: 3 Q Dr. Mowry, you have opined in both of your 4 declarations -- strike that. We'll just start with the 5 first one. 6 You have opined in your first declaration that 7 claim one of the '449 patent is obvious; correct? 8 A In my declarations, I say that claim -- that -- 9 I just go into detail about how the various claims are 10 obvious given the combination of Goossens2002 plus the 11 teachings -- combined with the teachings of Drake and 12 also in light of Goossens2003 combined with the teachings 13 of Drake. 14 Q Understood. And my question for you is that 15 when you performed your analysis comparing claim one of 16 the '449 patent to the references discussed in your 17 declarations, did you form any opinions -- it's just a 18 yes or no -- on claim construction for the phrase "each 19 having a set of connection properties"? 20 A As I said already, I was not asked to form claim 21 construction opinions in my analysis. 22 And my combinations of Goossens2002 plus the 23 teachings of Drake and also Goossens2003 with the 24 teachings of Drake satisfy the claim limitations under 25 all provided constructions that were offered to me.	Page 148 1 Q You agree that a duplex channel can enable 2 two-way communication using only one channel; correct? 3 A The term "duplex channel" does not appear in any 4 of the exhibits here. I mean, as -- I think you were 5 maybe quoting words out of a sentence here. 6 But that -- that phrase "duplex channel" -- you 7 know, "duplex" refers to a connection. It doesn't refer 8 to a channel. 9 MR. CHRISTOPHER: Move to strike as 10 nonresponsive. 11 BY MR. CHRISTOPHER: 12 Q My question was you agree that a duplex channel 13 can enable two-way communication over one channel; 14 correct? 15 A I believe that's what the sentence says there, 16 yes. 17 Q Okay. Thank you. 18 And in that sentence you refer to duplex 19 communication. 20 Do you see that? 21 A Yes. 22 Q Duplex communication refers to two-way 23 communication, communication in two different directions; 24 correct? 25 A It is two-way communication between two end

Page 149 1 points, yes. 2 Q Okay. And a person of skill in the art would 3 know that one way to do duplex communication would be to 4 use a single duplex channel; correct? 5 A A person of ordinary skill in the art would 6 expect that duplex communication is typically done with 7 multiple simplex connections; and, in fact, that's what's 8 described in Goossens2002 and 2003. 9 Q A person of skill in the art would know that one 10 way to do duplex communication would be to use a single 11 duplex channel; correct? 12 A Duplex channels don't really exist typically in 13 interconnects. That's -- a person of skill in the art 14 would be very surprised to see a duplex channel. 15 Duplex communication is composed of multiple 16 channels. So it's -- it's not something that -- if, 17 theoretically, a duplex channel exists, then it could be 18 used to implement duplex communication. 19 But duplex channels do not normally exist. 20 Duplex communication happens at a connection level by 21 using multiple channels. 22 Q So you agree that it is technically possible to 23 implement duplex communication in a network using a 24 single duplex channel; correct? 25 MR. KOHLHEPP: Object to form, scope.	Page 151 1 BY MR. CHRISTOPHER: 2 Q So you agree that it is technically possible in 3 an off-chip network to implement duplex 4 communication with a single duplex channel; correct? 5 A I just answered that question, so please refer 6 to my previous answer. 7 Q Your answer is yes, it is technically possible 8 to implement duplex communication with a single duplex 9 channel; correct? 10 A No. That's not what I said. Please refer to my 11 previous answer. 12 Q So your testimony is that it is not possible to 13 implement a duplex -- duplex communication in an off-chip 14 network using a single duplex channel? 15 Is that your testimony? 16 A That's also not what I said. Please refer to my 17 previous answer. 18 Q I'm going to try asking one more time because 19 I don't think I've gotten a clear answer. 20 In an off-chip network, is it technically 21 possible to implement duplex communication using a single 22 duplex channel, yes or no? 23 MR. KOHLHEPP: Object to form. 24 THE WITNESS: As I said before, in many 25 situations, there are many reasons why this -- having a
Page 150 1 THE WITNESS: As I mentioned, a network on chip, 2 which is what the '449 patent is about and which is what 3 the Goossens -- both of the Goossens references are 4 about, in that situation a duplex channel -- I've never 5 heard of a duplex channel existing. 6 There are many reasons why that would be a 7 terrible idea. And so that is not something that a 8 person of ordinary skill in the art would -- would 9 consider as being a reasonable way to implement duplex 10 communication. 11 As described, for example, in the Goossens 12 references, you can have a duplex communication over a 13 connection, you can have a duplex connection, but it's 14 composed of simplex channels. 15 MR. CHRISTOPHER: Move to strike as 16 nonresponsive. 17 BY MR. CHRISTOPHER: 18 Q You would agree that it is technically possible 19 in an off-chip network to implement duplex communication 20 using a single duplex channel; correct? 21 MR. KOHLHEPP: Object to form, scope. 22 THE WITNESS: It would depend on the context. 23 Not necessarily, as I said. There are many practical 24 reasons why duplex channels are a terrible idea, and 25 I don't think I ever see them in practice.	Page 152 1 true duplex channel is a terrible idea. 2 I don't think I ever really see it in practice. 3 So in many contexts it's just not practical. 4 And -- yeah, the way that it's -- as described 5 in Goossens2002 and in Goossens2003, you can establish 6 duplex connections; and you do that by composing together 7 multiple simplex channels. That makes a lot of sense 8 from a technical standpoint. 9 Having a duplex channel is not something that is 10 really discussed because it's a terrible idea. 11 MR. CHRISTOPHER: Move to strike as 12 nonresponsive. 13 BY MR. CHRISTOPHER: 14 Q In an off-chip network, it is technically 15 possible to implement duplex communication using a single 16 duplex channel; yes or no? 17 MR. KOHLHEPP: Object to form. 18 THE WITNESS: I've already answered that 19 question, so please refer to my previous answer. 20 BY MR. CHRISTOPHER: 21 Q No, you haven't. 22 In an off-chip network, it is technically 23 possible to implement duplex communication using a single 24 duplex channel; yes or no? 25 MR. KOHLHEPP: Object to form.

Page 153 1 THE WITNESS: That's exactly the question that 2 I've answered several times now, so please refer to my 3 previous answers to this exact question. 4 BY MR. CHRISTOPHER: 5 Q Sir, you have not answered this question. 6 In an off-chip network, it is technically 7 possible to implement duplex communication using a single 8 duplex channel; yes or no? 9 MR. KOHLHEPP: Object to form. 10 THE WITNESS: I've already answered this 11 question. Please refer to my previous answer. 12 BY MR. CHRISTOPHER: 13 Q Are you refusing to answer my question, which is 14 in an off-chip network it is technically possible to 15 implement duplex communication using a single duplex 16 channel; yes or no? 17 A I've already answered this exact question. 18 Please refer to my previous answer. 19 Q So you're refusing to answer the question; 20 correct? 21 A No. I've answered the question many times. 22 I have just -- already answered the question, so please 23 refer to my previous answer to this exact question. 24 Q You understand my question is a yes or no 25 question; right?	Page 155 1 testimony with anyone during our break? 2 A No, I didn't speak with anyone. 3 Q Okay. 4 All right. Can you turn to paragraph 107 of 5 your second declaration, Exhibit 1043? 6 A Okay. 7 Q Second sentence, third line down. You wrote: 8 "For example, the algorithm for allocating 9 a QoS transmission path described at Exhibit 1006, 10 page 10, line nine, to page 11, line 48, and 11 Figs. 4 through 5 shows that it supports multiple 12 of these QoS transmission paths (which would be 13 channels)." 14 Do you see that? 15 A Yes. 16 Q Your opinion here in paragraph 107 is that the 17 QoS transmission paths in Drake are channels; correct? 18 A Yes, that's correct. 19 Q Drake refers to the QoS transmission paths as 20 QoS data streams; correct? 21 A I don't think that's correct. The data stream 22 is the information that you're communicating between the 23 source and the target. 24 For example, if you're transferring a video 25 file, that would be -- I believe that's what -- how the
Page 154 1 A I've already provided my answer to this 2 question, so please refer to my previous answer to this 3 question. 4 Q You're not answering my question. 5 You understand that the prior question I'm 6 asking you multiple times is a yes or no question; 7 correct? 8 A I've already answered this question, so please 9 refer to my previous answer to this question. 10 Q No, you haven't answered this question, which is 11 you understand that the prior question was a yes or no 12 question; correct? 13 A Can you please pose the question that you would 14 like for me to answer? 15 MR. CHRISTOPHER: You know, why don't we take a 16 break. We're going to consider calling the board on 17 this. This is -- the witness is just not answering any 18 of the questions, so -- 19 Why don't we take a break; we'll come back and 20 see if we can move forward with this. Let's go off the 21 record. 22 (Recess.) 23 MR. CHRISTOPHER: Back on the record. 24 BY MR. CHRISTOPHER: 25 Q Dr. Mowry, did you discuss the substance of your	Page 156 1 term "data stream" is being used. 2 It's the workload that's being transmitted. 3 That's what the data stream is. That's different from 4 the path. 5 Q Okay. Let's look at the very last sentence on 6 page 65 of the PDF. You wrote: 7 "For each QoS requestor (i.e. source), there 8 is a stream count: A count of the number of data 9 streams for which QoS is currently allocated by 10 this requestor." 11 Do you see that sentence? 12 A Uh-huh. Yes. 13 Q And a few lines down you wrote: 14 "In addition, Drake consistently uses 15 data streams," plural. 16 Do you see that? 17 A Yes. 18 Q Is it your opinion that each of the data streams 19 in Drake is a channel? 20 A Each data stream that's functioning concurrently 21 needs to have its own path, needs to have its only 22 channel. So the fact that the -- the Drake supports 23 multiple concurrent data streams means that it has 24 multiple channels. 25 Q Okay. Does that mean that each data stream

Page 157 1 would be considered by a person of skill in the art to be 2 a channel? 3 A No. I said earlier a path -- Drake uses the 4 term "path" when it's referring to channels. It talks 5 about a transmission path. Those are channels. A stream 6 is something that's being communicated over a channel. 7 Q I think I understand. 8 In your first declaration, you identify Drake's 9 data streams as connections rather than channels; 10 correct? 11 A Can you point me to what you're talking about or 12 to which section you're referring to? 13 Q I can. Paragraph 97 of Exhibit 1003. 14 A Okay. I'm at the paragraph. 15 Q And you're going to want to go to PDF page 55, 16 second line down from the top. Do you see the sentence 17 that reads: 18 "Drake similarly describes connections between 19 source and target stations, i.e., first and second 20 processing modules, which it also refers to as QoS 21 connections, QoS streams and QoS data streams." 22 Do you see that? 23 A Uh-huh. I see that. 24 Q Paragraph 97 of your first declaration you 25 identify Drake's QoS data streams as connections;	Page 159 1 A That's what the sentence says. 2 Q And that would be consistent with the 3 understanding of a person of skill in the art; correct? 4 A Yes. That's a common way to implement a network 5 interface for an off-chip network. 6 Q Okay. And the following sentence that starts 7 column two, line 24 of the '449 patent discloses: 8 "Moreover, running the protocol stack on the 9 IP itself may also be not feasible, because often 10 these IPs have one dedicated function only, and do 11 not have the capabilities to run a protocol 12 network stack." 13 Do you see that? 14 A Yes, I see that. 15 Q Okay. So you see the '449 patent discloses that 16 running the protocol stack on the IP itself may not be 17 feasible; correct? 18 A No, I disagree with that. That's just talking 19 about doing it with a dedicated processor. 20 But you can implement the same functionality 21 with fixed function hardware, and also you can simplify 22 the -- the lower layers of the network stack. 23 You don't need to run, say, full TCPIP or 24 something like that. You can run -- you can have simpler 25 protocols than that.
Page 158 1 correct? 2 A Well, a particular stream corresponds to a 3 connection. 4 In order to transmit a particular data stream 5 across the network with quality of service properties -- 6 for example, if you're playing a particular video from -- 7 transporting it from a source to a target, you need a 8 connection for -- for that. So it corresponds to a 9 connection. 10 Q Okay. Let's go to the '449 patent, which is 11 Exhibit 1001, column two, line 17. Let me know when 12 you're there. 13 A Okay. 14 Q All right. Starting at line 17, the '449 patent 15 discloses: 16 "An off-chip network interface usually 17 contains a dedicated processor to implement 18 the protocol stack up to the network layer 19 or even higher, to relieve the host processor 20 from the communication processing." 21 Do you see that? 22 A I see that. 23 Q The '449 patent teaches that off-chip network 24 interfaces usually include a dedicated processor; 25 correct?	Page 160 1 MR. CHRISTOPHER: Okay. Move to strike as 2 nonresponsive. 3 BY MR. CHRISTOPHER: 4 Q My question was about what does the '449 patent 5 say. Let me back up to line 21, which is where I 6 actually intended to start. The '449 patent at line 21 7 discloses: 8 "Including a dedicated processor in a network 9 interface is not feasible on chip, as the size of 10 the network interface will become comparable to or 11 larger than the IP to be connected to the network." 12 Do you see that? 13 A I see that sentence, yes. 14 Q And you agree that the '449 patent is disclosing 15 that the size of the network interface should be smaller 16 than the size of the IP to be connected to the network; 17 correct? 18 A Well, that would be -- that would be desirable. 19 Q Okay. Can we turn now, staying in column two, 20 line 43 -- no. Let's skip that. Let's go back to your 21 second declaration. Paragraph 18. Let me know when 22 you're there. 23 A Yes, I'm there. 24 Q All right. In the first sentence you wrote: 25 "Dr. Bagherzadeh notes that there are

Page 161 1 differences between a NoC and a traditional 2 off-chip network." 3 Do you see that? 4 A Yes. 5 Q You would agree that there are differences 6 between an NoC and a traditional off-chip network; 7 correct? 8 A Yes, there are some differences; and I discuss 9 this in my first declaration, for example, in paragraphs 10 32 through 34. 11 Q Go to paragraph 20 of your second declaration. 12 It says PDF page 13. 13 A Okay. 14 Q All right. In the first sentence you wrote: 15 "Dr. Bagherzadeh argues that computer 16 network components are significantly larger 17 than NoC components." 18 Do you see that? 19 A I see that, yes. 20 Q You would agree that computer network components 21 in an off-chip network were generally larger than NoC 22 components in 2003; correct? 23 A So "larger" is a funny term here. So I don't 24 recall whether Dr. Bagherzadeh was clear about what he 25 meant by "significantly larger."	Page 163 1 Do you see that? 2 A Yes. 3 Q Okay. You haven't disputed in your second 4 declaration that SOC's are approaching a die area size of 5 100 millimeters; correct? 6 A No, I don't dispute that. 7 Q Okay. And you would agree that it is impossible 8 to take a traditional networking component from an 9 off-chip network and place it on the die area size of 10 100 square millimeters without modifying that component; 11 correct? 12 A You just asked -- to be clear, in your question 13 you say do I agree it's impossible? 14 Q Sure. I'll re-ask it. 15 You would agree that it is impossible to take a 16 networking component from an off-chip network and place 17 it on a die area size of 100 square millimeters unless 18 you somehow modified that component to reduce its 19 dimensions; correct? 20 A I disagree with that. In many cases you could 21 move things directly. It's just a matter of how space 22 efficient you want it to be. The -- the general 23 architecture of things can usually be translated in a 24 fairly straightforward way. 25 But, in any event, I would point out that the
Page 162 1 But the number of resources dedicated to 2 off-chip network interfaces is sometimes -- yeah, it can 3 be larger, but it's hard to -- I mean, the -- the 4 concepts translate directly, and there's obvious things 5 that one can do to adjust the sizes of things. 6 So I don't agree with this assertion that 7 they're significantly larger. It's fairly 8 straightforward to map things onto an NoC. In fact, 9 I cite many things that discuss that in my declarations. 10 Q I'm going to introduce in our Zoom chat so you 11 have a copy, Exhibit 2070. Let me know when you have 12 that open. 13 A Okay. Yes. 14 Q Exhibit 2070 is Dr. Bagherzadeh's declaration 15 that you reviewed and responded to in your second 16 declaration; correct? 17 A Yes. It appears to be that, yes. 18 Q All right. And if you can turn for me to 19 page 31 of the PDF, paragraph 75. Let me know when 20 you're there. 21 A Yes, I'm there. 22 Q All right. In the second sentence of paragraph 23 75 Dr. Bagherzadeh wrote: 24 "Modern SoCs are approaching a die area 25 size of 100 square millimeters."	Page 164 1 Goossens2002 and Goossens2003 references already disclose 2 a fully functional NoC that has network interfaces and a 3 fully functioning network on chip. 4 And all we're talking about is adding some 5 additional functionality to -- to perform quality of 6 service guarantees. So it's only that marginal increase 7 for managing quality of service that is at issue. 8 And, for example, Drake spells out in the 9 Figures 4 and 5 a very detailed flow chart of how to 10 implement this. 11 And it would be straightforward to implement 12 that in custom hardware -- fixed function hardware that 13 would take up a very small amount of die space. 14 So this would be straightforward to translate 15 the teachings of Drake onto a network on chip. 16 Q Well, would you agree that traditional off-chip 17 networking components are larger than 100 square 18 millimeters? 19 A That comparison doesn't make any sense because 20 we're talking about driving signals off of chips and 21 across boards and across large-scale devices. 22 So, of course, just the electronics to drive 23 signals across those boundaries -- those are large 24 things. I mean, just the electronics are large simply 25 because you're going off chip.

Page 165 1 Once you're staying on chip, the circuitry to 2 communicate across on chip wires is dramatically smaller. 3 So it's just a red herring to talk about the 4 size of an off-chip network and what that means for an 5 on-chip interconnect because -- and the fact is with 6 networks on chip -- or -- sorry -- with systems on chips, 7 we have abundant resources. 8 For example, Goossens2002 and 2003 talk about 9 having room for hundreds of IP cores. So with more and 10 more integration, there are more and more resources. 11 Resources are quite abundant. 12 So this whole discussion of allegedly taking 13 something very huge and squeezing it into small is -- is 14 just completely unfounded, in my opinion. 15 Q But you do agree, don't you, that the 16 electronics that are used in an off-chip network 17 traditionally are far larger than 100 square millimeters; 18 correct? 19 A And that has absolutely nothing to do with 20 communicating with an on-chip fabric because you don't 21 need those things at all. So they -- they go away. 22 You don't have them because you don't need to 23 drive large voltages to communicate on chip. You can do 24 it using the conventional techniques that have been used 25 for decades within microprocessors.	Page 167 1 So saying that something that goes away was big 2 and we don't need it anymore and then trying to say that 3 that's somehow a constraint or a problem is a nonsensical 4 argument. 5 MR. CHRISTOPHER: I'm going to move to strike 6 everything after, "Yeah, they are large in the rough 7 [sic]." 8 BY MR. CHRISTOPHER: 9 Q I need you to just focus on the questions I'm 10 asking. 11 Earlier we talked about Drake source station 12 being understood by a person of skill in the art as 13 something like a server. Do you recall that? 14 A I roughly recall that. If you can point me back 15 to that paragraph, I'd appreciate that. 16 Q Paragraph 15 of your second declaration. 17 A Okay. 18 Q PDF page nine. 19 A Okay. 20 Q Third line down. Does that refresh your 21 recollection? 22 A Yes. Thank you. 23 Q Okay. And my question is a person skilled in 24 the art would, of course, understand that the server 25 Drake would be far larger than the die for a network on a
Page 166 1 Even before we had systems on chips, VLSI 2 designers knew very well how to drive signals on wires 3 across chips. And it's that same tried and true 4 well-known technology that's used within is VLSI all the 5 time. 6 MR. CHRISTOPHER: Move to strike as 7 nonresponsive. 8 BY MR. CHRISTOPHER: 9 Q That wasn't my question. 10 My question was just simply you agree that the 11 electronics and off-chip networks are larger than 12 100 square millimeters; correct? 13 A I think I just answered that. But as I said, 14 that has nothing to do -- yeah, they are large. Exactly. 15 But they disappear. They're not needed at all on chip. 16 So this has nothing to do at all with whether 17 it's practical to take the teachings of off-chip networks 18 and apply them on chip because that's -- this is one of 19 the examples of why, over decades and decades, as we've 20 been able to integrate more and more transistors onto a 21 chip, computers have gotten more efficient. 22 Because we just eliminate the need to 23 communicate across chip boundaries, and that saves an 24 enormous amount of space. So it makes things easier to 25 do to implement; not harder.	Page 168 1 chip; correct? 2 A If you looked at the logic, if you looked at the 3 transistors in a server and realized that, as technology 4 progresses, the physical size of all these things keeps 5 shrinking, the hardware components, when they are shrunk 6 down equivalently onto a chip, are not vastly -- probably 7 fit easily onto a system on chip. 8 In the older technology and when you have to use 9 multiple chips and boards -- I mean, of course, a board 10 is larger than a chip. 11 But once -- once these things are integrated 12 onto a single chip, they become small, just like IP cores 13 and all the other things that Goossens2002 and 2003 14 already disclosed as being on a network on chip. 15 MR. CHRISTOPHER: Move to strike as 16 nonresponsive. 17 BY MR. CHRISTOPHER: 18 Q That wasn't my question. We can move on. 19 Paragraph 25 of your second declaration, please. 20 A Okay. 21 Q I need to get there myself. 22 The first sentence you wrote in paragraph 25: 23 "Another difference identified by 24 Dr. Bagherzadeh is that traditional off-chip 25 networks had network interfaces embedded

Page 169

1 within the computers."
2 Do you see that?
3 A Yes.
4 Q You agree with that statement; correct?
5 A Yes, it's true that in old -- yes. In the old
6 days we had separate network interface cards, and they
7 were separate little -- little boards or cards that you
8 plugged into a node.
9 Q When you referred to the old days in your prior
10 answer, would that have encompassed the 2003 time frame?
11 A Sorry. I just meant, you know, Dr. Bagherzadeh
12 said "traditional," so I took that to mean from several
13 decades ago.
14 So I'm not -- I was not assigning a time frame
15 to that; just saying that in the -- in the days before --
16 if we're talking about off-chip networks, it was common
17 practice to have network interfaces within the computers.
18 That statement is correct.
19 Q It was common practice in 2003 to have network
20 interfaces within the computers in off-chip networks;
21 correct?
22 A Yes, that's correct.
23 Q And then going back to that first sentence in
24 paragraph 25 of your second declaration, second line,
25 latter half of the sentence you wrote:

Page 170

1 "Whereas in a SoC, including network
2 interfaces in an IP module was disfavored."
3 Do you see that?
4 A Yes.
5 Q And you agree with that statement; correct?
6 A Yes.
7 Q Let's go to paragraph 32 of your second
8 declaration. This is PDF page 22.
9 A Okay.
10 Q In the first sentence you wrote:
11 "Dr. Bagherzadeh also identifies differences
12 in reordering, time-related guarantees, and
13 reliable communication as purported differences
14 between off-chip and on-chip networks."
15 Do you see that?
16 A Yes.
17 Q Okay. You would agree that there are
18 differences in terms of reordering, time-related
19 guarantees, and reliable communication between off-chip
20 and on-chip networks; correct?
21 A Yes, there are some differences, but those
22 differences don't really have any bearing on integrating
23 quality of service guarantees as described by the '449
24 patent or as described by the combination of Goossens2002
25 or 2003 in combination with Drake.

Page 171

1 Those differences have really nothing to do with
2 how -- implementing quality of service guarantees in a
3 network is described in those things. Those are
4 orthogonal to those issues.
5 MR. CHRISTOPHER: All right. I am getting close
6 to the end here. If we could go off the record for about
7 10 minutes, I'll confer with Mr. Holt and, hopefully,
8 wrap up pretty quickly after that.
9 Does that work for everybody?
10 THE WITNESS: Okay.
11 MR. CHRISTOPHER: All right. Thank you.
12 (Recess.)
13 MR. CHRISTOPHER: All right. Back on the
14 record.
15 BY MR. CHRISTOPHER:
16 Q Dr. Mowry, did you discuss the substance of your
17 testimony with anyone during our break?
18 A No, I didn't speak with anyone during the break.
19 Q Okay. If you could turn for me to paragraph 103
20 of your first -- excuse me -- paragraph 100 of your first
21 declaration, Exhibit 1003.
22 A Okay.
23 Q All right. About halfway down you see you cite
24 Exhibit 1024, parentheses, IEEE Dictionary?
25 A I see that, yes.

Page 172

1 Q I've placed a copy of Exhibit 1024 in the chat.
2 Let me know when you have that open. We could start on
3 the cover page.
4 MR. KOHLHEPP: Sorry, Counsel. Give me a
5 moment. I was looking at the second declaration. Let me
6 reorientate here.
7 MR. CHRISTOPHER: Sure. Just let me know when
8 you're ready.
9 MR. KOHLHEPP: Okay. Go ahead.
10 BY MR. CHRISTOPHER:
11 Q All right. Mr. Mowry, do you have a copy of
12 Exhibit 1024 in front of you?
13 A Yes, I have it open.
14 Q Exhibit 1024 is "The Authoritative Dictionary of
15 IEEE Standards Terms"; correct?
16 A That's what it says.
17 Q All right. If you could turn now to the very
18 last page, PDF page 11.
19 A Okay.
20 Q Left-hand column, roughly the bottom third of
21 the page. Do you see where it says, "Duplex channel"?
22 A I do see that.
23 Q Okay. And the IEEE Dictionary is providing a
24 definition of the term "duplex channel" here; correct?
25 A I do see it here. Yes, I see that here.

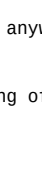
Page 173 1 Q Okay. The IEEE definition for the term "duplex 2 channel" is a communications channel capable of 3 simultaneous duplex communication; correct? 4 A That's what it says. 5 Q And the IEEE Dictionary is something that a 6 person of skill in the art would've looked to to 7 understand technical terms; correct? 8 A It's -- it is -- yes, it is a reference for 9 technical terms. 10 Q Okay. Let's go to paragraph 12 of your second 11 declaration, please. 12 MR. KOHLHEPP: Sorry. Dr. Mowry, were you 13 finished with your answer there? It sounded like you got 14 cut off. 15 THE WITNESS: Well, I was going to say more, 16 which is the IEEE -- this is a dictionary for 17 electrical -- electrical engineers. 18 And "channel" in this context means many things 19 beyond channels and computer networks. So, for example, 20 radio frequencies, other kinds of communication that had 21 existed far before computers. 22 So in some other context outside of computer 23 networks, it would be more common to -- more practical to 24 have a duplex channel. 25 But in a computer network this is generally	Page 175 1 Goossens2003) provides the claimed first module." 2 Do you see that? 3 A Yes. 4 Q You would agree that Drake does not disclose a 5 first module as claimed; correct? 6 MR. KOHLHEPP: Object to form. 7 THE WITNESS: No, I disagree with that. What I 8 am saying is that in my combination, I am taking the 9 teachings of Drake and applying them to the Goossens2002 10 reference and to the Goossens2003 reference. 11 And because the both of those Goossens 12 references already contain a -- already disclose a first 13 module, I'm not relying on Drake to provide the first 14 module. 15 But the application 11 in Drake corresponds to 16 the first module. So it's clear to a person of ordinary 17 skill in the art how to -- how to combine those -- those 18 references. 19 BY MR. CHRISTOPHER: 20 Q I understand. 21 You reviewed the board's institution decision 22 prior to preparing your second declaration; is that 23 correct? 24 A Yes, that's correct. 25 Q All right. And I included a copy in the Zoom
Page 174 1 impractical. And the reason is that when two end points 2 simultaneously try to drive a set of wires, you get noise 3 and garbage. So for that reason in computer networks we 4 just use simplex channels. 5 MR. CHRISTOPHER. Okay. Move to strike as 6 nonresponsive. 7 BY MR. CHRISTOPHER: 8 Q Let's go to paragraph 12 of your second 9 declaration, Exhibit 1043. Let me know when you're 10 there. 11 A You said paragraph 12; is that right? 12 Q 12. That is on page eight of the PDF. 13 A Okay. I am there. 14 Q All right. In paragraph 12, the first sentence 15 you wrote: 16 "Dr. Bagherzadeh contends that I appear to 17 take inconsistent and/or unclear positions as 18 to whether the claimed first module purportedly 19 corresponds to Drake's source station 10 or only 20 to application 11 therein." 21 Do you see that? 22 A Yes. 23 Q And then in paragraph 13 you wrote: 24 "My first declaration states that each 25 of the Goossens references (Goossens2002,	Page 176 1 chat. This is Paper 14 in the proceeding. If you can 2 open that up. Let me know when you're ready. 3 A Okay. Yes. 4 Q Do you recognize Exhibit -- excuse me. This is 5 actually Paper 10. I misspoke. So let's make that clear 6 for the record. This is Paper 10. 7 Do you recognize Paper 10 as a copy of the 8 board's institution decision? 9 A Yes. That's what it appears to be, yes. 10 Q And if you can scroll for me to page 24. 11 A Okay. Yes. 12 Q You know what, I may have the wrong exhibit. 13 You could put aside the Paper 10 we just opened. I'm 14 going to introduce -- 15 All right. I've introduced Paper 14 of this 16 proceeding as a PDF in the Zoom chat. Let me know when 17 you have that document open. Apologies for the 18 confusion. 19 A Okay. I have that open. 20 Q Do you recognize Paper 14 as the board's 21 institution decision with respect to Qualcomm's petition? 22 A That's what it appears to be. 23 Q Okay. Page 24, now that we are on the correct 24 document. Let me know when you are there. 25 A Yes.

Page 177 1 Q All right. Do you see the sentence in the 2 middle of the page that reads: 3 "Also, we disagree with Patent Owner that 4 Petitioner identifies application 11 in source 5 station 10 as the claimed first module for 6 limitation 6.a." 7 Do you see that? 8 A I see that. 9 Q And then in the very last sentence of this 10 paragraph on page 24, the board states: 11 "Petitioner's explanation indicates that 12 Petitioner identifies source station 10 as 13 the claimed first module for limitation 6.a 14 and identifies application 11 as a component 15 in the claimed first module involved in 16 issuing a request." 17 Do you see that? 18 A Yes. 19 Q You disagree with the board's interpretation of 20 the petition here on page 24; correct? 21 MR. KOHLHEPP: Object to form. 22 THE WITNESS: Well, as I discussed earlier, from 23 the perspective of the LAN 7, for example, in -- in 24 Drake -- from the perspective of the LAN 17, the end 25 points of the network are stations, like the source	Page 179 1 BY MR. CHRISTOPHER: 2 Q Respectfully, that wasn't at all my question. 3 In your second declaration, you explain that you 4 are not identifying source station 10 as the claimed 5 first module for limitation 6.a; correct? 6 A Can you point me to the specific part that 7 you're referring to? 8 Q Yes. It was the paragraph we just talked about. 9 Paragraph 13 of your second declaration. 10 A Okay. 13. Yes. As I was just saying in 11 paragraph 13, it's the Goossens references that provide 12 the first module. 13 Q Okay. So you are not relying on Drake's source 14 station 10 as disclosing the claimed first module in your 15 combination; correct? 16 A In the combination -- 17 MR. KOHLHEPP: Object to form. 18 THE WITNESS: So in the combination of 19 Goossens2002 with Drake, it is the IPs. The IPs are the 20 first modules. And in Drake it's the application 11 that 21 corresponds to the first module. 22 And for the combination of Goossens2003 with 23 Drake, it's the IP blocks that -- that disclose the first 24 module. And then in the combination, like, again, the 25 application 11 from Drake is what is -- corresponds with
Page 178 1 station 10 and the target station. 2 And so from that perspective, the -- that's the 3 granularity at which the LAN is tracking quality of 4 service. But the -- so it is true that the -- that the 5 application 11 is what I identify as the first module. 6 And it is inside of source station 10. 7 So from the -- when we look at it from the 8 perspective of the LAN, it is also true that source 9 station 10 is -- from its perspective, it is the thing 10 that is issuing the request because the pathways in the 11 actual LAN in Drake are between end points. 12 But it does -- it does originate the -- as I 13 said in my first deposition, the thing that I'm 14 identifying as the first module in Drake -- well, hold 15 on. 16 The thing that I'm identifying as the first 17 module is -- is actually in the Goossens2002 and 18 Goossens2003 references, which is the IP in Goossens2002 19 and the Goossens -- and the IP blocks in Goossens2003. 20 And when we combine Drake with either of those 21 two Goossens references, the application 11 is the thing 22 that maps onto those first modules in -- in the two 23 Goossens references. 24 MR. CHRISTOPHER: Move to strike as 25 nonresponsive.	Page 180 1 the first module from Goossens2003. 2 BY MR. CHRISTOPHER: 3 Q Okay. I understand all that. My question is a 4 lot more specific. 5 You are not opining that the source station 10 6 in Drake corresponds to the claimed first module; 7 correct. 8 A Well, as I think I just explained, my opinion 9 which I provided in my declarations is that it's the 10 IP and the IP blocks respectively from Goossens2002 and 11 Goossens2003 that provide the first module. 12 And then in the combination, the teachings of 13 Drake are combined with those things. And in that 14 combination it's the application 11 that corresponds to 15 the first module in those combinations. 16 Q Again, I understand all that. I think we're on 17 the same page. I'm just trying to be clear. 18 You are not opining that the source station 10 19 in Drake corresponds to the claimed first module; 20 correct? 21 A I believe I just answered that question. I said 22 it's -- it is the IP and the IP block from Goossens2002 23 and Goossens2003 respectively. Those are the first 24 modules in the combination. 25 And in the combination where I include the

Page 181 1 teachings of Drake, it is application 11, which is inside 2 source station 10. 3 That application 11 is what maps onto the first 4 module in the two Goossens references where I'm combining 5 the teachings of Drake. 6 Q Well, let's just go back to Paper 14, page 24. 7 That very last sentence. Let me know when you're there. 8 A Okay. 9 Q The last sentence the board stated: 10 "Petitioner's explanation indicates that 11 Petitioner identifies source station 10 as 12 the claimed first module." 13 Do you see that? 14 A Yes, I see that. 15 Q And based on the explanations you just gave me, 16 you would agree that your opinions -- that -- strike 17 that. 18 Based on the explanations you just provided, you 19 would agree that the board's characterization of the 20 petition is inconsistent with your mapping of the claims 21 onto Drake in the combination; correct? 22 A No. As I've said, source station -- as we 23 talked about earlier today, application 11 is inside 24 source station 10. 25 So there are many places in Drake where --	Page 183 1 for the court. 2 But in the combination -- in my combinations, in 3 both of them, the first module is in Goossens. It's -- 4 in Goossens2002 it's the IPs. In Goossens2003 it's the 5 IP blocks. 6 When I combine the teachings from Drake with 7 those -- with those two Goossens references, it is 8 application 11 that maps onto those things. So it's -- 9 and application 11 is within source station 10. 10 So there are a number of contexts in which the 11 Drake reference refers to source station 10 when what it 12 really is referring to is something inside of source 13 station 10, but it is application 11 that corresponds to 14 the first modules. 15 When I combine the teachings of Drake with the 16 two Goossens references, it's application 11 that maps 17 onto the first modules in those references; not source 18 station 10 as a whole. 19 Q Okay. I understand your combination, and I 20 appreciate your explanation once again, but my question 21 is about this particular statement in the institution 22 decision. So I'll try again. 23 Do you agree or disagree with the board's 24 finding on page 24 of Paper 14 that Petitioner's 25 explanation indicates that Petitioner identifies source
Page 182 1 again, from the perspective of the local area network 2 which routes things between end points, it sometimes 3 talks about source station 10 as -- in various ways where 4 that is -- what's really happening is it's -- it's a -- 5 the communication manager or something else inside of it 6 that is initiating communication. 7 But as I said, what my -- in my combinations, 8 the first module is in Goossens2002 and Goossens2003. 9 And in the combination of those things, it is application 10 11 which is inside source station 10. 11 That is the -- the thing that I'm mapping using 12 the teachings of Drake. Application 11 is the thing that 13 maps onto the first modules as disclosed by Goossens. 14 Q So you agree with the board's statement on 15 page 24 of the institution decision that Petitioner's 16 explanation indicates that Petitioner identifies source 17 station 10 as the claimed first module; correct? 18 A Can you repeat the question, please? 19 Q You agree with the board's statement on page 24 20 of Paper 14 that Petitioner's explanation indicates that 21 Petitioner identifies source station 10 as the claimed 22 first module; correct? 23 A I mean, I think I -- I've explained already that 24 the thing -- again, I didn't go to law school, so I don't 25 know all the subtleties of how one describes these things	Page 184 1 station 10 as the claimed first module? 2 A Well, as I -- I just explained a few times how I 3 characterize that. But I didn't go to law school, I'm 4 not a patent attorney, so I don't know. It's not -- I 5 don't feel like it's my position to comment on decisions 6 of the board. 7 The way I describe it is what I've described 8 several times now, which is the first module in my 9 combination is in Goossens. 10 I'm simply taking teachings from Drake to 11 combine it with Goossens, and in my combination it's 12 application 11 that I map onto the first module. 13 Q All right. If you could turn to paragraph five 14 of your second declaration. Let me know when you're 15 there. 16 A Okay. 17 Q In paragraph five you discuss a definition for 18 the relevant POSITA in this case. Do you see that? 19 A Yes. 20 Q Okay. Based on your CV, I understand you had at 21 least two years of work experience in the field of SoC 22 technologies as of October 2003; correct? 23 A Yes, that's correct. 24 Q Did you have any experience as of October 2003 25 working with networks on a chip?

Page 185 1 A Yes. In fact, in -- I'm an ACM fellow. And 2 when they make you an ACM fellow, they describe 3 specifically what it is that they're recognizing as your 4 major contributions to the field. 5 And I was recognized for two things. And one of 6 those two was my work on something called speculative 7 multiprocessing, which was -- which involved both systems 8 on chip and networks on chip. 9 So that was something that I started working on 10 in 1996, and we had published papers on this by 2000, in 11 the 2000/2001 time frame. 12 Q You mentioned your work on speculative 13 multiprocessing related to both systems on a chip and 14 network on a chip; is that right? 15 A Yes. That was for a chip that contained 16 multiple processors, and the interconnect between them 17 was on the chip, as well. 18 So all of that was integrated within the chip 19 including memory -- levels of the memory hierarchy, all 20 of that, all of those things. In fact, that predated -- 21 many of today's systems now look like that. But yes. 22 Q When you started working on this project in 23 1996, did it involve networks on a chip at that time? 24 A Well, yes. We were -- we envisioned it as 25 having -- we were trying to -- it was a thought	Page 187 1 networks on a chip dating back to 1996, are you using the 2 term "network on a chip" in the same way as the Dally and 3 Towles paper? 4 A Not in exactly the same way, but what I was -- 5 these were interconnects on a chip. There are -- so it's 6 same kind of concept involving having a lot of resources 7 and designing an interconnect, something that routes a 8 packet switch network. 9 Q You just mentioned something that routes a 10 packet switch network. The NoCs you were working on in 11 the late '90s involved routing a packet switch network; 12 is that correct? 13 A Well, the thing that we were working on involved 14 different kinds of interconnects such as a mesh, a 15 crossbar, switches, those types of things. 16 It really just depended on the scale, the number 17 of processors that you're connecting together. 18 Q What do you mean by "mesh"? 19 Is that a network including routers and 20 switches? 21 MR. KOHLHEPP: Object to form. 22 THE WITNESS: So it doesn't really have anything 23 to do with what's at issue here, but a mesh is a 24 two-dimensional interconnect. It involves wires and 25 switches. In fact, Bill Dally has published a number of
Page 186 1 experiment of what -- how would we design -- what we do 2 with a billion transistors on a chip. 3 And we were thinking about how to harness the 4 potential of having quite a number of processors all 5 integrated onto the same chip with an interconnect 6 between those -- those processors. 7 So, for example, I built -- we did -- we did 8 research on -- on -- yeah, lots of aspects of this, 9 including hardware design for -- for what we were working 10 on. And we published this in the top conferences in the 11 field. 12 Q Do you recall in your first deposition 13 testifying about a publication by Dally relating to 14 networks on a chip? 15 Do you recall that? 16 A Are you referring to the Dally and Towles 17 reference? 18 Q Yes. Thank you. I couldn't remember the other 19 name. The Dally and Towles reference. 20 A I'm familiar with that reference, yes. 21 Q Okay. And that reference related to networks on 22 a chip; correct? 23 A Yes. I think that was called route packets, not 24 wires, or something like that, yes. 25 Q Okay. When you say you had experience with	Page 188 1 papers on that topic, also. 2 BY MR. CHRISTOPHER: 3 Q Did any of the NoCs that you had worked on in 4 the late '90s use routers to transmit packets? 5 A The on-chip interconnects routed information 6 between processors using the same kind of interconnects 7 that were used traditionally for parallel systems. 8 So we would take off chip types of -- the things 9 that worked well for traditional parallel machines, and 10 that's what would be used for the on-chip version of this 11 type of architecture. 12 Q Would one of the types of interconnects you used 13 in your NoCs in the late '90s have been a router? 14 A Can you repeat the question? 15 Q Yeah. I'm trying to understand if we have the 16 same definition of network on a chip. I'm just trying to 17 understand what was involved in these networks on a chip 18 you had worked on in the late '90s. 19 And my question is did any of those devices that 20 you've referred to as a network on a chip use routers to 21 transmit packets between different modules on the chip. 22 A Yes. 23 Q Would a person who is skilled in the art have 24 considered networks on a chip cutting-edge technology in 25 October 2003?

Page 189 1 MR. KOHLHEPP: Object to form. 2 THE WITNESS: I don't know how to begin to 3 answer that question. I mean, people were well aware of 4 it in the early 2000s. 5 There's not -- that's a very fuzzy term, 6 "cutting-edge technology." I don't really have a -- 7 I prefer to deal in more concrete terms than that. 8 BY MR. CHRISTOPHER: 9 Q Well, I don't want to get into too many details, 10 but are you aware of any commercial networks on a chip 11 that were available in October 2003? 12 MR. KOHLHEPP: Object to form. 13 THE WITNESS: I referenced a number of articles 14 on network on-chip technology. It's been a while since 15 I've looked at them, so I don't have an answer off the 16 top of my head to that -- your question. 17 BY MR. CHRISTOPHER: 18 Q Okay. So you don't recall if there were any 19 commercial networks on a chip that were being sold out on 20 the market in products in the October 2003 time frame; is 21 that fair? 22 A You know, it didn't occur to me that that had 23 any relevance to what we're talking about and what are 24 the opinions that I expressed in my declaration, so I did 25 not refresh my memory on that.	Page 191 1 for just a couple minutes so we can confer, that may be 2 the end of the questioning. 3 (Recess.) 4 MR. CHRISTOPHER: All right. Back on the 5 record. 6 Dr. Mowry, thank you very much for your time 7 today. 8 I will pass the witness at this time. 9 MR. KOHLHEPP: Thank you. If we could just take 10 a 10-minute break, then we'll hop back on. So we can go 11 off the record. 12 MR. CHRISTOPHER: Okay. We'll be here. 13 (Recess.) 14 MR. KOHLHEPP: Dr. Mowry, thank you for your 15 time today. No questions from me. 16 We'll reserve the right to read and sign. 17 THE STENOGRAPHER: And, Mr. Peter, would you 18 like to order a copy of the transcript? 19 MR. KOHLHEPP: Yeah, we'll just take one normal 20 delivery. 21 THE STENOGRAPHER: And then there's going to be 22 a rough available. Would you like to order a rough? 23 MR. KOHLHEPP: No, thank you. 24 THE STENOGRAPHER: Great. That's all I need 25 then.
Page 190 1 If you want to point me to some references, I'm 2 happy to -- to look at that, so -- but I don't recall 3 having a discussion about that in either of my 4 declarations specifically. 5 It's possible -- I may -- I reference a number 6 of things that talk about the technology, but I did 7 not -- I don't have all that in my mind at the moment. 8 Q Okay. Fair enough. 9 Sorry. One more. Exhibit 1003. If you can for 10 me, page nine of the PDF. 11 A Okay. 12 Q Paragraph five. You wrote: 13 "I am not currently, and have not at any 14 time in the past been, an employee of Samsung. 15 I have no financial interest in Samsung." 16 Do you see that? 17 A I see that. 18 Q I just want to confirm. You are not currently 19 and have not at any time in the past been an employee of 20 Qualcomm; correct? 21 A That's correct. 22 Q Likewise, you don't have any financial interest 23 in Qualcomm; correct? 24 A That's correct. 25 MR. CHRISTOPHER: If we could go off the record	Page 192 1 (Deposition concluded at 5:28 p.m. EST) 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Page 193	Page 195						
REPORTER'S CERTIFICATE I, LYNDEN J. GLOVER, a Certified Shorthand Reporter holding a valid and current license issued by the State of California, the State of Washington, and the State of Oregon, do hereby certify: That said proceedings were stenographically taken before me at the time and place therein set forth, and was taken down by me in shorthand and thereafter transcribed into typewriting under my direction and supervision; and I hereby certify that the foregoing transcript of the proceedings is a full, true, and correct transcript of my shorthand notes so taken. I further certify that I am neither counsel for nor related to any party to said action, not in anywise interested in the outcome thereof. The dismantling, unsealing, or unbinding of the original transcript will render the Reporter's Certificate null and void. IN WITNESS WHEREOF, I have hereunto subscribed my name this 18th day of February 2025.  CA CSR No. 5510 WA CCR No. 23022842 OR CSR No. 230115	DEPOSITION ERRATA SHEET Case Name: Qualcomm vs. Network System Technologies Name of Witness: Todd Mowry, Ph.D. Date of Deposition: 02/11/2025 Job No.: 10158402 Reason Codes: 1. To clarify the record. 2. To conform to the facts. 3. To correct transcription errors. <table border="0" style="width: 100%;"> <tr> <td>Page ____</td> <td>Line ____</td> <td>Reason ____</td> </tr> <tr> <td>From ____</td> <td colspan="2">to ____</td> </tr> </table> Repeating the table structure for 25 rows as per the image	Page ____	Line ____	Reason ____	From ____	to ____	
Page ____	Line ____	Reason ____					
From ____	to ____						
Page 194 DECLARATION UNDER PENALTY OF PERJURY Case Name: Qualcomm vs. Network System Technologies Date of Deposition: 02/11/2025 Job No.: 10158402 I, TODD MOWRY, PH.D., hereby certify under penalty of perjury under the laws of the State of _____ that the foregoing is true and correct. Executed this ____ day of _____, 2025, at _____. _____ TODD MOWRY, PH.D. NOTARIZATION (If Required) State of _____ County of _____ Subscribed and sworn to (or affirmed) before me on this ____ day of _____, 20____, by _____, proved to me on the basis of satisfactory evidence to be the person who appeared before me. Signature: _____ (Seal)	Page 196 DEPOSITION ERRATA SHEET <table border="0" style="width: 100%;"> <tr><td>Page ____</td><td>Line ____</td><td>Reason ____</td></tr> <tr><td>From ____</td><td colspan="2">to ____</td></tr> </table> Repeating the table structure for 25 rows as per the image ____ Subject to the above changes, I certify that the transcript is true and correct ____ No changes have been made. I certify that the transcript is true and correct. _____ TODD MOWRY, PH.D.	Page ____	Line ____	Reason ____	From ____	to ____	
Page ____	Line ____	Reason ____					
From ____	to ____						

\$			
\$650 11:24 12:3			
-			
-2003 100:23			
1			
1 18:7,10,24 20:6 29:18 38:14 39:16 40:23 41:20 42:21 43:16,17 44:5,13 45:15 46:13 47:3,4 48:6 61:6 62:6,7 68:25 70:8,11 71:16 76:15 77:15 78:11 83:12,15,16,19 104:11 105:8 112:22 121:13 124:22	100 162:25 163:5,10, 17 164:17 165:17 166:12 171:20 1001 83:10 158:11 1003 7:20,24 79:10 83:22 106:23 157:13 171:21 190:9 1006 17:9,12 155:9 1007 82:13 125:12 101 84:8,11 102 117:14 1024 171:24 172:1, 12,14 103 147:11,19 171:19 1043 6:19,23 7:13 11:10 17:17 127:17 147:13 155:5 174:9 107 155:4,16 11 5:1 9:4 13:6,10,14 14:9,14 15:8 27:23 28:15,18,21 29:3,17, 22 30:6,12,16 31:16 32:14,19 34:9,14,22 47:21 48:1,6,9,18,21 50:4,15,25 51:11 69:3 70:14 72:2 92:1 118:20 155:10 172:18 174:20 175:15 177:4,14 178:5,21 179:20,25 180:14 181:1,3,23 182:10,12 183:8,9, 13,16 184:12 110 84:12 12 27:24 28:16,17,22 29:18 30:7,12 31:2, 6,16,24 32:4,9,15,25 38:8,19,24 39:5,13 40:1,4 41:12,21 42:2,7,21,25 43:3,6,	18 45:11 46:8,16 47:12,20 48:1,7,10, 21 50:5,15 51:10,18 52:3,10,18,25 53:3, 7,14,18,21 54:3,7, 10,13 55:3,6,10,16, 24 56:5,13,19 57:19 58:2,14 59:21 60:3 61:3,7 62:3 70:1,5, 17 71:2,6 73:10,16, 23 76:6,9,20 77:3,7, 18,24 78:10,12 79:2, 7,12 80:6,21 81:9,21 82:2,14 83:1 84:20 85:2 86:3,13,25 88:10 95:9,16 96:6, 18 97:15 98:4 99:2, 7,12,20 101:4 102:13 103:1 104:12 105:9 106:20 107:19 109:17 111:2,17 112:7,23 113:5,12, 24 114:5,18 115:7 116:15 118:25 128:16 173:10 174:8,11,12,14 122 79:15 106:2 107:2,3,17 108:4,12, 13,17,19 109:11 111:14,19 113:20,24 114:3,19 115:5,25 116:13,22,25 13 41:13,22 42:2,7 43:19 45:12 46:8,17 47:13 51:13,19 52:3, 10,18 53:1,4,7,14,18 54:7,10,13 57:19 59:21 60:8,10 61:4,8 62:3 69:1,21 70:18 73:17,24 75:25 76:5, 8,16 77:4,5,9,18,25 78:10,12 110:4 161:12 174:23 179:9,10,11	14 110:4 176:1,15,20 181:6 182:20 183:24 15 17:17,19 18:1,13 20:11,16,21 21:14 26:2 33:14,25 37:13, 20 38:1,18,20 39:12, 16,25 40:5,16 41:19, 22 42:2,13,14,15 46:8,14,17 49:12,19 50:1,8 61:24 62:2,3, 7 91:5 129:5 167:16 155 91:1 92:9 156 93:5,19,23 94:9, 16 95:4 105:13 157 103:12,19,24 104:5,6,8,20 105:7 110:2,17 16 37:13,20 38:2,18, 21 39:12,16,25 40:5, 16 41:23 42:2 46:8, 17 49:15 50:1 62:3 107:25 125:14 129:6 17 22:2,15 23:18 27:4 38:19,24 39:13 40:2, 4 45:17 48:11,18,24 49:14,18 52:6 71:18 122:23 158:11,14 177:24 170 83:23 84:1,4 173 79:25 18 68:18,19,22 76:12 160:21 185 87:22 98:9,11 115:12 186 87:22 88:1 98:10 187 87:22 98:9,15 19 74:2 1996 185:10,23 187:1

2 2 137:9 20 18:25 19:2,8,16,22 21:6,21,22 22:1,12 23:7,15,23 24:7,15 25:6,15 26:11,20 27:2 41:1 43:10 60:16 61:10,13,15 62:12 64:12 65:17 69:2,9,22 70:21 71:10,14 72:7,9 73:8 74:13 75:6,11 76:17 80:13 105:3 109:24 110:1 120:10,16,25 121:14,20 122:12 123:6,9,13 124:5,23 161:11 20- 125:12 200 84:7,10,11,14 2000 185:10 2000/2001 185:11 2000s 189:4 2002 118:16 119:15 2003 64:6 120:12 130:15 149:8 161:22 165:8 168:13 169:10,19 170:25 184:22,24 188:25 189:11,20 2024 92:19,25 2025 5:1 7:5 92:1 203 93:13,20 105:14, 23 106:5 107:13 108:2,16 204 93:14,20 205 110:4 2070 162:11,14	2078 93:13 105:19 107:22 117:24 209 110:4 21 41:2 62:19 74:16 160:5,6 22 41:2 170:8 23 42:11 60:17,23 61:10,18 63:2,9 64:1,21 65:3 104:12, 16 105:3,8 109:13, 19,22,25 111:3,6,9, 11,21 112:19,23 113:5,8 118:6 119:11 233 118:1,3,6,10 119:17 24 60:18 61:19 63:2, 10 64:1,21 65:4 93:13,20 108:2,16 159:7 176:10,23 177:10,20 181:6 182:15,19 183:24 25 168:19,22 169:24 26 44:22 46:3 72:3,25 73:7 27 41:5 44:23 45:16, 25 46:22,24 27th 7:4 28 41:5 44:23 45:16, 25 46:22,25 29 41:4 43:15,16,17 44:5,13,21 45:6,9, 15,17 46:21 47:1,3, 9,10 52:7 62:21,24 71:24 72:1,13 73:3 80:11 3 3 12:5,10	31 27:9,12 28:11 162:19 31-32 104:1 32 161:10 170:7 34 51:25 59:15,18,19, 20 75:17 127:17 161:10 35 75:18 36 119:23 37 49:8 120:2 38 139:7,10 39 37:9 40:14 143:19 144:16 4 4 67:25 68:2,11,23 69:13,19 70:6,7,10 71:12 72:18 74:7 75:23 76:13 155:11 164:9 4.1 126:5 4.2.4 125:17 4.5 82:16,18 83:5 84:2,5,16,24 86:1,10 87:16 88:9 89:8,25 41 72:19,22 42 74:19 43 160:20 449 19:25 21:3 55:25 58:3 64:15 65:21 67:5,14,19 71:18 83:10,18 97:6 100:25 132:11 133:4 134:2 135:3 137:8 139:25 141:21 143:15,22 146:7,16 150:2 158:10,14,23 159:7,15 160:4,6,14	170:23 48 155:10 4th 92:19,24 5 5 70:10 155:11 164:9 51 66:13 67:11 52 105:21 127:20 129:12 55 119:22 157:15 5510 5:6 56 30:20 5:28 192:1 6 6.a 177:6,13 179:5 60 10:9 68:23 76:13 117:25 61 68:23 69:13,19 70:2,6 71:8,12 74:2, 3,12,25 75:21,24 76:13 77:10 62 147:14 63 47:16 48:20 51:5 60:1,2 64 60:2 65 156:6 69 107:2 6:30 109:1 7 7 177:23 70 72:23
--	---	--	--

71 72:24 73:6,21 74:4,19 75:2,22	actively 43:25 45:3	163:7,13,15 164:16	ambiguity 112:21
75 162:19,23	acts 60:18,23 61:19	165:15 166:10 169:4	amount 10:17,20 11:1,2 164:13 166:24
	actual 69:10 122:19 145:7 178:11	170:5,17 175:4 181:16,19 182:14,19 183:23	analogous 121:13
	added 52:14	agreed 14:15 16:2	analysis 17:7 25:3 57:24 141:8,15,16 143:12 146:15,21
9	adding 164:4	agreed-upon 14:5	and/or 174:17
	addition 156:14	ahead 106:1 107:25 115:17 172:9	aninterfacing 129:17
90s 187:11 188:4,13, 18	additional 75:18 87:6,10 97:8,22 99:13 101:23 164:5	algorithm 155:8	annotate 46:13
93 92:10	Additionally 88:5 106:8 107:5	algorithms 36:24	annotated 41:20 62:2 84:2,4,15
94 83:24 103:14,15, 17	address 36:17 98:8 119:16	allegedly 165:12	annotation 109:10
97 7:2,8 157:13,24	addressed 102:9	allocated 156:9	answer 24:20 25:8, 18,20,21 26:16 32:1, 23 44:17 56:2,7,10 57:3 58:20,25 59:5 63:5,14,24 64:25 65:2,8,9,11 66:2 67:15,22 79:22 85:25 87:20 99:6 102:21,24 103:6,7 112:11,24 113:16 115:15,23 119:10,17 131:6 135:12,13,19, 25 136:4,15,17,22, 25 137:3,4,5 142:15 143:2,3 145:11 147:9 151:6,7,11,17, 19 152:19 153:11, 13,18,19,23 154:1,2, 9,14 169:10 173:13 189:3,15
9:00 5:2 109:3	addresses 141:8	allocating 68:3,13 69:17 155:8	answered 25:17 44:16 57:22 59:6 64:25 86:16 99:5 101:8,9 102:17,22 103:5,8,10 110:23 132:5 133:16 134:15 135:11,15,21 136:1,
	adjusted 162:5	allocator 18:25 19:2, 8,10,16,22 20:7 21:6,21,22 22:1,5,12 23:7,15,23 24:7,15 25:1,6,15 26:11,20 27:2 41:1,8 42:17 43:10 60:16 61:10, 13,15 62:12,21 64:12 65:17 69:1,9, 22 70:21 71:10,14 72:4,7,9,25 73:7,8 74:13 75:6,11 76:6, 16 78:7 104:15,17, 19 105:3 109:24 110:1 120:10,16,25 121:14,20 122:12 123:6,9,13 124:5,23	
A	adopted 14:20 16:1, 22	allow 38:18 39:5,12 45:17	
a.m. 5:2 109:3	adopting 14:23	allowing 39:17	
Aaron 9:10	adoption 15:21	allows 69:8	
able 13:18 43:22 45:9 47:10 53:7,18 100:8 115:3 123:20 128:24 129:9 130:1 131:6 132:23 134:8 135:8 136:9 166:20	advantage 99:15	alluded 7:16	
absolutely 165:19	affect 64:12 141:11	alternative 39:22 40:8	
abundant 165:7,11	afternoon 92:2		
access 49:14 85:7,20	ago 10:15 15:19 25:18 84:19 113:10 169:13		
accessible 100:7	agree 19:22 20:23 30:25 31:11,23 35:25 36:16 38:17, 23 39:11 42:20 44:4, 25 46:22 48:16,24 50:22 57:12 60:7 89:22 90:12,18 95:6 111:8 115:9 124:3 148:1,12 149:22 150:18 151:2 160:14 161:5,20 162:6		
accurate 5:22 11:1 71:4 95:2 111:6 113:6,17			
accurately 10:16 63:6 66:2 67:23 69:23 94:4 131:6			
ACM 185:1,2			
act 89:8			
active 46:5 47:7			

3,14,20,24 151:5 152:18 153:2,5,10, 17,21,22 154:8,10 166:13 180:21 answering 63:13 109:5 154:4,17 answers 58:17,22 59:2 102:18,23 110:10,19 111:5,13 112:8,13,18 113:6, 11,17 135:16,22 136:21 153:3 anymore 167:2 Apologies 176:17 appear 116:21,24 148:3 174:16 appears 7:7 27:14 70:9 95:3 104:11 110:24 112:22 162:17 176:9,22 application 27:23 28:15,18,21 29:3,17, 22 30:6,12,16 31:16 32:14,19 34:1,8,9, 14,22 35:10 44:22 46:2 47:21 48:1,6,9, 17,21 50:4,15,25 51:11 69:3 70:14 72:2,3 174:20 175:15 177:4,14 178:5,21 179:20,25 180:14 181:1,3,23 182:9,12 183:8,9,13, 16 184:12 applications 6:11 applied 14:18 15:5, 14,24 16:12,20 17:6 23:12 56:17 apply 13:16 14:1,15, 22 15:10,12,17 16:7, 11,15,25 17:4 36:14	42:23 121:15 166:18 applying 20:1 21:5 22:9 24:2 25:4 26:24 28:19 29:2,9,20 30:1 32:2,16 55:7,21 57:1,25 58:11 64:4 86:22 101:15 141:20 175:9 appreciate 97:12,25 123:4 167:15 183:20 approaching 162:24 163:4 approximately 8:19, 23 9:1 10:20 architecture 39:15 122:1 163:23 188:11 area 162:24 163:4,9, 17 182:1 argues 161:15 argument 167:4 arrange 121:5 arranged 121:16 arrows 74:8 art 22:20 23:6,14,22 24:5,13,25 25:14,25 26:5,10,19 27:2 29:17 30:5 31:18 32:8 34:13 37:25 47:22 51:12 57:7 62:13 63:11 64:2 76:24 77:12,24 78:11 79:16 80:18 83:3 85:1 86:2,11 89:23 90:12,16,19 116:4 117:1 122:18 124:4 128:2 131:14 132:22 133:18,21 134:16,18,22 138:7 139:1,18 149:2,5,9, 13 150:8 157:1 159:3 167:12,24	173:6 175:17 188:23 articles 189:13 ASIC 35:10,12,21 ASICS 35:14 aside 100:11 176:13 asked 13:1,3,15,24 14:10 15:9,12 16:7, 11,24 17:4 26:15 32:11 35:15 39:19 86:15 101:7 104:18 105:25 106:6 107:12 109:1 111:18 113:3 118:6,11 132:4 140:17 141:18 143:9 146:20 163:12 asking 8:15 28:3 64:17 97:25 102:11 104:23 111:25 113:14 114:22 115:24 123:9,12 134:4 136:7,25 145:5 151:18 154:6 167:10 aspects 186:8 assemble 52:3,11,13, 19,21 53:1,3,7,11, 15,18,21 54:3,7,13 55:2,16 56:5,13 58:14 59:21 61:8,14 73:17 77:3,4 78:6,15 128:24 129:9 130:2, 8,16 131:10,21 132:2,16 133:13,22 134:9,12,19 135:9 136:10 137:18 138:3 assemble/format 128:16,22 assembled 54:21 61:3 73:23 assembles 132:24	assembling 54:9,16 57:18 77:7 138:9 asserted 78:21 140:22 143:14 asserting 99:1 assertion 162:6 assigning 169:14 associated 74:3,25 75:1,21,22,24 85:15 138:18 assume 89:7 110:7 assumed 111:25 141:15,22 assumption 102:8 attach 125:2 attached 19:19 37:14 40:17 81:23 82:4,9 attention 77:17 80:15 105:22 118:1 139:6 attorney 184:4 attorneys 9:7,18,25 11:6 attractive 124:17 attribute 50:7 audible 106:14 authored 6:15 Authoritative 172:14 availability 98:20 available 7:21 67:14 73:2 74:21 106:25 189:11 191:22 aware 189:3,10 B back 8:4,19 17:16
--	--	--	--

20:11,12 33:14 38:14 40:24 51:5 59:10,15,17 61:23 63:4 71:7 74:1 77:15 92:5 107:22 117:21 127:16 154:19,23 160:5,20 167:14 169:23 171:13 181:6 187:1 191:4,10	148:15 155:25 180:21 benefit 98:19 better 62:10 beyond 143:3 173:19 big 167:1 Bill 187:25 billion 186:2 bit 39:9 124:7 block 80:8,9 90:8,14, 17,20,24 124:9 125:3,5,8 127:23 128:4 180:22 blocks 79:19 106:12 107:9 117:4 124:1,5 125:10 127:2 178:19 179:23 180:10 183:5 blue 111:20 board 116:14 154:16 168:9 177:10 181:9 184:6 board's 175:21 176:8,20 177:19 181:19 182:14,19 183:23 boards 164:21 168:9 169:7 bookkeeping 72:10 bottom 18:24 47:16 108:1 125:16 129:20 172:20 boundaries 164:23 166:23 box 18:25 45:15 68:23 69:13,19 70:2, 6 71:8,12 72:23,24 73:6,21 74:2,3,4,12, 18,19,25 75:2,21,22, 24 76:13 77:9 79:13	80:7,8 104:12 108:21 111:20 112:23 boxes 28:6 42:2 46:8 62:3 72:18 74:8 break 37:4 59:8,13,16 91:4,6 92:6 117:17, 22 154:16,19 155:1 171:17,18 191:10 brief 92:15 104:2 broad 122:13 broader 122:13 buffers 127:8 build 30:2 building 87:5 built 35:14 186:7 C California 5:6 call 20:5 called 86:24 185:6 186:23 calling 154:16 calls 9:10 capabilities 159:11 capable 173:2 captured 94:4 cards 169:6,7 carefully 57:15 Carl 5:20 case 11:25 16:5 17:15 20:5 22:2 23:17 27:4 32:21 36:6 65:25 66:10 71:17 88:23 92:18 95:23 101:21 117:23 184:18	cases 45:7 163:20 center 82:23 83:15 centralized 120:12,16 certain 12:11 110:3 126:24 127:3 certainly 49:2,5 140:10 cf 126:5 challenge 100:24 101:3 change 15:1,16 78:18 125:11 143:11 147:3 changed 112:7 changes 10:2 channel 140:8,15 141:2 147:20,22 148:1,2,3,6,8,12,13 149:4,11,14,17,24 150:4,5,20 151:4,9, 14,22 152:1,9,16,24 153:8,16 156:19,22 157:2,6 172:21,24 173:2,18,24 channels 139:12,16, 17,19,23 140:1,2,10, 14,23 141:2,6,17,23 142:11,24 143:7,23 144:18 147:2 149:12,16,19,21 150:14,24 152:7 155:13,17 156:24 157:4,5,9 173:19 174:4 characterization 56:9 181:19 characterize 49:22 184:3 chart 68:12 70:8 74:8 164:9
---	---	--	---

charts 36:22,25	85:24 86:8 87:13,19	19,20,22,23 139:6,9,	145:24
chat 6:20 7:21 17:10	89:5 91:8 92:4 96:16	25 140:13,14,21	collaboration 9:16
82:12 105:18 162:10	97:11,24 98:24	141:16,18,22	column 37:8 40:14
172:1 176:1,16	100:10,21 101:9	142:10,20,22 143:6,	47:15 48:19 49:7,8
chip 20:4 21:7,8	102:1,10,20 111:7	10,19,22 144:6,8,10,	51:5,25 59:15 60:12,
22:13 23:16 24:9	113:18 116:9,11,18,	13,16 145:2,17,18	14 61:17 68:6,10,20
25:7 27:5 33:3,11	20 117:16,20	146:7,8,15,18,20,24	70:9,11 71:3,7 72:19
36:6,9,12,13,15	130:13,24 131:7,23	147:1	74:2 75:16 76:11
79:13,19 80:6	132:12 133:5,7	claimed 79:2,8	83:18 158:11 159:7
106:11 107:8 108:6	134:3 135:5,18,24	106:18 109:13,22	160:19 172:20
114:1,6,19 116:16	136:6,16,23 137:6	139:15 174:18	combination 21:4
117:3 118:13	138:1,12 139:24	175:1,5 177:5,13,15	32:23 33:9 42:23
120:19,20 121:4,11,	140:12,24 141:13	179:4,14 180:6,19	53:11,17 55:9 56:20,
16,18 124:10 130:25	142:4,7,18 144:5,24	181:12 182:17,21	22 57:13 60:2 64:14
150:1 160:9 164:3,	145:21,24 146:2	184:1	65:19 70:13 79:4
15,25 165:1,2,6,23	147:8 148:9,11	claims 64:15 65:20	80:1 86:21 95:18
166:15,18,21,23	150:15,17 151:1	78:22 97:6 100:24	96:4 98:2 99:14
168:1,6,7,10,12,14	152:11,13,20 153:4,	101:3 111:10,12	100:12,20,22 101:2
184:25 185:8,13,14,	12 154:15,23,24	134:2 139:5 140:22	106:22 114:24 117:9
15,17,18,23 186:2,5,	160:1,3 166:6,8	141:8,21 143:14	120:6,9 132:8 133:2,
14,22 187:1,2,5	167:5,8 168:15,17	144:12 146:9 181:20	3,25 134:25 135:2
188:8,16,17,20,21,	171:5,11,13,15	clarification 12:16	140:19 143:13
24 189:10,19	172:7,10 174:5,7	13:11 15:4 81:4	146:10 170:24,25
chips 81:22 82:3	175:19 178:24 179:1	112:3 116:17 117:15	175:8 179:15,16,18,
164:20 165:6 166:1,	180:2 188:2 189:8,	132:19	22,24 180:12,14,24,
3 168:9	17 190:25 191:4,12	clarified 104:25 111:1	25 181:21 182:9
CHRISTOPHER 5:17	circuit 35:11 79:12,	119:9	183:2,19 184:9,11
10:4,18 11:3 12:17	13,18,19 80:6	clarifying 113:4	combinations 23:5
13:12,13 15:7 17:1	106:11 107:8 108:5,	clear 32:14 66:8 70:7	30:2 55:22,23 58:1,8
18:23 19:6,14,21	6 113:25 114:1,5,6	77:7 86:17 87:4 90:1	78:25 140:20 141:5,
20:9 21:10 22:4,16	116:15,16 117:3	98:1 110:22 113:1	7 143:12,14 146:22
23:19 24:10,12,21	circuitry 33:11	131:16 151:19	180:15 182:7 183:2
26:17 27:6,8 30:14	120:20 165:1	161:24 163:12	combine 64:8 175:17
32:6 35:4 37:3,7	cite 93:13 105:14	175:16 176:5 180:17	178:20 183:6,15
39:10 42:4 44:10,19	110:16 162:9 171:23	close 97:12 143:18	184:11
46:6,19 48:15 50:12,	cited 93:20	171:5	combined 78:19
20 51:4 53:13 54:1,	cites 104:1	cloud 83:1	131:16 133:25 135:1
8,14,23 55:11 56:1,	claim 12:11,15,23,25	cloud-shaped 82:22	146:11,12 180:13
21 58:4,6,19,24	13:1,3 14:6 15:17,	83:4,14,16	combining 181:4
59:4,7,10,11 63:18	21,24 16:16,21 17:4	clouds 83:6	come 59:17 154:19
65:1,7,22 67:7,24	132:10 134:1 135:2	coaching 142:6	coming 72:5 73:11
72:14,16 74:10 75:8,	137:9,12,17,20,21,		
20 76:10 77:11 78:9,	23 138:2,5,6,8,13,		
23 81:5,6,16 83:2			

comment 184:5	138:3,8,13,14,19,24	10,16,18 177:14	concurrent 156:23
commentary 145:15	139:2,12,17,19	components 27:24	concurrently 156:20
commercial 189:10, 19	140:1,7,14,15 141:1, 2,17,23 142:11,24	28:2,4,8,16,18,22	conductivity 121:8
common 27:16 28:12 159:4 169:16,19 173:23	143:7,23 144:18	29:4,19,23 30:7,13, 17,18 31:17 32:15	confer 171:7 191:1
communicate 38:3,5, 19,24 39:6,13,18 40:1,4 61:12 66:19 72:2 100:8 115:4 121:9,12 123:20 127:23 128:4 165:2, 23 166:23	147:2,21,22 148:2, 13,19,22,23,25 149:3,6,10,15,18,20, 23 150:10,12,19 151:4,8,13,21 152:15,23 153:7,15 158:20 170:13,19 173:3,20 182:5,6	34:4,18,21,23,24 35:6,16 36:2,17,18 38:3,4 39:23 40:12 41:8,15,23,25 42:3, 6,8,16 43:15,24 44:5,12,21,23,24 45:4,14 46:5,15,18, 23,25 47:2,5,13 50:11 52:3,10,18,20, 25 53:7,11,14,18 54:7,10,13 59:21 62:4,12,14 63:3,11 64:3,7,22 65:5,18 70:8,12 72:1 78:12, 15 80:20 129:1,5 130:21 131:20 133:21 134:19 140:10 161:16,17, 20,22 164:17 168:5	conferences 186:10
communicated 70:20 129:10 157:6	communications 85:16 90:16 97:2,20 101:16 106:21 112:14 115:11 173:2	composed 149:15 150:14	configurable 14:7 16:21
communicating 48:22 155:22 165:20	comparable 160:10	composing 152:6	configurable' 13:17
communication 38:21 39:5,17 43:1, 23 44:1 45:3,10,24 46:1 47:8,11 49:23, 24 50:9,25 51:2 55:10,25 56:20 58:2 61:5 62:17,23 66:18, 25 67:4,11,17 70:15, 16 71:23 72:4,8 79:2,8 83:6 85:4,6,7, 12,19,20,21 86:19, 23 87:1,5,7,12,17 88:4,6,14,22,24 89:9,13,16,17,24 90:9,13,20 93:8 95:20,23 96:10,14 97:8,22 98:13,16 99:8,10,25 100:6 101:20,22,24 106:19 109:14,17,18 113:9 114:23 115:4,19 121:9 123:19 130:20,23 131:2 132:10 133:4 135:4 137:13,14,18,22	compares 10:11	concludes 192:1	configuration.' 13:20
	comparing 146:15	computer 6:9 161:15, 20 173:19,22,25 174:3	configured 13:18
	comparison 164:19	computers 166:21 169:1,17,20 173:21	confirm 44:12 63:19 142:9 190:18
	compensated 11:24	concept 121:15 187:6	confusing 39:3,9 48:13 120:18 121:2
	compensation 12:2	concepts 162:4	confusion 73:14 176:18
	complete 5:22	concluded 192:1	connect 124:11
	completely 142:4 165:14	conclusion 65:19	connected 19:11 20:7 22:1,13 23:17 24:8 27:3 81:19 83:20 121:14 160:11,16
	completeness 143:18	concrete 131:5 189:7	connecting 187:17
	component 18:13 20:7 22:1,13 23:16 24:7 25:6 27:3 32:19 34:2,14 41:9 42:21 43:4,7,8,11 46:3 50:8 62:21 64:11 71:4,6 73:11 77:25 88:14 98:5 102:4 127:22 128:15,20 129:18 130:2,8,16 131:10 132:2,16,24 133:12 134:9,12 135:9 136:10 163:8,		connection 6:15 7:17 13:19 39:23 52:4,19 69:17 70:19 80:4 82:19 96:17 97:14 98:14 126:5,11,13 137:21 138:10 139:3,11,15 143:20, 23 144:19 145:3 146:19 147:3 148:7 149:20 150:13 158:3,8,9

consider 42:6 150:9 154:16	138:6 139:25 150:22 173:18,22	9,10,13,14,16 42:8, 22 43:4,7,12,13,16 44:6,13 45:1,18 47:1 48:2,5,8,11,18 49:20 50:16 51:20 52:11 53:4,15,22 54:4,10, 16 55:3,17 56:8 57:20 58:15,20,25 59:23 60:23 61:4,6, 11,20,22 62:4,5 63:3,20 64:3,22 65:5,25 66:11 68:3 69:14,22 70:2 71:10, 14 73:8,24,25 74:4, 14,15,22 75:2,11,22 76:1,21 79:3,8,9,14 80:7,10 81:10 82:6, 19,23 83:17 84:5,6, 16 86:4 87:17 89:10 90:4,14,17,21 92:16, 17,19,20,22 93:3,21, 22,25 94:4,24 95:10, 18 96:7,20 97:17 98:6 99:4,21 100:15, 25 101:1,6 102:5 105:11 106:19,22 107:14,15,20,21 108:12 110:5,8 111:10,17 114:1,6, 20 117:12 118:21,22 119:18 126:2,11 127:4,14 128:5,8,23 132:16 135:10,13,19 136:18 137:18 138:3,15,19 139:16, 20 140:2,15 142:12, 24 143:8,24 144:7,8, 11,13,20 145:18 146:7 148:2,14,24 149:4,11,24 150:20 151:4,9 153:20 154:7,12 155:17,18, 20,21 157:10 158:1, 25 159:3,17 160:17 161:7,22 162:16 163:5,11,19 165:18	166:12 168:1 169:4, 18,21,22 170:5,20 172:15,24 173:3,7 175:5,23,24 176:23 177:20 179:5,15 180:7,20 181:21 182:17,22 184:22,23 186:22 187:12 190:20,21,23,24 correctly 40:21 62:25 63:24 93:11,12 118:17 120:13 127:25 correctness 14:11 correspond 72:19 corresponded 106:21 corresponding 80:20 111:9 corresponds 55:24 56:19 58:2 79:2,7 86:25 95:24 99:8 106:18 109:18,22 122:12 158:2,8 174:19 175:15 179:21,25 180:6,14, 19 183:13 could've 114:13 counsel 8:17,20 9:22 118:7 141:24 142:4 145:21 172:4 counsel's 118:19 Counselor 145:19 count 30:23 156:8 counters 127:9 couple 118:6 191:1 course 9:7 11:4 57:16 164:22 167:24 168:9 court 183:1
considered 63:10 64:2 65:17 123:22 157:1 188:24	contexts 36:4 121:23 152:3 183:10		
considers 64:11	continue 142:2		
consistent 159:2	continuing 105:2 115:15,24		
consistently 156:14	contributions 185:4		
constitute 46:9 77:25	control 49:14		
constraint 121:10 167:3	conventional 165:24		
construction 13:1,2, 4,25 14:1,6,11,15, 19,20,22,24 15:1,6, 10,13,14,15,17,21, 24 16:2,8,11,12,13, 16,21,25 17:5,6 88:7 141:19 142:10,20,22 143:6,10 145:2 146:18,21	convert 125:20,25		
constructions 12:11, 15,23 146:25	cooperate 52:14,18, 22 129:1		
construed 147:1	cooperating 129:6		
contain 43:18,24 74:23 117:11 175:12	cooperation 52:23		
contained 65:25 66:11 185:15	coordinates 121:4,18		
contains 61:21 87:16 101:12 102:8 158:17	copy 6:19,23 7:20,24 17:9,12 82:11 83:22 105:18 106:24 125:12 137:8 162:11 172:1,11 175:25 176:7 191:18		
contend 101:2	cores 165:9 168:12		
contends 174:16	corner 18:11 41:4 105:23 118:1		
context 19:25 20:3 21:9,18,20 22:9 23:4,11 24:2,6 25:6 26:24 27:1 28:20 29:2,8,20,24 32:2,5, 7,16,18,21,22 36:8 55:6 56:19 57:24 104:13 112:13 119:7	corners 29:15		
	correct 6:9,13 7:5,18, 19 8:18 11:18,21,22 12:4,12,13,15,23 13:4,5 14:11,13,16 15:11,12 17:14 19:23 20:25 21:19 23:2 25:2,9,16,20 26:7,8 28:18 29:11, 13,14 30:18 31:7 34:11,15,16,22 35:1 36:3,10,19 37:21,24 38:3,9,19,25 39:14 40:6,7,13 41:2,3,5,6,		

cover 172:3	decision 175:21 176:8,21 182:15 183:22	66:4,11 87:20 114:21 141:1,12 142:15,23 143:7 144:2,9,11 145:7,13 146:4,8,17 147:7 162:9 180:9 190:4	describe 98:10 184:7 185:2
create 70:18			described 36:22 55:25 70:6 74:4 75:16,23 77:9 78:7 101:25 131:9,20 132:1,15 133:4 138:21 149:8 150:11 152:4 155:9 170:23, 24 171:3 184:7
credit 127:9	decisions 184:5		
crossbar 187:15	declaration 6:24 7:4, 13,14,17,25 9:14,15, 16,21,25 10:6,12,15, 21,22,25 11:5,21,23 12:2,3,6,10 14:18 15:9,13,22,23,25 16:3,6,14,15,20 17:17,20 20:12 21:14 22:24 27:10 29:7 30:10,21 33:15 41:18 42:10,12 46:7, 15 55:15 56:4,25 61:23 63:8,15 66:10, 13 67:12 79:10,15, 25 80:12 81:1,7 83:23 84:8,14 91:2 92:9,14 93:6 98:9 102:12 103:13 105:14 106:2,17,24 108:12,17,19 109:11 110:2 112:12 113:21 114:4,20 115:6 116:13,22 119:16, 20,22 127:17 142:1, 3,16,19,21 143:1,3 144:3 145:20 146:6 147:13 155:5 157:8, 24 160:21 161:9,11 162:14,16 163:4 167:16 168:19 169:24 170:8 171:21 172:5 173:11 174:9, 24 175:22 179:3,9 184:14 189:24	decodes 60:18 61:19	
CSR 5:6		decouple 66:18,25 67:3,10,16	
curious 145:4		dedicated 34:25 35:20 36:3,18 37:1 158:17,24 159:10,19 160:8 162:1	describes 75:6 78:2 98:12 100:3 157:18 182:25
currently 6:12 156:9 190:13,18		defined 108:3 113:23 114:3	describing 27:23 30:12 31:15 74:20
custom 164:12		definitely 95:25 133:25 135:2	description 70:10 71:8 73:21 74:2,12, 18
cut 62:7 173:14		definition 13:16 28:4 172:24 173:1 184:17 188:16	design 33:13 39:22 51:2 121:3,5 123:21 124:16 125:1 186:1, 9
cutting-edge 188:24 189:6		delivery 191:20	designed 36:11 45:8
CV 184:20		depend 13:19 32:2 150:22	designer 114:13
		depended 187:16	designers 166:2
D		dependent 137:9,20 138:5,22	designing 124:20 187:7
Dally 186:13,16,19 187:2,25		depends 36:8	designs 40:8
dashed 77:20,23 78:10,17		deposed 66:4 113:15	desirable 90:8 122:19 123:17 160:18
data 44:22 46:3 52:5 68:14 69:8,10 72:3 73:2 74:21 75:7 122:4,25 155:20,21 156:1,3,8,15,18,20, 23,25 157:9,21,25 158:4		deposition 5:25 6:3, 15 8:3,13,21 66:10 92:16,18 93:2,3,21, 25 94:3,13,23 103:21,25 105:15 107:13 108:15 109:2,16 110:5,8,11, 14,19 112:10 117:14,23 118:3 142:2 145:25 178:13 186:12 192:1	desirably 127:22
date 92:21			desire- 123:16
dated 7:4			desired 138:10
dating 187:1			detail 87:6,10,11 96:13 97:5,8,22 99:13 101:23 146:9
day 109:3 111:19	declarations 7:11 8:4,6 16:19 23:11 24:2 25:3 26:24 55:20 57:4,6,9 58:10,11 63:5,8,17, 20 64:4,20 65:25		detailed 36:21,22 136:21 164:9
days 169:6,9,15			
deal 189:7			
decades 165:25 166:19 169:13			
deciding 118:12			

details 37:15,19,23 38:1,7,12 50:24 53:9 66:21 90:9 116:5 129:3,8 131:17 137:24 189:9 determine 73:1 74:20 determined 37:15,20, 23 38:2,8,12 device 124:14 devices 92:22 124:10 164:21 188:19 diagram 68:2 dictionary 28:4 171:24 172:14,23 173:5,16 die 162:24 163:4,9,17 164:13 167:25 difference 44:16 51:23 94:20 168:23 differences 161:1,5,8 170:11,13,18,21,22 171:1 different 32:20 49:24, 25 62:21 75:1 88:4 113:15 114:14 121:23 130:3,9,17 131:10,21 132:2,25 133:22 134:5,20 137:14 138:14 140:9 148:23 156:3 187:14 188:21 difficult 67:15 dimensions 163:19 direct 61:24 80:15 118:1 139:6 141:25 directed 9:18,25 36:9 42:5 direction 140:9 directions 85:13	148:23 directly 36:14 38:24 39:3,8 48:22 67:9 162:4 163:21 disagree 28:11 31:8 56:9 103:9 136:24 159:18 163:20 175:7 177:3,19 183:23 disappear 166:15 disclose 27:18 38:7 40:3 48:17 50:21 53:2,20 54:2 69:25 70:4 164:1 175:4,12 179:23 disclosed 20:6 48:24 87:2 127:13 128:3 168:14 182:13 discloses 54:15 56:12 57:6,14,18 60:3,22 69:20 75:25 86:19 88:6 95:20 96:10 97:2,20 101:21 130:8,16,20, 22 158:15 159:7,15 160:7 disclosing 27:23 30:11 31:15 61:17 73:16 160:14 179:14 disclosures 98:18 discuss 12:11 40:7 58:9 59:12 79:25 90:6,7 92:5,8 109:20 114:21 124:18 142:17 144:3,8 147:7 154:25 161:8 162:9 171:16 184:17 discussed 15:15 41:12 49:2,3 58:10 59:16 66:17 70:23 77:2 89:1 90:10 95:11 105:1 109:15	111:14,16 138:8 142:1 143:1 146:16 152:10 177:22 discusses 49:4,5,6 60:9 70:24 75:18 78:5 discussing 12:24 38:12 48:23 58:11 75:5 83:19 85:10 87:23 88:21 104:15 111:2 112:4,14 113:1,8 114:11 117:22 119:7 141:10 discussion 38:10 39:20 73:19 99:12 165:12 190:3 discussions 8:16 9:6 119:6 disfavored 170:2 dispute 163:6 disputed 163:3 distinct 78:7 DMA 85:14 document 10:1,3 13:7 176:17,24 documents 10:2 doing 6:2,8 63:19 72:9 86:22 98:23 101:14 138:24 159:19 Dr 5:9,25 12:25 13:15 27:14 31:9 37:8 59:12 92:5 117:21 142:10 144:6 146:3 154:25 160:25 161:15,24 162:14,23 168:24 169:11 170:11 171:16 173:12 174:16 191:6,14	draft 9:18 drafted 9:16 Drake 8:11 17:13 18:7 20:1,23 21:4, 17,18,21,22 22:6,10, 21,23,25 23:4,7,10, 12,15,23 24:3,6,14 25:1,4,15,25 26:5, 10,20,25 27:18,22 28:6,19 29:2,5,8,10, 13,15,16,19,20,21, 25 30:2,5,11 31:6,15 32:3,7,12,17 34:10 36:2,9,11,14,16,20 37:8,19 38:7,11,14, 24 40:3,9,11,14 42:16,21,24 43:3,6, 10,15,16 44:13 46:14 47:15,25 48:16,20,25 49:2,8, 11 50:21,24 51:17, 18 52:10 53:2,14,16, 20 54:2,6,9,12,15,20 55:2,5,7,12,15,21,24 56:4,12,17 57:1,6, 10,11,13,15,17,24 58:12,13 59:20 60:2, 9,15,22 61:2,17 62:6,8 64:5,7,13 65:14,19 67:25 68:10,22 69:13,19, 25 70:4,24 71:12 72:22 73:15 74:19 75:25 77:13,15 78:19 79:2,7 80:17 86:22,23 87:6,10 88:10 93:7 95:10,16, 22,25 96:4,12,24 97:4,7,21 98:15 99:6,7,12,15 100:12, 23 101:5,13,15,23 102:13 103:1 104:9 105:8,9 108:20 109:25 114:23 115:7 116:2,5,8 117:4,7
---	---	--	---

118:25 122:22 123:6,13 124:22 129:4 131:15 132:7, 8 133:3,24 135:1 140:20 143:12,13 146:11,13,23,24 155:17,19 156:14, 19,22 157:3,18 164:8,15 167:11,25 170:25 175:4,9,13, 15 177:24 178:11, 14,20 179:19,20,23, 25 180:6,13,19 181:1,5,21,25 182:12 183:6,11,15 184:10 drake's 79:12,17 80:5,21 81:3,8,21 82:2 84:20 85:1 86:3,12,25 96:6,18 97:15 98:4,17,19 99:2,20 102:3 106:10,18 107:7,18 108:4,10 113:24 114:4 117:2 120:10, 16 122:12 124:5 128:15 157:8,25 174:19 179:13 dramatically 165:2 draw 77:17 105:22 drive 164:22 165:23 166:2 174:2 driving 164:20 duly 5:13 duplex 147:20,22,23 148:1,3,6,7,12,18,22 149:3,4,6,10,11,12, 14,15,17,18,19,20, 23,24 150:4,5,9,12, 13,19,20,24 151:3,4, 8,13,14,21,22 152:1, 6,9,15,16,23,24 153:7,8,15 172:21,	24 173:1,3,24 E earlier 28:10 40:15 47:6 56:17 62:1 70:22 73:15 77:2 88:13 95:11 111:14 112:17 119:5 123:25 157:3 167:11 177:22 181:23 early 118:16 119:15 189:4 easier 166:24 easily 168:7 efficient 163:22 166:21 eight 33:18 174:12 either 21:5 22:10 32:3,17 36:25 56:23 57:5 64:19 67:19 82:3 99:25 140:25 143:7 178:20 190:3 electrical 173:17 electronics 11:13,17 164:22,24 165:16 166:11 element 111:9,12 elements 35:24 65:16 eliminate 166:22 embedded 168:25 emphasized 139:3 employee 190:14,19 enable 39:23 148:1, 13 enabling 40:1 66:19 encompassed 169:10	encompasses 121:24 122:7 encompassing 122:14 end-to-end 98:13 126:6,11 engineer 51:2 engineers 173:17 engines 85:15 enormous 166:24 ensuring 98:20 entered 68:24 76:14 entire 72:12 110:7 145:25 entities 28:5 entity 49:15 96:24 97:16 98:5 environment 36:12 envisioned 185:24 equally 36:5 equivalently 168:6 EST 5:2 192:1 establish 152:5 estimate 10:10 Ethereal 125:20 event 78:17 133:24 163:25 eventually 70:20 everybody 171:9 exact 10:7 25:11 93:24 94:12 103:8 153:3,17,23 exactly 8:8 26:14 83:1 94:22 102:8 121:15 153:1 166:14 187:4	EXAMINATION 5:16 examined 5:13 example 8:9,11 17:22 18:2,21 20:13,21 26:4 39:15,24 45:2 46:13 50:4 61:5 71:16,20 75:4 84:24 85:10 86:1,10 88:1 89:25 98:10,16 100:4 115:12 116:25 122:21 129:4 131:5, 17,18 132:9 140:6, 21 150:11 155:8,24 158:6 161:9 164:8 165:8 173:19 177:23 186:7 examples 166:19 excerpts 103:20 exchanged 50:14 excuse 171:20 176:4 execution 16:3 exhibit 6:19,23 7:13, 20,24 11:10 17:9,12, 17 79:10 82:13 83:10 93:13 105:19 106:23 107:22 117:24 125:12 127:17 147:13 155:5,9 157:13 158:11 162:11,14 171:21,24 172:1,12, 14 174:9 176:4,12 190:9 exhibits 148:4 exist 149:12,19 existed 173:21 existing 87:7 124:13 150:5 exists 149:17
---	--	--	--

expect 129:17,25 131:14 132:22 133:18,21 134:7,18, 22 149:6	facilitating 39:17	87:16 88:9 89:8,25 104:11 105:8 108:20 111:20 112:22 121:13 124:22	21,23 180:1,6,11,15, 19,23 181:3,12 182:8,13,17,22 183:3,14,17 184:1,8, 12 186:12
expectation 98:22	fact 14:22 64:13 65:18 70:24 90:7 92:24 98:11 143:11 149:7 156:22 162:8 165:5 185:1,20 187:25	figures 36:22 70:10 164:9	fishing 145:8
expected 128:15	fair 9:20 10:19 17:7,8 52:17 57:14 81:20 82:1 110:20 121:17 141:3,14,22 147:4 189:21 190:8	file 69:3 155:25	fit 168:7
expedition 145:8	fairly 36:21 162:7 163:24	files 75:7	five 60:12,13,14,15 61:16,17 129:20 147:17 184:13,17 190:12
experience 184:21,24 186:25	familiar 22:23 186:20	fills 131:17	fixed 35:6,9 36:5,7, 19,25 159:21 164:12
experiment 186:1	far 95:2 128:10 145:9 165:17 167:25 173:21	financial 190:15,22	flaw 96:22 101:12
expert 12:12	feasible 159:9,17 160:9	find 122:18	flawed 102:8
experts 39:7	February 5:1 92:1	finding 183:24	flow 36:22,25 68:2,12 70:8 74:8 164:9
explain 30:25 179:3	feel 91:3 184:5	fine 91:7 142:6	flowing 46:2
explained 65:13 180:8 182:23 184:2	fellow 185:1,2	finished 79:22 115:23 173:13	focus 43:14 99:17 109:10 144:25 167:9
explanation 123:4 177:11 181:10 182:16,20 183:20,25	field 184:21 185:4 186:11	first 5:13 7:25 10:11, 14,21,25 11:9,23 12:3 14:18,24 15:13, 22,25 16:13,20 24:1 25:3 26:23 27:12 28:10 29:7 79:10,15 83:22 84:8 92:16,18 93:2,6,21,24,25 94:8,13,15,16,23 95:4 98:9 100:8 103:20 105:14 106:17,24 107:13 108:12,17,18 109:11,16 110:5,11, 14,19 112:9 113:20 114:4,20 115:3,6 116:13,22 117:23 127:19 145:20 146:5,6 157:8,19,24 160:24 161:9,14 168:22 169:23 170:10 171:20 174:14,18,24 175:1, 5,12,13,16 177:5,13, 15 178:5,13,14,16, 22 179:5,12,14,20,	flowing 46:2
explanations 181:15, 18	Figs 155:11		focus 43:14 99:17 109:10 144:25 167:9
explicitly 16:10,24 17:4 70:22,24 108:3 113:23 114:3	figure 18:7,10,24 19:11 20:6 22:14 29:18 38:14 39:16 40:23 41:20 42:21 43:16,17 44:5,13 45:15 46:13 47:3,4 48:6 61:6 62:2,6,7 67:25 68:2,11,23,25 69:13,19 70:6,7,8,11 71:12,16 72:18 74:7 75:23 76:13,15 77:15 78:11 82:16, 18,20 83:5,12,15,16, 19 84:2,5,16,24 85:12 86:1,10,14		focusing 21:13 29:15 109:9 119:10
explore 134:24 135:6 136:8 141:6			follow 44:11
expressed 57:5 134:17 189:24			follow-up 119:11
expressly 36:16 115:5			following 159:6
extra 52:14 124:15			follows 5:14
extremely 111:19			form 9:23 10:13,23 14:17 16:18 18:16 19:4,9,17,24 21:1,24 22:8 23:9,25 24:17 26:13,22 30:9 31:25 32:11 35:2 39:1 41:17 44:7,14 45:19 46:11 48:12 49:21 50:17,23 53:5,23 54:5,11,17 55:4,18 56:15 57:21 58:16, 21 59:1 63:12 64:23 65:6,12 67:6,20 74:5
F			
fabric 22:14 121:24 122:9,14,20 165:20			
facilitate 38:21			

75:3,12 76:2,22 78:1,13 81:11 82:24 83:7 85:3 86:5,15 87:18 88:17 96:8,21 97:18 98:7 99:22 100:16 101:7 102:6, 16 110:21 113:13 130:10,18 131:3,12 132:4,20 133:14 134:13 135:14,20 136:2,12,19 137:2, 19 138:4 139:21 140:4,16 141:4,25 142:13 143:25 144:21 145:22 146:17,20 147:5 149:25 150:21 151:23 152:17,25 153:9 175:6 177:21 179:17 187:21 189:1,12 format 49:13 50:18, 25 51:13,19 60:4,10 61:8,14 73:17 77:4 78:6,16 129:10 formats 68:25 69:20 76:15 formatting 60:8 76:25 77:6 formed 32:10,12 62:15 63:1,25 64:19 65:3 66:9 132:13 133:10 forming 14:16 forms 52:23 forward 154:20 four 13:7 29:15 37:9 40:14 42:1 46:15 47:15 48:19 49:7,8 51:5 59:15 83:19 119:5 129:20 frame 169:10,14	185:11 189:20 framing 101:18 free 91:3 frequencies 173:20 front 6:9 83:12 172:12 full 159:23 fully 164:2,3 function 35:7,9 36:5, 7,19,25 133:19 138:18 159:10,21 164:12 functional 164:2 functionality 33:3 35:20 74:3,4 79:17 106:10 107:7,18 117:2 130:2 131:1,9 132:1,15,23 133:12 134:9,11,19 135:8 136:10 159:20 164:5 functionally 121:6 functioning 156:20 164:3 funny 161:23 further 96:13 97:5 99:13 128:9 129:12, 19 fuzzy 189:5 G garbage 174:3 gears 109:8 125:11 general 35:7,12,22 80:18 100:5,6,11 163:22 generally 161:21 173:25	generated 72:6 getting 94:22 171:5 give 5:22 10:10 113:15 172:4 given 54:18 103:6 104:13 112:13 113:6 137:4 138:5 146:10 giving 20:21 Glover 5:5 go 17:16 20:11,12 27:9 30:20 33:14,20 37:3,5 38:14 42:11 51:5 59:15 60:12 61:23 63:4 66:2,13 67:25 68:5 71:7 74:1,18 77:15 84:7 85:5,13 91:5,8 106:23 107:22 113:20 115:17 127:16 129:19 137:9 146:9 147:11 154:20 157:15 158:10 160:20 161:11 165:21 170:7 171:6 172:9 173:10 174:8 181:6 182:24 184:3 190:25 191:10 goal 61:12 goes 40:19 87:10 167:1 going 6:19 7:11,20 17:9 25:22 26:18 37:4 54:19 63:15 66:15 71:22 72:7,14 91:5 99:16 103:10 112:9 117:17 125:3 141:24 145:6,14 151:18 154:16 157:15 162:10 164:25 167:5 169:23 173:15 176:14 191:21	good 5:4,18 109:20 Goossens 8:10 20:2 29:2 56:23 58:8 64:9,14 65:20 67:14 80:17,23 81:10 82:4, 11,12 90:6,11 98:11 121:25 125:19 130:15 150:3,11 174:25 175:11 178:19,21,23 179:11 181:4 182:13 183:3, 7,16 184:9,11 Goossens' 93:10 120:12 goossens2002 8:10 20:2 21:5 22:10 23:12 24:3 25:5 26:25 28:20 29:9,21 30:3 32:3,17 42:24 55:8,21 56:18 57:2, 25 58:12 64:5 65:14 67:19 78:20 79:5,6, 9,24 90:18,21,23 95:10 106:22 108:6 114:1,6,19,24 115:8 117:7 118:14 140:19 143:12 146:10,22 149:8 152:5 164:1 165:8 168:13 170:24 174:25 175:9 178:17,18 179:19 180:10,22 182:8 183:4 Goossens2002's 79:13,19 106:12 107:9 117:4 Goossens2003 8:10 20:2 21:5 22:11 23:12 24:3 25:5 26:25 28:20 29:9,21 30:3 32:4,17 42:24 55:8,22 56:18 57:2 58:1,12 65:14 67:19
--	--	--	--

78:20 79:5 80:1 83:5 84:2,5,16,20,24 85:10 86:10,18,21, 23 87:2 89:25 90:1, 14 95:14,17,19,23 96:4,7,9,19,25 97:1, 17,19 98:6 99:3,9,14 100:3,12,15,23 101:5,13,16,20,21, 25 102:14 103:2 115:10 120:17,24 121:1,21 123:7,25 124:6 125:12 126:10 127:2,13 128:3 130:7,20,22 131:9, 17,20 132:1,9,15,23 133:2,12,19,25 134:11 135:1 140:19 143:13 146:12,23 152:5 164:1 175:1, 10 178:18,19 179:22 180:1,11,23 182:8 183:4	171:2 guess 10:8 79:23 91:4 H half 144:25 169:25 halfway 33:23 171:23 hand 5:8 124:8 happened 14:24 112:1 happening 75:19 182:4 happens 101:17 149:20 happy 142:17 144:3 145:13 190:2 hard 162:3 harder 166:25 hardware 28:18,22, 23,24 29:4,19,23 30:7,18 32:13,20,23 33:6,13 35:7,9,20, 22,23 36:6,7,19 37:1 120:12,15,17,19 122:1 159:21 164:12 168:5 186:9 harness 186:3 head 10:8 189:16 heard 150:5 heavily 139:4 help 9:18 10:1 helping 77:5 helps 12:7 herring 165:3 hierarchy 185:19	higher 158:19 highlighted 108:20, 24 111:21 hold 137:11 178:14 Holt 171:7 home 6:2 hop 191:10 hopefully 171:7 host 158:19 host/ip 66:19 hour 11:24 12:3 37:5 91:5 117:18 hours 9:4 10:9 housekeeping 6:18 huge 165:13 hundreds 165:9 hypothetical 131:5 134:24 I i.e 156:7 i.e. 157:19 idea 150:7,24 152:1, 10 identical 14:19,25 16:13,22 17:6 24:19 identification 69:8 identified 62:3 64:7 110:3,17 111:8 112:16 114:17 168:23 identifies 170:11 177:4,12,14 181:11 182:16,21 183:25 identify 42:25 141:5	157:8,25 178:5 identifying 178:14,16 179:4 IEEE 171:24 172:15, 23 173:1,5,16 illustrate 47:4 illustrated 28:9 39:15,24 44:3 45:6 61:6 62:17 116:8 124:22 illustrates 48:6 illustrating 43:20 illustration 47:5 70:12 implement 36:1 79:11,17 80:5 81:2,8 85:1 87:11 89:23 90:13,16,20 96:6,18 97:8,15,22 98:4 99:14,20 100:13 101:24 102:3,13 103:1 114:25 116:5, 14 118:12 120:15 121:19 123:5,13 124:4 126:10 131:18,19 133:3 149:18,23 150:9,19 151:3,8,13,21 152:15,23 153:7,15 158:17 159:4,20 164:10,11 166:25 implementation 96:13 97:5 135:3 implemented 20:25 26:7,12 35:6 36:18, 25 39:4 81:22 82:3 87:9 88:11 95:10,17 99:3,25 100:6 108:5 113:25 114:5,19,23 115:2,11,19,20 120:11 121:1 126:6,
Goossens2003's 80:7 87:8 88:3,5 95:25 125:25 127:21 128:14 129:25 134:8 135:7 136:9 Gossens2003 123:14 gotten 151:19 166:21 granularity 72:11 178:3 great 6:14,23 12:21 191:24 ground 80:3,4 96:17 97:14 98:3 99:19 102:3 grounds 141:15 guaranteed 89:16 98:21 guarantees 72:8 164:6 170:12,19,23			

14	indicate 147:21	intention 61:14	126:7,10,14,23
implementing 32:24	indicates 177:11	inter 6:16	127:3,7,13 128:3
96:24 101:4,12,19	181:10 182:16,20	interact 89:17 97:9	158:24 162:2 164:2
106:9 107:6,18	183:25	interactions 97:23	168:25 169:17,20
115:6 117:2 171:2	information 46:1 50:3	interacts 47:20 48:1	170:2
important 69:7	128:21 155:22 188:5	51:10 96:14	interfacing 34:4,18,
impossible 123:24	initial 79:24	interconnect 22:14	21,24 35:16 36:2,18
124:16 134:10	initiate 43:23 45:9	23:17 24:8 27:3	97:16
163:7,13,15	47:10 70:15 85:15,	71:17 72:11 81:19	internal 47:21 48:1,4,
impractical 174:1	18 88:22 89:15	124:21 125:2,7	9,17 50:14,21 51:11
inaccurate 76:7	initiated 50:3 72:5	165:5 185:16 186:5	72:1
inappropriate 142:5	initiating 70:25 71:5	187:7,24	interpret 113:7
include 35:23 44:22	85:5,12 182:6	interconnects 122:3	interpretation 52:16
89:9 98:12 127:22	initiator 89:8	149:13 187:5,14	177:19
130:21 131:2 158:24	inserted 52:12	188:5,6,12	introduce 6:19 7:20
180:25	inside 27:15 28:11	interest 190:15,22	105:18 162:10
included 60:25	71:2 73:8,10,11	interesting 111:24	176:14
122:14,16 175:25	89:24 90:14,20	interface 41:23 42:2	introduced 176:15
includes 41:1,5,8	96:25 111:11 121:20	45:17,21 46:9,18,23,	introducing 17:15
60:16 123:1 124:1	124:5,15 178:6	25 47:2,5,13 62:3,14	involve 32:20 51:3
139:15	181:1,23 182:5,10	63:3,11 64:3,11,21	140:22 185:23
including 135:3	183:12	65:4,17 80:21 81:18	involved 28:25 32:24
160:8 170:1 185:19	instances 110:13	82:8 83:21 84:21	43:2,8,11 45:25
186:9 187:19	institution 175:21	87:3 88:6 89:11,19	49:24,25 60:8 70:1,5
inconsistent 174:17	176:8,21 182:15	93:9 95:8,15,21	76:1 103:6 122:6
181:20	183:21	96:1,7,11,19 98:5	137:3 177:15 185:7
Incorporated 11:13	integrate 166:20	99:3,10,21 100:1,2,	187:11,13 188:17
incorrect 50:7 70:3	integrated 20:4 21:7	4,14 101:5,17 102:5,	involves 44:1 71:8,12
76:7,9 95:19	22:12 23:16 24:8	15 103:3 114:25	75:5 187:24
incorrectly 110:23	25:7 27:4 33:2,11	115:7,12,21 116:3,7,	involving 47:11 187:6
increase 164:6	35:11 79:13,18 80:6	21 117:5,8,11 122:5	IO 124:10,14
indecipherable 81:3	106:11 107:8 108:6	123:6 125:17 127:8	IP 79:13,19 80:7,8
116:16 117:14	113:25 114:6 116:16	129:2,7 158:16	90:8,14,17,20,23,24
132:18	117:3 168:11 185:18	159:5 160:9,10,15	106:12 107:9 117:4
independent 141:9	186:5	169:6	124:1,5,9 125:3,5,8,
independently 13:16	integrating 170:22	interfaces 66:17	9 127:2,23 128:4
14:6 16:21 53:3	integration 165:10	80:22 81:9 84:15,25	130:3,9,17 131:11,
	intended 160:6	85:23 86:4,13,20	22 132:3,25 133:23
		87:8,16 88:3,11 89:9	134:20 159:9,16
		98:12 99:24 122:15	160:11,16 165:9
		123:2,14 125:20,25	

168:12 170:2 178:18,19 179:23 180:10,22 183:5 IPS 84:5 126:20,23 159:10 179:19 183:4 isolation 30:1 issue 38:10 64:10 87:23 141:10 164:7 187:23 issues 171:4 issuing 177:16 178:10 it' 93:10 items 42:2	66:5 72:20 76:4 80:12 95:2 100:18, 19 103:13 105:19 106:24 113:16 118:2 119:12,24 128:21 132:7 133:1 139:7 140:18 145:6 148:7 149:3,9 154:15 158:11 160:21 162:11,19 169:11 172:2,7 174:9 176:2, 12,16,24 181:7 182:25 184:4,14 189:2,22 knowledge 66:20 known 98:19 Kohlhepp 9:9,23 10:13,23 14:17 16:18 18:16 19:4,9, 17,24 21:1,24 22:8 23:9,25 24:17 26:13, 22 30:9 31:25 35:2 39:1 41:17 44:7,14 45:19 46:11 48:12 49:21 50:17,23 53:5, 23 54:5,11,17 55:4, 18 56:15 57:21 58:16,21 59:1 63:12 64:23 65:6,12 67:6, 20 74:5 75:3,12 76:2,22 78:1,13 81:11 82:24 85:3 86:5,15 87:18 88:17 96:8,21 97:18 98:7 99:22 100:16 101:7 102:6,16 110:21 113:13 130:10,18 131:3,12 132:4,18, 20 133:14 134:13 135:14,20 136:2,12, 19 137:2,19 138:4 139:21 140:4,16 141:4,24 142:13 143:25 144:21	145:19,22 147:5 149:25 150:21 151:23 152:17,25 153:9 172:4,9 173:12 175:6 177:21 179:17 187:21 189:1,12 191:9,14, 19,23 L label 82:20 104:11 labeled 22:2,14 23:18 27:4 28:6 46:15,18 83:15 LAN 19:12,19 20:8 22:2,15 23:18 27:4 37:13,15,16,19,20, 23 38:1,2,3,5,8,13, 19,22,24 39:6,13,18, 23 40:2,4,9,16,18 45:17 46:2 48:11,18, 23,24 49:12,14,18, 19 50:1 52:6 71:18, 21 121:14 122:23 124:24 177:23,24 178:3,8,11 large 164:23,24 165:23 166:14 167:6 large-scale 164:21 larger 160:11 161:16, 21,23,25 162:3,7 164:17 165:17 166:11 167:25 168:10 late 109:3 111:19 187:11 188:4,13,18 launched 49:13 law 66:2 182:24 184:3 layer 125:21,22 126:1,2 158:18	layers 39:4 49:24 159:22 left 18:11 85:11 90:2 118:1 Left-hand 172:20 length 59:16 102:9 109:16 let's 6:18 9:14 12:5 20:11 22:19 27:9 30:20 37:5 40:23 42:11 47:15 51:5 59:15 60:12 65:23 68:5 71:7 74:11 77:14 78:24 79:6 80:11 83:9 91:1,8 93:5 94:1 103:12 106:1 107:22,25 109:10 113:19 117:16 119:21 125:11 129:19 139:5 147:11 154:20 156:5 158:10 160:20 170:7 173:10 174:8 176:5 181:6 level 66:21 90:9 149:20 levels 185:19 license 5:6 licensed 5:5,7 light 99:13 146:12 Likewise 190:22 limitation 177:6,13 179:5 limitations 100:24 101:3 132:10 134:1 135:2 146:24 Limited 11:14 line 37:9 40:14,21 42:15 47:16 48:19 49:8 51:5,25 59:15,
J January 7:4 jump 106:1 K keep 101:12 keeping 72:10 keeps 168:4 kept 105:4 110:25 112:2 kind 66:1 82:22 83:14 187:6 188:6 kinds 173:20 187:14 knew 166:2 know 6:21 7:22 11:10 12:7 13:8 17:10,18, 23 18:8 20:14 27:10 30:21 33:16 37:9 38:15 40:23 42:12 47:16 49:9 51:6 59:17 60:13 63:8			

18,19,20,25 60:1,2, 13,14,15 61:16 68:8, 10,18,19,22 69:23 72:19,22 74:2,16,19 75:18 76:11 77:20, 23 78:10,18 83:19 93:13,14,20 95:4 104:20 105:25 106:5 107:25 108:2,16 110:4 111:15 112:6 118:5,6,10,20 119:3, 5,12 139:7,10 143:19 144:16 155:7,10 157:16 158:11,14 159:7 160:5,6,20 167:20 169:24	look 40:23 54:20 71:16 93:5 108:18 125:3 156:5 178:7 185:21 190:2 looked 8:9,11 94:18 98:17 168:2 173:6 189:15 looking 9:5 63:4 67:22 71:3 82:7 86:18 108:14,23 116:4 126:12 172:5 looks 94:14,19,20 loop 143:18 lost 74:6 93:16 137:24 lot 131:18 152:7 180:4 187:6 lots 186:8 Louwagie 9:9 low 66:21 90:8 lower 159:22 lunch 91:4,6,10 92:6 Lynden 5:5	63:2,10 64:1,21 65:4 68:25 69:21 70:18 73:17,24 75:25 76:5, 8,15 77:4,5,9,18,21, 25 78:3 machines 188:9 main 34:3,14,25 major 185:4 manage 88:4 98:13 123:2 management 122:6 manager 19:13,20 20:8 22:3 27:24 28:16,17,21 29:3,18, 23 30:7,12,17 31:1, 6,10,16,19,23 32:4, 9,15,18,25 38:8,19, 23 39:5,13,18 40:1,4 41:12,21 42:7,16,21, 25 43:1,3,6,18 45:11 46:16 47:12,20,25 48:7,10,21 50:5,15 51:1,10,18 53:3,21 54:3 55:3,6,10,16, 24,25 56:5,13,19,20 57:19 58:2,3,14 60:3,17,22 61:3,7, 10,18 63:2,9 64:1,20 65:3 70:1,5,13,17,25 71:2,6 72:6 73:10, 16,23 76:9,20 77:3, 7,18,21,24 78:3 79:1,3,7,8,12,18 80:5 81:9,21 82:2 84:20 85:1,4,8,20 86:3,13,23,25 87:1, 5,7,12,17 88:6,10, 14,24 89:10,13,18, 24 90:14,16,20 93:8 95:9,16,20,24 96:6, 10,14,15,18,25 97:2, 3,9,15,20,23 98:4, 16,18 99:2,7,8,10,	11,20,25 100:6,13 101:4,13,17,20,22, 24 102:4,13 103:1 104:2,10,16,21,23 105:1,3,4,5,8,9 106:10,18,19,20,21 107:7,19 108:5,21, 24 109:7,9,13,14,17, 18,19,22,24,25 110:24,25 111:2,3,6, 9,11,12,13,16,20,21, 24 112:3,4,7,14,15, 19,21 113:1,2,5,7,8, 9,12,24 114:5,18,23 115:4,7,11,19 116:3, 15 117:3,5 118:13, 21,24,25 119:2,6,8, 10 120:10 122:12 124:15,20,23 125:2 128:16 130:20,23 131:2 132:10 133:4 135:4 137:13,18,23 138:3,8,13,19,24 139:2 182:5 managers 85:22 86:19 108:22 111:5 121:9 123:19 managing 137:13 138:14 164:7 map 64:7 95:22 117:7 162:8 184:12 mapped 65:13 mapping 99:7 181:20 182:11 maps 178:22 181:3 182:13 183:8,16 marginal 164:6 market 189:20 marks 66:24 67:11,17 94:9 matter 97:3 163:21
lines 75:17 129:20 147:17 156:13 list 33:8 literally 116:24 117:11 litigation 13:17 14:2, 7,16,21 15:10,18,21 16:1,8,12,16,23,25 17:5 145:9 little 6:18 75:13 124:7 169:7 local 182:1 locate 49:1 63:16 81:15 116:7 located 5:24 89:14 114:15 121:7,11 locating 109:6 location 104:14 111:23 114:17 logic 33:2 168:2 long 8:23 9:1 10:5,24 81:22 82:4 115:3 120:2	look 40:23 54:20 71:16 93:5 108:18 125:3 156:5 178:7 185:21 190:2 looked 8:9,11 94:18 98:17 168:2 173:6 189:15 looking 9:5 63:4 67:22 71:3 82:7 86:18 108:14,23 116:4 126:12 172:5 looks 94:14,19,20 loop 143:18 lost 74:6 93:16 137:24 lot 131:18 152:7 180:4 187:6 lots 186:8 Louwagie 9:9 low 66:21 90:8 lower 159:22 lunch 91:4,6,10 92:6 Lynden 5:5 M M-1 90:3 M-2 90:3 MAC 37:13,20 38:2, 18,21 39:12,16,25 40:5,12,16 41:2,5,9, 23 44:23 45:16,25 46:17,22,25 49:14 50:1 62:19 129:6 machine 41:13,22 42:7 43:19 45:11 46:17 47:13 51:13, 19 53:4 57:19 60:4, 7,10,18 61:4,8,19	63:2,10 64:1,21 65:4 68:25 69:21 70:18 73:17,24 75:25 76:5, 8,15 77:4,5,9,18,21, 25 78:3 machines 188:9 main 34:3,14,25 major 185:4 manage 88:4 98:13 123:2 management 122:6 manager 19:13,20 20:8 22:3 27:24 28:16,17,21 29:3,18, 23 30:7,12,17 31:1, 6,10,16,19,23 32:4, 9,15,18,25 38:8,19, 23 39:5,13,18 40:1,4 41:12,21 42:7,16,21, 25 43:1,3,6,18 45:11 46:16 47:12,20,25 48:7,10,21 50:5,15 51:1,10,18 53:3,21 54:3 55:3,6,10,16, 24,25 56:5,13,19,20 57:19 58:2,3,14 60:3,17,22 61:3,7, 10,18 63:2,9 64:1,20 65:3 70:1,5,13,17,25 71:2,6 72:6 73:10, 16,23 76:9,20 77:3, 7,18,21,24 78:3 79:1,3,7,8,12,18 80:5 81:9,21 82:2 84:20 85:1,4,8,20 86:3,13,23,25 87:1, 5,7,12,17 88:6,10, 14,24 89:10,13,18, 24 90:14,16,20 93:8 95:9,16,20,24 96:6, 10,14,15,18,25 97:2, 3,9,15,20,23 98:4, 16,18 99:2,7,8,10,	11,20,25 100:6,13 101:4,13,17,20,22, 24 102:4,13 103:1 104:2,10,16,21,23 105:1,3,4,5,8,9 106:10,18,19,20,21 107:7,19 108:5,21, 24 109:7,9,13,14,17, 18,19,22,24,25 110:24,25 111:2,3,6, 9,11,12,13,16,20,21, 24 112:3,4,7,14,15, 19,21 113:1,2,5,7,8, 9,12,24 114:5,18,23 115:4,7,11,19 116:3, 15 117:3,5 118:13, 21,24,25 119:2,6,8, 10 120:10 122:12 124:15,20,23 125:2 128:16 130:20,23 131:2 132:10 133:4 135:4 137:13,18,23 138:3,8,13,19,24 139:2 182:5 managers 85:22 86:19 108:22 111:5 121:9 123:19 managing 137:13 138:14 164:7 map 64:7 95:22 117:7 162:8 184:12 mapped 65:13 mapping 99:7 181:20 182:11 maps 178:22 181:3 182:13 183:8,16 marginal 164:6 market 189:20 marks 66:24 67:11,17 94:9 matter 97:3 163:21

mean 28:2,3,4 33:5, 10 45:21 66:3,6 75:14 76:4 81:18 90:3,5,24 100:17,19 112:10,11 113:16 114:9,21 116:2 120:20 139:23 140:5,6 142:14 148:4 156:25 162:3 164:24 168:9 169:12 182:23 187:18 189:3 meaning 113:8 means 100:18 114:10 121:23 139:22 156:23 165:4 173:18 meant 120:21 161:25 169:11 medium 49:14 meet 8:20 meetings 8:12,16,24 9:2,4,8 meets 101:3 109:13, 17 memory 67:21 90:2 109:20 124:10,14 185:19 189:25 mention 76:20 98:15 mentioned 32:22 34:9,17 35:9 46:16 47:6 107:17 111:18 130:21 150:1 185:12 187:9 merely 147:22 mesh 187:14,18,23 message 72:7 messages 47:21 48:1,4,9,17 50:14,22 51:11 messaging 6:11	met 9:7,9 microprocessor 85:11 90:2 microprocessors 165:25 middle 104:19 112:24 122:19,22 129:13 177:2 millimeters 162:25 163:5,10,17 164:18 165:17 166:12 mind 109:6,8 190:7 minute 113:10 minutes 54:19,20 84:19 171:7 191:1 mis- 38:11 mischaracterized 88:19 mischaracterizes 92:15 missing 44:16 mission 141:6 misspoke 176:5 misstated 18:17 mistake 42:1 misunderstood 104:6 110:11,18 112:18 Modern 162:24 modified 125:5 163:18 modify 90:8 124:8,11, 14 modifying 163:10 module 27:16 28:12 45:10 66:19 83:20 85:5,7,18 88:21 89:8	90:4 100:8 115:3 170:2 174:18 175:1, 5,13,14,16 177:5,13, 15 178:5,14,17 179:5,12,14,21,24 180:1,6,11,15,19 181:4,12 182:8,17, 22 183:3 184:1,8,12 modules 71:18 88:4, 13 89:7,24 124:10 137:14 138:15 157:20 178:22 179:20 180:24 182:13 183:14,17 188:21 moment 67:15 172:5 190:7 momentarily 59:17 morning 5:4,18 motivated 79:17 86:12 89:23 90:13, 19 106:9 107:6 117:1 124:4 move 20:10 21:11 22:17 23:20 24:10 27:6,7 58:4 68:17 72:14 77:14 103:10, 12 107:25 116:9 119:21 122:4,25 133:5 134:5 137:7 145:15 147:11 148:9 150:15 152:11 154:20 160:1 163:21 166:6 167:5 168:15, 18 174:5 178:24 Mowry 5:9,11,20,25 37:8 59:12 92:5 117:21 141:25 142:10 144:6 146:3 154:25 171:16 172:11 173:12 191:6,14	multimedia 52:5 68:14 69:2 75:7 multiple 45:21 75:5,9 104:11 110:24 112:22 114:12 115:18 121:23 139:19,23 140:23 141:6 149:7,15,21 152:7 154:6 155:11 156:23,24 168:9 185:16 multiprocessing 185:7,13 N name 5:4,19 186:19 narrow 125:6 narrowcast 82:18 85:9 Nate 9:9 natural 80:19 81:12, 14 82:7 85:21 89:12, 18 93:10 94:17,19, 24 95:5,7,12 100:2 114:22,24 115:20 116:6 117:7 123:23 124:19 131:19 naturally 116:6 nature 53:10 near 75:16 94:16 necessarily 19:5,7 30:19 31:12,20 32:12,13 35:3,19 81:13 88:12 89:19 95:13 115:1 123:23 130:7,16 131:1 150:23 necessary 10:3 43:20 need 12:18 17:16
--	--	---	--

34:25 35:19 38:4,5 43:25 45:3,13 57:13 63:4 66:2 67:21 82:9 85:7,20 88:25 89:4,9 93:15 99:17 115:2 121:8 123:19 128:21 129:2,8 131:5 158:7 159:23 165:21,22 166:22 167:2,9 168:21 191:24 needed 166:15 needs 88:23 89:17 100:7,8 121:11 128:24 129:9 138:10 156:21 negotiate 126:23 127:2 network 41:23 42:2 46:9,18,23,25 47:2, 5,13 48:25 49:3,6,23 62:3,14 63:2,11 64:3,11,21 65:17 66:17,21 79:19 80:20,22 81:9,18,23 82:5,8,10,23 83:17, 20 84:15,21,25 85:22 86:3,13,19 87:2,8,15 88:3,11 89:9,11,19 93:9 95:8,15,21,25 96:6, 10,19 97:16 98:5,12, 20 99:3,10,21,24 100:1,2,4,5,14 101:5,17 102:5,14 103:2 114:25 115:7, 11,21 116:3,7,21 117:5,8,11 121:16, 20,23 122:5,6,7,13, 14 123:1,2,3,6,14 125:17,20,21,25 126:1,6,10,14,23 127:3,7,8,13,24 128:3,5,17,21,23,25 129:2,3,7,9,11	130:1,25 134:8 135:8 136:9 149:23 150:1,19 151:3,14, 20 152:14,22 153:6, 14 158:5,16,18,23 159:4,5,12,22 160:8, 10,11,15,16 161:2,6, 16,20,21 162:2 163:9,16 164:2,3,15 165:4,16 167:25 168:14,25 169:6,17, 19 170:1 171:3 173:25 177:25 182:1 185:14 187:2,8,10, 11,19 188:16,20 189:14 networking 39:7 163:8,16 164:17 networks 39:4 165:6 166:11,17 168:25 169:16,20 170:14,20 173:19,23 174:3 184:25 185:8,23 186:14,21 187:1 188:17,24 189:10,19 never 65:4 104:25 111:1,8 150:4 new 37:3 60:12 96:25 119:21 125:5 Nice 5:18 nine 33:18,19 68:8,10 75:17 83:18 93:14, 20 155:10 167:18 190:10 Noc 99:20 102:5,13 103:2 120:12,17,24 121:1,20 124:1 127:22 128:14 161:1,6,17,21 162:8 164:2 Nocs 187:10 188:3,13 node 169:8	noise 174:2 nonresponsive 21:12 22:18 23:21 24:11 27:7 58:5 72:15 116:10 133:6 134:6 148:10 150:16 152:12 160:2 166:7 168:16 174:6 178:25 nonsensical 114:7 167:3 nontrivial 11:2 normal 124:10 191:19 normally 125:4 149:19 NOS 107:9 117:4 NOS.' 106:12 notated 28:8 notes 8:8 160:25 November 92:19,24 number 5:6 10:7 18:21 35:13 54:19 84:9 114:13 118:20 119:23 147:14 156:8 162:1 183:10 186:4 187:16,25 189:13 190:5 O oath 93:3 object 9:23 10:13,23 14:17 16:18 18:16 19:4,9,17,24 21:1,24 22:8 23:9 26:13,22 30:9 31:25 35:2 39:1 41:17 44:7,14 45:19 46:11 48:12 49:21 50:17,23 53:5,23 54:5,11,17 55:4,18	56:15 57:21 58:16, 21 59:1 63:12 64:23 65:6,12 67:6,20 74:5 75:3,12 76:2,22 78:1,13 81:11 82:22, 24 83:4,14,16 85:3 86:5,15 87:18 88:17 96:8,21 97:18 98:7 99:22 100:16 101:7 102:6,16 110:21 113:13 130:10,18 131:3,12 132:4,20 133:14 135:14,20 136:12,19 137:2,19 138:4 139:21 140:4, 16 141:4,24 142:5, 13 143:25 144:21 147:5 149:25 150:21 151:23 152:17,25 153:9 175:6 177:21 179:17 187:21 189:1,12 objecting 145:22 objection 23:25 24:17 54:5 134:13 136:2 142:5 144:21 objections 145:25 obtain 98:19 126:24 127:3 obvious 79:11 80:5 81:2,8 102:12,25 141:8 145:17 146:7, 10 162:4 obviously 6:8 occur 189:22 occurred 92:19 occurs 49:23 53:10 74:3 75:21 October 184:22,24 188:25 189:11,20 off-chip 150:19
---	---	--	--

151:3,13,20 152:14, 22 153:6,14 158:16, 23 159:5 161:2,6,21 162:2 163:9,16 164:16 165:4,16 166:11,17 168:24 169:16,20 170:14,19 offer 56:12 57:12 143:6,9 offered 25:24 55:1,14 56:3,8 142:20,22 143:2 144:6 146:25 office 6:2 Oh 93:16 Okay 5:24 6:5,18 7:16 8:2,12,15,23 9:5,12, 14 11:4,11,20 12:9 13:3,9 14:9 15:8 16:6 17:9,11,15,19 18:7,24 20:15 22:24 23:3 25:22 26:4,9 27:11 29:5,15 30:15, 20,22 33:21,22 34:8 37:11 38:14,16,17 40:9,25 41:11 42:14 43:10,14 44:20 47:18 51:7 52:1 57:16 58:4,13 59:15 60:12,15 61:1,25 62:9 63:22 66:8,14 68:1,2,7,9,21 69:19, 25 71:7 72:14,21 73:13,21 74:1,25 75:9,21,24 76:11 77:16,19 79:10,21 80:14 81:1 82:11,15 83:11,25 84:13 86:17 88:8 89:6 92:8,11,18,23 94:22 103:18,23 105:12,20 107:23,24 108:9 111:8 112:17 113:19,22,23 114:7	115:17 116:2 118:3, 5,19 119:21,25 120:1 124:3 125:13, 15 126:4,16,18,22 127:6,16,18 128:9 136:17,24 137:10,12 139:8 140:25 145:14 147:15 148:17 149:2 155:3,6 156:5,25 157:14 158:10,13 159:6,15 160:1,19 161:13 162:13 163:3,7 167:17,19, 23 168:20 170:9,17 171:10,19,22 172:9, 19,23 173:1,10 174:5,13 176:3,11, 19,23 179:10,13 180:3 181:8 183:19 184:16,20 186:21,25 189:18 190:8,11 191:12 old 169:5,9 older 36:13 168:8 on-chip 165:5,20 170:14,20 188:5,10 189:14 once 125:1 165:1 168:11 183:20 ones 8:8 112:15 open 6:21,22 7:22,23 17:10,11 82:13 83:9, 10,22 105:19 162:12 172:2,13 176:2,17, 19 open-ended 39:20 131:4 opened 6:12 176:13 opening 82:13 opine 79:11 135:6 136:8	opined 22:24 46:7 63:9 79:1,6 80:4 81:7 84:19 99:1 102:11,25 106:17,20 134:7 140:25 146:3, 6 opining 34:12 81:2 109:12,21 180:5,18 opinion 9:25 10:3 13:25 24:24 25:13, 24 28:17,25 29:1,16, 25 30:4 31:5 32:10, 11,12 34:21 56:8,12 62:15 81:20 82:1 86:2,9,11 87:15 88:2,5,9 89:21 95:8, 15 96:3 100:23 106:8 107:5 111:16 120:25 130:7,15,19, 22,25 133:17 134:17 140:13 142:20,23 143:6 144:6 155:16 156:18 165:14 180:8 opinions 9:19 11:7 12:14,22,25 13:2,4 14:10,16 15:2,16 23:10 24:1,22 25:23 26:23 29:7,11 30:1 55:1,5,14,20 56:4,25 57:4,5,13 58:10 63:1,25 64:12,19 65:3,24 66:3,9 78:19 132:13 133:10 140:18 141:11,18 142:11 143:2,9,17 145:2,5,12,17 146:17,21 147:4,11 181:16 189:24 opposed 111:2 opposite 142:25 option 121:19 123:5, 12	options 81:15,17 order 9:3 57:12 60:10 77:13 89:13 90:8 158:4 191:18,22 ordinary 22:20 23:6, 14,22 24:5,13,25 26:19 27:1 32:8 62:13 76:23 79:16 90:15 116:4,25 118:15 119:15 122:18 131:14 132:21 133:18,20 134:16,17,21 138:7 139:1 149:5 150:8 175:16 Oregon 5:7 orientate 78:25 80:3 original 35:15 125:5, 9 originate 178:12 originating 73:9 orthogonal 171:4 OSI 125:21 126:1 outside 90:17 97:16 98:5 100:1 173:22 overall 123:1 Owner 12:12 15:24 104:1 177:3 Owner's 12:15,22 88:7 92:15 P p.m. 109:1 192:1 packet 49:13,18 50:7 187:8,10,11 packet-based 48:25 49:3,6
---	--	---	--

packets 50:16,19,22 51:3 186:23 188:4, 21 page 7:2,8,10 11:9 12:6 13:7 33:16,19 42:13,14,15 61:24 80:13,16 82:14 83:1, 24 84:8,11 92:10 93:14,20 103:14,15 105:14,21,23 106:5 107:2,13 108:2,16, 18,23 110:3,4 117:25 118:1,3,6,10 119:17,23 120:1,2,5 125:14,16 126:17 127:17 147:14 155:10 156:6 157:15 161:12 162:19 167:18 170:8 172:3, 18,21 174:12 176:10,23 177:2,10, 20 180:17 181:6 182:15,19 183:24 190:10 pages 33:18 93:13 104:1 paper 176:1,5,6,7,13, 15,20 181:6 182:20 183:24 187:3 papers 185:10 188:1 paragraph 13:6,10,14 14:9,14 15:8 17:17, 19 18:1,13 20:11,16, 21 21:13 26:2 27:9, 12 28:10 30:20 33:14,25 41:19 42:11 46:14 61:24 62:2,7 66:13 67:11 75:17 79:15,25 80:11 83:23 84:1,4, 7,9,14 88:1 91:1 92:9 93:5,19,23 94:9,16 95:4 98:10,	11,15 103:12,19,24 104:5,6,8,20 105:7, 13 106:2 107:2,3,17 108:4,11,13,17,19 109:11 110:2,17 111:14,19 113:20,24 114:3,19 115:5,12, 25 116:13,22,24 117:10,14 119:22 120:3 126:19 127:20 128:9 129:12 147:11,19 155:4,16 157:13,14,24 160:21 161:11 162:19,22 167:15,16 168:19,22 169:24 170:7 171:19,20 173:10 174:8,11,14,23 177:10 179:8,9,11 184:13,17 190:12 paragraphs 87:22 98:9 161:9 parallel 14:7 188:7,9 parameters 73:1 74:20 parentheses 171:24 part 18:24 34:4,18 42:9 48:20 62:16 69:16 75:15 79:24 122:13,17,24,25 179:6 partes 6:16 particular 17:17 32:21 42:9 43:21 47:8 50:9 52:22,23 61:21 78:4 83:23 86:1 138:21 139:3 158:2,4,6 183:21 particularly 112:12 118:19 123:17 parts 37:14 40:12,17 129:7	pass 191:8 passage 61:16 passing 50:10 patent 8:11 12:12,14, 22 15:24 20:1 21:3 36:13 52:25 55:25 58:3 64:5,16 65:21 67:5,19 69:15,24 70:7,23 78:2,14 83:10,18 88:7 92:15 97:6 100:25 104:1 132:11 133:4 137:8 138:25 139:4,25 140:22 141:21 143:15,22 146:7,16 150:2 158:10,14,23 159:7,15 160:4,6,14 170:24 177:3 184:4 path 52:5 68:3,13 73:2 74:22 155:9 156:4,21 157:3,4,5 paths 155:12,17,19 pathways 178:10 PDF 7:2,8 11:10 12:7 13:7 33:16,18,19 42:13 80:13 82:14 83:24 84:8,11,12 92:10 103:14,17 105:22 107:2 117:25 119:23 125:14 127:17 147:14 156:6 157:15 161:12 162:19 167:18 170:8 172:18 174:12 176:16 190:10 PDFS 63:20 Pederson 9:10 peer 125:3 Pennsylvania 5:1 6:1 92:1	people 189:3 perform 35:19 130:1 131:8,25 132:14,23 133:11 134:8,11,18 135:8 136:9 164:5 performed 146:15 performing 19:12,20 20:8 22:3 46:1 performs 131:1 person 22:20 23:6, 14,22 24:5,13,24 25:14,24 26:5,10,19 27:1 29:16 30:5 31:18 32:8 34:13 37:25 57:6 62:13 63:10 64:2 76:23 77:12,23 78:11 79:16 83:3 84:25 86:2,11 89:22 90:12, 15,19 116:4,25 122:18 124:3 128:2 131:13 132:17,21 133:17,20 134:16, 17,21 138:7 139:1, 18 149:2,5,9,13 150:8 157:1 159:3 167:12,23 173:6 175:16 188:23 personally 9:15 perspective 71:20 177:23,24 178:2,8,9 182:1 Peter 9:9 191:17 petition 176:21 177:20 181:20 Petitioner 5:12 118:7 177:4,12 181:11 182:16,21 183:25 Petitioner's 177:11 181:10 182:15,20 183:24
---	--	--	---

PH.D. 5:11	147:7 151:5,10,16	115:22 134:24	previous 24:19,20
phrase 14:6 17:22	152:19 153:2,11,18,	possibility 36:4 82:9	25:10,11,18,21
54:18 66:24 67:3,10,	22 154:2,8,13	89:20 123:15,16	56:10 58:17,22 59:2
16,18 104:10 120:6	168:19 173:11	possible 33:12 36:5	64:25 65:9 102:18,
140:1 142:11,23	182:18	38:11 51:1 99:24	23 135:12,16,22
143:6 145:1,3	plugged 169:8	100:11,19 131:8,25	136:4,14,22 137:5
146:18 148:6	plural 156:15	132:14 133:11	151:6,11,17 152:19
phrases 94:9	plus 122:14 146:10,	134:23 135:7 136:8	153:3,11,18,23
phrasing 102:7	22	149:22 150:18	154:2,9
physical 168:4	point 71:17,23 74:7	151:2,7,12,21	previously 6:20 7:17
physically 5:24	108:25 121:17	152:15,23 153:7,14	prior 16:3 50:3 63:24
piece 120:11,16	122:4,5 124:21,25	190:5	66:10 69:10 74:3
pieces 22:19	125:7 142:16 144:2	possibly 39:23 48:14	75:22 154:5,11
Pittsburgh 5:1 6:1	147:6 157:11 163:25	54:20 94:14	169:9 175:22
92:1	167:14 179:6 190:1	potential 186:4	probably 52:24 121:5
place 15:22 80:19	pointed 40:15	potentially 7:12	168:6
81:13,14 82:7 84:19	pointing 35:18 48:20	39:21,22 63:15	problem 121:22
85:21 86:2,12 89:12,	142:19,25	85:13	167:3
18 93:10 94:17,19,	points 62:16 71:21	practical 150:23	proceeding 6:16,20
24 95:5,7,9,12,13,16	72:10 122:25 149:1	152:3 166:17 173:23	7:18,25 10:22 11:18
100:2 114:14,22,24	174:1 177:25 178:11	practice 43:22 150:25	12:12 176:1,16
115:1,20 116:6	182:2	152:2 169:17,19	process 68:3,12
117:8 163:9,16	popular 36:14	preceding 126:19	69:14,16 70:2,5
placed 172:1	pose 154:13	predated 185:20	process- 35:16
places 49:2 70:23	POSITA 18:2,14 19:2	prefer 52:24 90:16	processing 27:16
100:7 110:24 112:22	20:17,23 21:2,3,6,	189:7	28:12 35:24 157:20
114:12,14 115:3,18	15,22,25 22:5,11,25	preparation 8:21	158:20
181:25	27:17,22 28:7,20	prepare 8:2,13 11:21	processor 34:3,15,25
play 50:2 62:19	30:11 31:1,5,12,14	prepared 7:17 10:14,	35:1,8,17,19,22
playing 158:6	33:23 34:1 80:19	25 49:19 144:10	36:3,19 124:13
plays 50:9	88:2 98:17 99:14	preparing 10:5,11,20,	158:17,19,24 159:19
please 5:8,19 7:21	106:8 107:5 118:15	21 11:1,4 29:10 50:7	160:8
12:20 37:8 43:5 44:8	119:15 120:9 127:21	175:22	processors 35:13,14
53:25 54:21 63:23	129:13,17,21,25	preregistration 69:7,	37:1 124:9 185:16
68:4 71:11 74:9	134:7 184:18	14,16	186:4,6 187:17
81:24 86:6 93:17	POSITA's 21:16	presumably 83:7	188:6
123:11 125:14	position 184:5	114:10	produced 5:12
130:12 136:22	positions 174:17	pretty 171:8	products 189:20
137:25 142:6 145:21	possibilities 33:4,7,8		progresses 168:4
	37:2 49:5 89:14		

project 185:22 properties 13:19 69:18 70:16,20 85:17 89:17 98:14 126:5,11,13,24 127:4 137:21 138:11 139:3 143:20,24 144:19 145:3 146:19 147:3 158:5 propose 115:5 proposed 12:11,15 15:23 23:4 33:9 88:7 95:17 96:5 98:1 100:12,22 101:2,4 proposing 96:5,18 97:15 98:3 99:19 100:13,18 102:3 116:14 protocol 37:13,20 38:1,18,20 39:11,16, 25 40:5,11,16 41:1, 5,9,13,22 42:7 43:18 44:23 45:11,16,25 46:16,17,22,24 47:13 49:12,19 50:1, 8 51:13,19 53:4 57:19 60:4,7,9,18 61:4,7,18 62:19 63:2,10 64:1,21 65:4 68:25 69:21 70:18 73:17,24 75:25 76:5, 8,15 77:3,5,8,18,21, 25 78:3 129:5 158:18 159:8,11,16 protocols 130:4,9,17 131:11,22 132:3,25 133:23 134:20 159:25 provide 13:1,3,24 14:10 36:21 50:24 53:9 96:13 97:5,7,21 99:13 141:18 175:13 179:11 180:11	provided 136:21 145:12 146:25 154:1 180:9 181:18 provides 175:1 providing 28:24 29:25 87:6 101:23 110:19 172:23 publication 186:13 published 185:10 186:10 187:25 pull 125:11 137:8 purported 170:13 purportedly 174:18 purpose 35:7 purposes 141:20 put 10:1 17:9 67:10, 16 80:20 81:13 82:7, 11 84:19 85:21 89:12 93:10 94:17, 19,24 95:6,7,12,13 100:2 114:13 117:8 121:5 122:19 124:14 176:13 Putting 100:11 Q qos 18:25 19:2,8,10, 16,22 20:7 21:6,21, 22 22:1,5,11 23:7, 15,23 24:7,15 25:1, 6,14 26:11,20 27:2, 23 28:15,17,21 29:3, 17,22 30:6,12,16 31:1,9,16,19,23 32:4,9,15,18,24 38:8,18,23 39:5,12, 17 40:1,3 41:1,8,12, 13,15,21,22 42:6,7, 8,16,17,20,21,25	43:3,4,6,7,10,15,18 44:4,12,24 45:11 46:16 47:12,20,25 48:7,10 50:4,15 51:1,10,12,13,18,19, 22 52:4,19 53:2,4,20 54:2 55:3,6,9,15,23 56:5,19 57:18,19 58:2,14 60:3,4,7,8,9, 11,16,17,19,22,23 61:1,2,3,7,9,13,15, 17,18,19 62:12,21 63:1,2,9,10,25 64:1, 12,20,21 65:4,16 68:3,13,25 69:1,9, 20,21,25 70:4,13,17, 18,21,25 71:2,6,9,13 72:4,5,7,9 73:1,8,9, 16,23 74:13,20 75:6, 10,25 76:4,6,8,15, 16,20 77:2,3,5,7,8, 17,18,21,24,25 78:3, 6 79:1,7,12,17 80:5, 21 81:8,21 82:2 84:20 85:1 86:3,12, 25 88:10 93:8 95:9, 16,24 96:6,18,24 97:15 98:4,18 99:2, 7,11,20 100:13 101:4,13 102:3,13 103:1 104:10,15,16, 19 105:1,2,3,8,9 106:10,18,20 107:7, 18,19 108:4,10,22 109:12,16,18,21,24, 25 110:1,23 111:2,3, 5,6,8,11,16,20 112:4,6,19,21 113:4, 5,7,12,24 114:4,18 115:6 116:2,15 117:2,5 118:13,21, 24,25 119:6,10 120:10,16,25 121:14,19 122:12 123:5,9,13 124:5,23 128:16 130:1,3,8,16	131:1,8,10,21 132:1, 2,14,16,24 133:11, 22 134:9,11,12 135:8,9 136:10 137:18 138:3 155:9, 12,17,19,20 156:7,9 157:20,21,25 Qualcomm 8:17 9:18, 22 11:6,13,20 13:17 14:2,15,20 15:10,18 16:8,11,16,23,25 17:5 190:20,23 Qualcomm's 176:21 quality 41:24 43:2,9, 11,23 44:1 45:4,9 47:11 62:22 69:17 70:15,16,19 71:22 72:8 85:6,16 89:16 138:9,10 158:5 164:5,7 170:23 171:2 178:3 question 12:20 17:23 19:15 20:10 21:11, 20 22:17,19 23:3,20 24:19 25:8,10,12,17, 19,20,21 26:9,15,16 29:5 33:1,10,19 35:15 39:3,9,19 40:21,22 41:24 42:1, 5 43:5 44:9,12,15, 17,18 48:13 50:6 53:24 54:19,24 55:12 56:3,22 57:16, 23 58:7,18,20,23 59:3,5,6 62:11 63:5, 23 64:18,24 65:2,10, 11 66:1 67:15,22 68:4,17 71:11 74:7,9 76:3 80:2 81:5,24 86:7 87:21 90:18 93:15,17 94:2,5,7 95:14 96:23 98:1,2, 8,25 99:5,17 101:10, 11,18 102:7,17,19,
--	--	--	--

21,22,23,24 103:4,5, 8,10 104:13,14 106:3,15,16 107:12, 24 108:1,3,7,9,11,15 109:1,5,6 110:10,15, 18,22 111:18,23,24 112:5 113:10,12 114:2,15 115:14,16 116:12,18 117:16 118:19,23 119:2,4, 11,13,17 120:1,18, 22 121:2,22 123:8, 10 124:19 130:12 131:6,24,25 133:8 134:4,5,15 135:11, 13,15,17,21,23,25 136:3,5,13,15,17,20, 22 137:5,25 142:8 143:5 144:2,15 145:10,14 146:14 147:9 148:12 151:5 152:19 153:1,3,5,11, 13,17,19,21,22,23, 24,25 154:2,3,4,5,6, 8,9,10,11,12,13 160:4 163:12 166:9, 10 167:23 168:18 179:2 180:3,21 182:18 183:20 188:14,19 189:3,16	109:3 165:11 186:4 quotation 66:24 67:11,17 94:9 quote 94:17,23 95:4 quoted 93:24 quoting 148:5 R radio 173:20 raise 5:8 range 33:4 rate 12:3 re-ask 12:18 81:5 93:15,17 146:1 163:14 re-read 51:8 read 60:1 69:23 93:11,12,19 108:16 111:4 118:17 119:13 120:13 127:25 129:16 144:10,12 191:16 reading 20:23 21:3 23:15 61:16 128:7 138:6,23,25 reads 37:12 47:19 52:2 69:6 76:12 129:24 157:17 177:2 ready 172:8 176:2 real 123:18 realize 27:2 realized 104:22 168:3 realizing 111:4 really 10:25 60:1 114:15 149:12 152:2,10 170:22 171:1 182:4 183:12	187:16,22 189:6 reason 5:21 43:19 45:5,6,14 71:15 122:21 174:1,3 reasonable 98:22 150:9 reasons 150:6,24 151:25 recall 8:23 10:7 11:25 12:1 14:25 31:21 38:10,11 40:20 46:10 49:4 50:6 73:15,18 84:22 88:15,16,18 124:1 161:24 167:13,14 186:12,15 189:18 190:2 recalling 40:20 received 50:10 receives 45:24 60:18 61:19 70:14 72:23 receiving 44:22 45:3 46:3 72:3 recess 37:6 59:9 91:10 117:19 154:22 171:12 191:3,13 recites 137:13 138:13 139:9 143:22 144:17 recognize 6:23 7:24 17:12 176:4,7,20 recognized 185:5 recognizing 185:3 recollection 167:21 record 5:19 37:5 59:10 91:6,9 92:23 154:21,23 171:6,14 176:6 190:25 191:5, 11 recording 94:25 95:1	red 108:21 111:21 165:3 reduce 163:18 refer 7:12 21:15 24:19 25:18,21 26:15 35:12,21,23 36:1 42:1,15 44:17 56:9 58:17,22 59:2 64:25 65:9 102:18, 22 112:6 122:8 124:9 135:12,16 136:4,14,22 148:7, 18 151:5,10,16 152:19 153:2,11,18, 23 154:2,9 reference 17:13 22:21,23 24:14 29:10,13 57:10,11 60:9 73:22 95:23 96:9 97:1,20 99:9 100:3 118:20 119:19 131:15 132:8 173:8 175:10 183:11 186:17,19,20,21 190:5 referenced 33:9 61:1 109:11 189:13 references 8:5,7,10 20:2 23:13 24:4 25:5 26:25 29:2,22 30:3 32:4,18 42:25 54:21 55:8,22 56:18,23 57:2 58:1,8,12 64:6, 9,15 65:15,20 67:14, 22 78:21 80:17,23 81:10 82:4,12 90:6, 11 141:21 146:16 150:3,12 164:1 174:25 175:12,18 178:18,21,23 179:11 181:4 183:7,16,17 190:1 referencing 119:5
--	---	--	---

referred 8:5 30:15 36:17 37:22 40:21 112:6 118:24 119:4 169:9 188:20	reliable 170:13,19	60:4,8,11,19,23	107:7,18,19 108:4,
referring 8:7 21:16 30:17 41:21 42:9 57:8 61:2 67:3,18 70:8 73:22 103:7 105:4,7 107:16,19 128:20 135:22 137:4 157:4,12 179:7 183:12 186:16	relieve 158:19	61:1,2,9,15,20 69:1, 21 70:14,18 71:5,9, 13 72:6,25 73:7,9, 11,17,22 74:13,20, 25 75:1,10 76:1,9,16 77:1,4,6,8,13 128:17,22,25 129:10 130:3,8,17 131:10, 21 132:2,16,24 133:13,22 134:10, 12,19 135:9 136:11 137:18 138:3,9 177:16 178:10	22 109:12,16,19,21, 25 110:23 111:2,3,5, 6,9,11,16,21 112:4, 7,19,21 113:4,5,7, 12,24 114:4,18 115:6 116:3,15 117:2,5 118:13,21, 24,25 119:6,10 128:16 156:7,10
refers 121:25 139:19 140:1 148:7,22 155:19 157:20 183:11	relying 96:12 97:21 175:13 179:13	remember 10:15 25:11 63:14 73:19 186:18	requests 43:2,23 47:11 56:6 71:1 75:5,9,14 78:6,16
refresh 67:21 167:20 189:25	render 140:18	rendered 65:24 145:17	require 85:16 88:14 137:17 138:2 147:2
refusing 102:24 103:4 136:17,25 153:13,19	rendering 145:16	requesting 73:7 98:18	required 35:16 39:12, 20 53:15 73:1 74:21
regarding 11:6 15:21 56:25 58:13 88:10 134:23 142:23	reordering 170:12,18	requestor 27:24 28:16,17,21 29:3,18, 22 30:7,12,16 31:1, 6,9,16,19,23 32:4,9, 15,18,24 38:8,18,23 39:5,13,18 40:1,4 41:12,21 42:7,16,20, 25 43:3,6,18 45:11 46:16 47:12,20,25 48:7,10,21 50:4,15 51:1,10,18 53:2,21 54:3 55:3,6,9,16,24 56:5,13,19 57:19 58:2,14 60:3,17,22 61:3,7,10,18 63:1,9 64:1,20 65:3 70:1,4, 13,17,25 71:6 72:5 73:9,16,23 77:2,7, 18,21,24 78:3 79:1, 7,12,18 80:5,21 81:9,21 82:2 84:20 85:1 86:3,12,25 88:10 93:8 95:9,16, 24 96:6,18,24 97:15 98:4,18 99:2,7,11,20 100:13 101:4,13 102:4,13 103:1 104:10,16 105:1,2,8, 9 106:10,18,20	requirement 109:13 121:7 123:19
register 71:9,13 75:10	reorientate 51:8 172:6		requires 140:14 141:2,16,23
registered 69:1,9,21 74:13 76:16	repeat 25:10 43:5 44:8 53:24 63:23 68:4 71:11 74:9 81:24 86:6 114:2 123:8,10 130:11 145:14 182:18 188:14		requiring 66:20
registration 70:1,5	repeatedly 110:25 111:13		research 186:8
relate 113:12	reply 142:1,3		reserve 52:4,19 72:8 127:7,14 138:10 191:16
related 12:25 23:10 55:5 57:4 112:18 185:13 186:21	represent 9:19 83:6 92:24		reserving 70:19 139:2
relates 69:13 98:15	represents 82:23		resource 19:12,20 20:8 22:3 87:12 96:15 97:2,9,23 104:2,21,23 105:4,5 108:21,23 109:7,9, 22,24 110:25 111:12,13,20,24 112:2,14,25 113:2,4, 8 119:2,8 120:10 122:11 124:15,19, 20,23 125:1
relating 186:13	reproduce 95:4		resources 98:21 127:8,14 162:1
relevance 144:1 189:23	reproduced 103:20 104:7 105:7 108:20		
relevant 134:25 145:5 184:18	request 49:13 51:14, 19,22 52:4,11,13,19, 21 53:1,3,8,12,15, 19,21 54:3,7,10,13, 16 55:2,16 56:13 57:18 58:15 59:22		

165:7,10,11 187:6	105:10,21,23,25		103:23 105:13
respect 21:21 24:22	106:23 107:4 108:17	S	139:5,6 176:10
46:21 176:21	111:19 112:19		searchable 63:20
Respectfully 179:2	113:10 117:21	sake 141:16	second 7:13 9:14,15,
respectively 83:21	118:10 120:4,8	Samsung 9:17 11:13,	16,21,24 10:5,21
180:10,23	125:14,16,19 127:19	17 190:14,15	11:4,21 12:2,5,10
responded 162:15	129:16 136:7 139:9	satisfies 100:24	13:23 15:8 16:3,6,
responding 66:5,7	147:16 153:25 155:4	satisfy 64:14,15	15,20 17:16,19
118:23	158:14 160:24	65:20 78:21 134:1	20:12 21:14 24:2
response 106:14	161:14 162:18,22	135:2 140:21 143:14	25:3 26:23 27:9 29:7
rest 99:12	171:5,11,13,23	146:24	30:20,23 33:14,17
retained 11:20	172:11,17 174:11,14	saves 166:23	41:18 42:11 46:7,14
return 76:11	175:25 176:15 177:1	saying 17:3 18:20	61:23 66:13,15
reused 127:23 130:3,	184:13 185:14	19:7,16 31:11,14	67:12 80:11 81:1,7
9,17 131:11,22	191:4,16	40:22 48:21 53:16	91:1 92:9,14 93:6
132:3,25 133:22	role 19:12,20 20:8	81:12,14 101:12	101:19 103:12,15
134:20	22:3 38:20 50:9	110:25 111:13 112:2	105:13 110:2 112:12
review 6:16 57:13	55:10 62:20 88:24	134:10 167:1 169:15	119:16,19,22 127:16
110:13	roles 50:2 78:4,8	175:8 179:10	145:20 147:13,14
reviewed 8:4 10:2	room 6:5 165:9	says 11:12 14:12	155:5,7 157:16,19
29:10 57:10,11,15	rough 167:6 191:22	16:9 20:20 37:22	160:21 161:11
94:6 110:7 162:15	roughly 8:25 167:14	40:19,20 48:3 51:21,	162:15,22 163:3
175:21	172:20	24 52:16,20,25 53:6	167:16 168:19
reviewing 21:17,22	route 186:23	54:6,12 59:20 60:24	169:24 170:7 172:5
22:25 23:7,23 24:6,	routed 188:5	68:10 83:19 94:15,	173:10 174:8 175:22
14 25:25 26:5,10,20	router 127:9 188:13	17 126:14 127:5,15	179:3,9 184:14
30:5 57:17 77:12	routers 122:4 125:21	128:1 129:13 139:17	section 12:5,10,24
87:20,24,25	126:1 187:19 188:4,	148:15 159:1 161:12	92:8,14 125:17
revise 112:9	20	172:16,21 173:4	126:5,19 157:12
right 5:8 6:4 7:1 14:7	routes 182:2 187:7,9	scale 187:16	see 5:18 11:12,15,16
16:4,9 17:2 18:10,15	routing 121:24 122:9,	scenario 46:4 75:5,7,	13:15,21,22 14:3,4
20:19 21:17,20 23:1	14,20 187:11	19 85:11	17:2,24,25 18:5,6,
26:2 27:12 34:10	ruling 14:23 15:20	school 66:2 182:24	11,12,24 19:1 27:19,
41:4 47:19 52:17	run 159:11,23,24	184:3	20,25 28:1,13 31:3,4
57:10 58:8 59:20	running 27:16 28:12	scope 23:9,25 24:17	33:22 34:6,7,19,20
62:1 68:10 78:24	34:2,8 159:8,16	26:13,22 82:24	37:12,17,18 42:12,
80:2,15 83:12 84:1,	runs 28:23	140:16 141:25 142:6	18,19 47:19,23
7,18 90:3 91:8 92:12		143:25 144:4,22	49:16 51:9,15,16
93:5 103:16,19		147:5 149:25 150:21	52:2,8,9 54:20
		scroll 7:1 17:22 40:24	59:23,24 60:5,6,20
		49:7 51:25 59:25	63:16 66:22,25
			68:15,16 69:4,5,11
			73:4,5,13 74:17
			76:18,19 77:20,22

80:24,25 82:16 83:14,16 84:1,3 85:25 94:1,8,10 103:19 104:3 105:16,17,25 106:3, 13,15,16 107:4,10, 11,24 108:1,7 118:5, 8,9 119:19 120:4,7 121:14 124:22 125:16,18,23 126:8, 20,25 127:11 128:10,18 129:13,22 130:5 137:15,16 139:13 143:19,21 144:1,23 147:17,18, 24,25 148:20 149:14 150:25 152:2 154:20 155:14 156:11,16 157:16,22,23 158:21,22 159:13, 14,15 160:12,13 161:3,18,19 163:1 169:2 170:3,15 171:23,25 172:21, 22,25 174:21 175:2 177:1,7,8,17 181:13, 14 184:18 190:16,17 seeing 111:22 selection 72:24 send 43:20 77:13 sending 48:17 50:2 73:7 sends 72:25 sense 11:1 104:15 109:6 110:23 114:16 122:11,13,16 125:1, 3,6 131:18 152:7 164:19 sent 49:18 75:6 78:6 sentence 13:23 17:21,24 18:17 20:13 21:13,15,18	27:13,21 28:10 30:23 33:22 34:9,12, 17 37:12,22 42:19 47:19 48:23 51:9,21 52:2 53:10 60:24 61:21 66:15 69:6 73:5 74:23 76:12,19, 20,25 80:16 82:6 93:6,19,24 94:8,15, 16 107:4,11 120:5,7, 8 126:3,4,12 127:5, 6,15,19 128:7,10,21 129:18,21,24 138:21 147:16,18 148:5,15, 18 155:7 156:5,11 157:16 159:1,6 160:13,24 161:14 162:22 168:22 169:23,25 170:10 174:14 177:1,9 181:7,9 sentences 30:23 separate 15:20 16:1 24:7 25:6 27:24 28:5,6,8,9,16,18,22 29:4,19,23 30:7,13, 17,18 31:16 32:15, 19 34:3,22,23,24 96:24 97:16 98:4 102:4 169:6,7 separately 78:4 server 18:4,15,18,19, 20 19:3,8,16,23 20:5,18,25 21:8 22:6 23:1,8,24 24:15 25:1,15 26:1,4,12,21 34:2,5,8,18 167:13, 24 168:3 serves 55:10 service 41:25 43:2,9, 11,23 44:2 45:4,9 47:11 62:22 69:17 70:15,16,19 71:22	72:8 85:16 89:16 98:21 138:9,11 158:5 164:6,7 170:23 171:2 178:4 service-based 85:6 services 98:21 125:21,22 126:1,2 session 92:2 set 33:12 39:4 75:7 122:3,9 134:23 139:12,17,19 140:1, 5,13 141:1 142:11, 23 143:6,20,22,23 144:18,19 145:3 146:19 174:2 sets 140:23 seven 13:7 shed 99:13 short 37:4 59:8 91:6 117:17 showing 47:7 68:2 74:7 82:18 83:8 shown 29:18 36:24 43:15 44:2,5,12 45:15 47:3 68:12 86:13 87:16 89:25 109:25 111:11 122:22 shows 70:13 93:7 104:10 116:2 155:11 shrinking 168:5 shrunk 168:5 sic 80:7 sic] 167:7 side 85:11 sign 191:16 signal 127:23 128:4	signals 164:20,23 166:2 signature 7:7 significantly 161:16, 25 162:7 silicon 79:20 similar 10:17 124:22 125:8 similarly 157:18 simple 103:9 simpler 159:24 simplex 149:7 150:14 152:7 174:4 simplify 159:21 simply 32:5 43:19 47:7 54:12 96:12 97:4,7,21 99:11 100:7 101:23 144:15 164:24 166:10 184:10 simultaneous 15:3 173:3 simultaneously 174:2 single 20:4 114:14 120:11,16 149:4,10, 24 150:20 151:4,8, 14,21 152:15,23 153:7,15 168:12 Sir 103:9 153:5 sit 92:21 sits 124:21 125:6 sitting 63:7 124:24 situation 150:4 situations 151:25 six 12:6 129:20 size 160:9,15,16
--	---	---	---

162:25 163:4,9,17 165:4 168:4 sizes 162:5 skill 22:20 23:6,14,22 24:5,13,25 25:14,24 26:10,19 27:1 29:16 30:5 31:18 32:8 34:13 37:25 57:7 62:13 63:11 64:2 76:23,24 77:24 78:11 79:16 83:3 85:1 86:2,11 89:22 90:15 116:4 117:1 118:15 119:15 122:18 124:3 128:2 131:14 132:21 133:18,20 134:16, 18,21 138:7 139:1, 18 149:2,5,9,13 150:8 157:1 159:3 167:12 173:6 175:17 skilled 26:5 77:12 90:12,19 167:23 188:23 skip 106:5 160:20 slots 127:9 small 94:14 164:13 165:13 168:12 smaller 160:15 165:2 Soc 170:1 184:21 Socs 162:24 163:4 software 27:16 28:12, 23,25 31:2,7,10,13, 20,24 32:5,9,13 sold 189:19 solely 36:11 solid 78:18 solution 98:19 some- 104:14	somewhat 103:6 sorry 8:19 9:17 25:10 54:18 68:4 70:11 71:25 79:21 80:8 84:9 86:24 93:16 99:24 100:5 104:16, 21 112:25 114:2 115:15,24 125:12 130:11 137:24 140:17 165:6 169:11 172:4 173:12 190:9 sort 141:9 sound 101:19 sounded 173:13 sounds 66:1 91:7 92:20,22 142:25 source 18:3,10 20:17, 24 22:7 23:1 25:25 26:6,11 27:15 28:11 34:10 41:7,11 43:21 44:1,3 45:24 46:8 47:8 48:4,7 52:6 60:19 61:4,8,20 62:4,17,20,22,23 68:14,24 69:8,20 70:12 71:2,4,9,13, 21,22,25 72:12,23, 24 73:3,6,10,12,24 75:10 76:14 85:19 88:22 89:2,15 155:23 156:7 157:19 158:7 167:11 174:19 177:4,12,25 178:6,8 179:4,13 180:5,18 181:2,11,22,24 182:3,10,16,21 183:9,11,12,17,25 space 163:21 164:13 166:24 speak 11:5 155:2 171:18 speaking 8:25 140:5	142:5 spec 69:24 specialized 35:14 specific 13:25 35:10 50:2 53:9 57:8 64:18 65:16 66:20 71:5 75:6 85:9 98:1 114:17 120:21 121:4 179:6 180:4 specifically 99:18 115:25 118:12 122:8 123:10 185:3 190:4 specification 36:23 69:15 70:7,24 78:2, 14 138:25 specified 50:18 specifies 83:1 specify 111:1 118:20 speculative 185:6,12 spell 36:20 spells 164:8 spend 10:5 63:4 spent 10:11,19,21 11:1 square 162:25 163:10,17 164:17 165:17 166:12 squeezing 165:13 stack 38:18,20 39:12, 16,25 40:5,11 41:2, 5,9,22 44:23 45:16, 25 46:17,22,24 49:19 50:8 62:19 129:5 158:18 159:8, 12,16,22 stand-alone 21:8 standard 37:14 40:12,17 49:12	Standards 172:15 standpoint 152:8 start 13:12 79:6 82:12 121:3 146:4 160:6 172:2 started 109:2 185:9, 22 starting 37:9 68:23 75:18 76:13 83:18 92:9 107:24 108:2, 16 110:3 118:5 119:2 139:9 144:16 158:14 starts 17:22 20:13 33:22 120:5 126:20 128:11 129:21 147:16 159:6 state 5:5,7,19 14:9,14 30:24 103:24 133:15 stated 11:23 15:13,19 18:13 40:22 45:7 55:19 133:1,17 181:9 statement 31:8 169:4,18 170:5 182:14,19 183:21 states 49:11 51:9 60:15 68:22 72:22 125:19 126:4 174:24 177:10 station 18:3,10 20:17, 24 22:7 23:1 26:1,6, 11 27:15 28:11 34:10 41:4,7,11 43:14,16,17,22 44:3, 5,13,21 45:2,6,9,17, 23,24 46:8,21 47:1, 3,8,9,10 48:5,8 52:6, 7 60:16,19 61:4,8, 10,13,20 62:4,17,18, 20,23 68:24 69:2,9,
--	--	--	--

20,22 70:12 71:2,4, 9,10,13,14,21,23,25 72:1,12,13,23,24 73:3,6,10,12,24 74:13 75:10 76:14 85:19 88:23 89:3,15 167:11 174:19 177:5,12 178:1,6,9 179:4,14 180:5,18 181:2,11,22,24 182:3,10,17,21 183:9,11,13,18 184:1	58:4 72:15 86:9 89:21 96:3 107:25 108:10 110:11,15 116:9 129:18 133:5 134:5 142:21 145:15 146:4 147:10 148:9 150:15 152:11 160:1 166:6 167:5 168:15 174:5 178:24 181:16	surface 121:4 surprised 149:14 switch 187:8,10,11 switched 109:8 switches 122:3,10,24 187:15,20,25 sworn 5:13 symmetrical 89:1 symmetrically 45:8 system 20:4 21:7 22:12 23:16 24:9 25:7 27:5 33:2,11 36:6,9,11,13 93:10 120:19 122:2 123:1 168:7 systems 36:15 98:12 165:6 166:1 185:7, 13,21 188:7	talking 7:11 15:3 76:25 79:4,23 90:1 104:2 108:13 109:7 112:25 119:1 121:3, 6 145:19 157:11 159:18 164:4,20 169:16 189:23 talks 78:15 137:21 157:4 182:3 target 41:4,7 43:14, 15,17,21,22 44:5,13, 21 45:2,6,9,13,17,23 46:21 47:1,3,9,10 52:7 62:18,20,22 71:23,25 72:1,12 73:3 88:25 89:3 155:23 157:19 158:7 178:1 TCPIP 159:23 teach 80:19 132:9 teaches 37:19 40:9, 11 47:25 51:17,18 52:10 53:14 54:9 55:15 56:4 158:23 teaching 58:13 teachings 20:1 21:4 22:10 23:11 24:3 25:4 26:24 28:19 29:8,21 30:1 32:3,16 36:14 42:24 55:7,20 56:17 57:1,25 58:11 64:5,13 65:14,19 78:19 86:22 88:9 95:22 96:12 97:4,7, 21 99:6,15 101:15 117:6 131:15 132:8 133:2,24 135:1 140:20 146:11,12, 23,24 164:15 166:17 175:9 180:12 181:1, 5 182:12 183:6,15 184:10
stations 37:14 40:12, 17 71:18 89:2 157:19 177:25 staying 160:19 165:1 stenographer 5:4 12:16 13:11 15:4 81:4 116:17 117:15 132:19 191:17,21,24 step 75:21,22,24 steps 49:25 72:18 stick 52:24 stop 91:3 storage 85:15 straightforward 162:8 163:24 164:11,14 stream 44:22 46:3 52:5 72:3 73:2 74:21 155:21 156:1,3,8,20, 25 157:5 158:2,4 streams 155:20 156:9,15,18,23 157:9,21,25 strictly 140:5 strike 20:10,22 21:11 22:17 23:20 24:10, 23 27:6 40:10 51:17	structured 96:23 studying 63:7 submitted 6:20 66:3 subsequent 103:25 substance 8:15 9:5 11:6 59:12 154:25 171:16 subsystem 83:7 subtleties 182:25 subtly 124:7 success 98:23 successfully 40:2 46:1 87:12 suffices 147:10 suggest 27:14 77:23 78:11 suggesting 31:9 53:16 suggests 52:23 supplied 69:3 support 90:8 supports 155:11 156:22 supposed 142:2 sure 28:3 43:6 44:11 54:2 86:9 93:18 94:1 96:2 123:16,21 130:14 163:14 172:7	surface 121:4 surprised 149:14 switch 187:8,10,11 switched 109:8 switches 122:3,10,24 187:15,20,25 sworn 5:13 symmetrical 89:1 symmetrically 45:8 system 20:4 21:7 22:12 23:16 24:9 25:7 27:5 33:2,11 36:6,9,11,13 93:10 120:19 122:2 123:1 168:7 systems 36:15 98:12 165:6 166:1 185:7, 13,21 188:7 T tables 127:10 take 8:8 22:19 37:4 54:19 59:7 63:16 91:4,6 117:6,17 124:13 127:22 128:4 154:15,19 163:8,15 164:13 166:17 174:17 188:8 191:9, 19 taken 15:22 talk 9:14 72:18 78:24 91:6 98:11 105:2 115:10,12 140:7 165:3,8 190:6 talked 62:1 70:22 73:15 84:18 104:24 123:25 129:4 167:11 179:8 181:23	talking 7:11 15:3 76:25 79:4,23 90:1 104:2 108:13 109:7 112:25 119:1 121:3, 6 145:19 157:11 159:18 164:4,20 169:16 189:23 talks 78:15 137:21 157:4 182:3 target 41:4,7 43:14, 15,17,21,22 44:5,13, 21 45:2,6,9,13,17,23 46:21 47:1,3,9,10 52:7 62:18,20,22 71:23,25 72:1,12 73:3 88:25 89:3 155:23 157:19 158:7 178:1 TCPIP 159:23 teach 80:19 132:9 teaches 37:19 40:9, 11 47:25 51:17,18 52:10 53:14 54:9 55:15 56:4 158:23 teaching 58:13 teachings 20:1 21:4 22:10 23:11 24:3 25:4 26:24 28:19 29:8,21 30:1 32:3,16 36:14 42:24 55:7,20 56:17 57:1,25 58:11 64:5,13 65:14,19 78:19 86:22 88:9 95:22 96:12 97:4,7, 21 99:6,15 101:15 117:6 131:15 132:8 133:2,24 135:1 140:20 146:11,12, 23,24 164:15 166:17 175:9 180:12 181:1, 5 182:12 183:6,15 184:10

technical 111:23 123:15 152:8 173:7, 9 technicality 90:22 technically 132:14 133:11 149:22 150:18 151:2,7,20 152:14,22 153:6,14 techniques 165:24 technologies 184:22 technology 36:13 166:4 168:3,8 188:24 189:6,14 190:6 tell 9:6 116:14 145:9 tens 54:20 term 14:1 35:12,21,22 39:2 45:20 90:23 104:9,10 112:21,22 116:21 118:21,24 121:22 124:9 141:1 148:3 156:1 157:4 161:23 172:24 173:1 187:2 189:5 terminated 11:18 terminology 71:19 terms 10:10 170:18 172:15 173:7,9 189:7 terrible 150:7,24 152:1,10 testified 5:14 88:13 92:15 93:7 112:17 testifying 186:13 testimony 5:22 15:18 30:8 56:11,14,16 59:13 88:19 92:6,16 93:2,23 94:3,12 103:25 104:6,9	105:6 110:3,16,17 112:10 117:13 151:12,15 155:1 171:17 text 9:19,21,24 63:20 71:3 77:21 82:25 103:23 138:20 thank 5:21 148:17 167:22 171:11 186:18 191:6,9,14, 23 theoretically 149:17 thepdf 61:24 thing 72:6 90:25 96:25 124:18 125:5 178:9,13,16,21 182:11,12,24 187:13 things 18:21 28:5,9 35:13 39:25 45:8,22 47:7 66:5 75:19 121:23 122:6 123:2 124:9,10,12 143:3 162:4,5,8,9 163:21, 23 164:24 165:21 166:24 168:4,11,13 171:3 173:18 180:13 182:2,9,25 183:8 185:5,20 187:15 188:8 190:6 think 18:17,18 33:1, 24 41:25 51:22 66:6 73:13 74:6 89:6 90:23 96:22 97:12 99:5 107:15 109:15 111:18 121:17 122:17 123:22 124:20 128:6,12 129:23 131:19 133:15 135:11 142:1 147:10 148:4 150:25 151:19 152:2 155:21 157:7 166:13 180:8, 16 182:23 186:23	thinking 12:19 111:22 186:3 third 17:21 20:13 128:10 155:7 167:20 172:20 thought 104:18,22 105:2 119:1,7 132:7 185:25 three 8:22,24 9:4,7 12:6 84:4,15,25 86:13 105:25 118:5 129:19 135:12 time 10:11,17,20 11:1,2,24 14:24 25:22 26:18 63:4,16 114:8 151:18 166:5 169:10,14 185:11,23 189:20 190:14,19 191:6,8,15 time-related 170:12, 18 times 8:20,22 26:15 57:23 101:8 102:18 103:5,7,8 104:11 133:16 135:12,16,22 136:4,14,21 137:4 153:2,21 154:6 184:2,8 today 5:22 6:6,14 7:10 63:7 70:22 95:11 112:11 117:13 145:4 181:23 191:7, 15 today's 5:25 8:3,13, 21 66:10 93:3 185:21 Todd 5:11,20 top 10:7 11:12 41:4 75:16 105:23 118:1 157:16 186:10 189:16	topic 37:3 119:21 140:18 188:1 total 9:3 Towles 186:16,19 187:3 track 72:10 74:6 93:16 137:24 tracking 178:3 traditional 161:1,6 163:8 164:16 168:24 169:12 188:9 traditionally 165:17 188:7 transcript 93:21 94:4, 6,18 95:1,2 103:21 104:21 105:15 106:6 107:14 108:16 110:5,8,14 117:23 118:4 119:17 191:18 transferring 155:24 transistors 166:20 168:3 186:2 translate 162:4 164:14 translated 163:23 transmission 68:3,13 69:2,10 73:2 74:22 155:9,12,17,19 157:5 transmit 158:4 188:4, 21 transmitted 156:2 transport 37:13,19 38:1,17,20 39:11,16, 24 40:5,10,11,16 41:1,5,9,22 44:23 45:16,25 46:17,22, 24 49:12,19 50:1,8 62:19 125:22 126:1
---	--	---	--

129:5 transporting 158:7 tried 114:8 166:3 trivial 51:23 true 16:24 38:4,22 43:17 73:11 117:10 152:1 166:3 169:5 178:4,8 truthful 5:22 try 22:19 26:18 65:23 74:11 151:18 174:2 183:22 trying 25:23 49:1 72:2,17 88:8 95:3 104:5 143:16 145:16 167:2 180:17 185:25 188:15,16 Tuesday 5:1 92:1 turn 11:9 12:5 13:6 18:7 37:8 47:15 62:6,7 68:18 72:19 80:11 82:14 83:23 91:1 105:21 117:25 126:16 155:4 160:19 162:18 171:19 172:17 184:13 two 7:11 8:9 15:19 20:1 23:11 25:17 29:2 42:16 53:7,11, 17 55:20,22 58:10 64:4,8,14 65:20 66:11 78:15 80:3,4 90:2,6 94:9 96:17 97:14 98:3 99:19 102:3 111:5 129:19 137:12,17,20,23 138:2,5,8,13,19,20 139:16 140:2,21 141:11,15,16,23 147:2 148:23,25 158:11 159:7 160:19	174:1 178:21,22 181:4 183:7,16 184:21 185:5,6 two-dimensional 187:24 two-thirds 120:4 two-way 140:7 147:21 148:2,13,22, 25 type 32:23 33:2,3,6 120:15,19 188:11 types 187:15 188:8, 12 typically 39:7 139:22 140:3 149:6,12 typo 94:15,21 95:3 U Uh-huh 74:17 93:1 130:6 156:12 157:23 unbounded 33:12 unclear 75:13 145:23 174:17 underneath 104:7 understand 6:14 11:17 14:5 16:2 17:2 18:2,14 19:2 20:17, 24 21:6,16,22,25 22:5,11,21,22,25 23:7,15,23 24:6,14, 25 25:14,23,25 26:6, 10,20 27:17,22 28:7, 21 29:6,17 30:6,11 31:1,6,12,15,19 32:8 33:1,5,10,23 34:1,13 38:1,5 50:13 56:2,7, 23 57:14 58:7 62:13 64:17 76:3 77:13 85:25 88:8 89:6	90:24 94:2 96:2 99:1,16 100:17 104:5 114:9 118:24 120:9,22 127:21 128:2 129:3,8 138:7 139:1,18 143:5,16 145:16 153:24 154:5,11 157:7 167:24 173:7 175:20 180:3,16 183:19 184:20 188:15,17 understandable 7:12 understanding 11:19 14:8 15:20 21:17 30:16 57:3 58:9 62:25 66:12 80:18 83:4 97:13 138:23 142:14 145:11 159:3 understands 76:24 understood 29:13 44:4 46:20 48:10 61:9,15 63:24 73:13 88:3 105:6,12 108:9, 11 110:15 112:5 113:11,17 125:11 128:17,23,25 141:14,20 143:16 144:13 146:14 147:1 167:12 unfounded 165:14 unit 124:14 unpack 87:14 unreasonable 52:15 upper 18:11 use 36:2,5,7 39:2,7 45:4,13 66:24 124:8 128:15 149:4,10 168:8 174:4 188:4, 20 user 68:14 126:2	users 125:22 uses 90:23 156:14 157:3 usually 140:6 158:16, 24 163:23 utilized 60:10 77:6 utilizes 51:12,19 60:3 V various 146:9 182:3 vastly 168:6 verb 45:21 verify 92:21 version 41:20 84:2 188:10 video 155:24 158:6 view 17:6 41:15 VLSI 166:1,4 voltages 165:23 W walk 72:17 want 17:16,21 33:20 43:14 59:17 91:3,5 94:1 124:8,11,13 142:16 144:2,25 157:15 163:22 189:9 190:1,18 wanted 44:11 wants 88:22 89:15 Washington 5:7 wasn't 166:9 168:18 179:2 way 7:1 36:1,20 39:8 40:3 44:20 49:23
--	--	--	--

50:13 54:9,15,25 55:2 57:17 65:23 66:8 68:5 74:11 78:18 83:10 91:3 92:20 101:18 113:19 116:19 120:5,23 121:18 123:17,21,23 124:20 125:8 133:9 149:3,10 150:9 152:4 159:4 163:24 184:7 187:2,4 ways 33:12 51:1 182:3 we'll 20:12 27:7 33:14 127:16 137:7 146:4 154:19 191:10,12, 16,19 we're 6:8 7:10,11 21:4 79:23 82:7 86:18 97:12 98:1 113:8 137:12 139:5 154:16 164:4,20 169:16 180:16 189:23 we've 37:4 70:22,23 71:3 91:5 117:17 166:19 Welcome 92:5 117:21 well-known 47:22 51:12 166:4 went 8:4 wide 33:4 wires 122:3,9,24 165:2 166:2 174:2 186:24 187:24 withdraw 54:24 62:10 67:8 77:14 116:18 117:16 witness 5:12 9:24 10:14,24 14:18 15:5 16:19 18:17 19:5,10,	18,25 21:2,25 22:9 23:10 24:1,18 26:14, 23 30:10 32:1 35:3 39:2 41:18 44:8,15 45:20 46:12 48:13 49:22 50:18,24 53:6, 24 54:6,12,18 55:5, 19 56:16 57:22 58:17,22 59:2 63:13 64:24 65:13 67:21 74:6 75:4,13 76:3,23 78:2,14 81:12 82:25 85:4 86:6,17 88:18 91:7 96:9,22 97:19 98:8 99:23 100:17 101:11 102:7,17 110:22 113:14 130:11,19 131:4,13 132:6,21 133:15 134:14 135:15,21 136:3,13,20 137:3, 20 138:5 139:22 140:5,17 141:5 142:6,14 144:1,23 145:24 147:6 150:1, 22 151:24 152:18 153:1,10 154:17 171:10 173:15 175:7 177:22 179:18 187:22 189:2,13 191:8 word 21:2 39:8 52:22 69:15 122:7 126:20 147:17 word-for-word 14:25 wording 14:19 15:25 16:13,22 25:11 50:6 52:24 words 10:1 52:12,15, 18 60:25 61:22 74:24 93:24 94:5,13 117:11 122:2 126:3 138:16 144:16,23 148:5	work 52:10,12 78:5, 12 124:16 171:9 184:21 185:6,12 worked 188:3,9,18 working 77:3,8 184:25 185:9,22 186:9 187:10,13 workload 156:2 works 70:13,17 would've 79:11,16 80:4 88:2 102:12,25 117:1 135:7 136:8 173:6 wouldn't 35:25 39:7 49:22 147:3 wrap 171:8 write 9:15 writes 143:19 written 9:21 wrong 129:18 176:12 wrote 13:14,23 14:24 15:9,22 16:6 18:1 20:16 27:13,21 33:25 66:16 80:16 93:6 106:7 120:8 127:20 128:13 155:7 156:6,13 160:24 161:14 162:23 168:22 169:25 170:10 174:15,23 190:12	years 184:21 yellow 84:15 yup 128:6 Z Zoom 6:20 7:21 82:12 162:10 175:25 176:16 zooms 87:11
		Y yeah 60:1 68:5 74:11 93:16 108:15 123:12 126:12 152:4 162:2 166:14 167:6 186:8 188:15 191:19	