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1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3 - - - - -X
4 TWITCH INTERACTIVE, INC., :
5 Petitioner, : Case No. IPR2025-00307
Patent No. 9,729,658
6 v. :
Case No. IPR2025-00308
7 6 RAZDOG HOLDINGS LLC, : Patent No. 10,334,068
8 Patent Owner. :
9 - - - - -X
Friday, October 10, 2025
Washington, D.C.
Deposition of:
PAUL D. MARTIN, Ph.D.,
called for oral examination by counsel for the Patent Owner
RazDog Holdings, LLC, pursuant to notice, at the law offices
of Perkins Coie, LLP, 700 13th Street, Northwest, Suite 600,
Washington, D.C. 20005, before Christina S. Hotsko, RPR,
CRR, CA CSR, of Veritext Legal Solutions, a Notary Public in
and for the District of Columbia, beginning at 9:09 a.m.,
when were present on behalf of the respective parties:

Page 6 1 IPR proceedings? 2 A. I don't think so. I don't think in IPR. 3 Q. Okay. Well, it sounds like you're pretty 4 experienced, but just go over some ground rules 5 just to try to make this more efficient today. 6 One, we would ask that you give verbal 7 answers. The court reporter can't take down head 8 nods and things like that, so please give verbal 9 answers. 10 Do you understand? 11 A. Yes. 12 Q. Let's try to avoid talking over each 13 other. Please wait until I complete my question 14 before responding. 15 Do you understand? 16 A. Yes. 17 Q. Please let me know if you don't 18 understand a question or if you need me to 19 rephrase it. If you answer, we'll assume that 20 you understood the question. Is that okay? 21 A. Yes. 22 Q. And if you need to have a question	Page 8 1 Q. You understand that Twitch is the 2 petitioner in these proceedings? 3 A. I do. 4 Q. If we refer to RazDog, you understand 5 that that refers to RazDog Holdings LLC? 6 A. Yes. 7 Q. And you understand that RazDog is the 8 patent owner in these proceedings? 9 A. I do. 10 Q. If we refer to the '658 patent, do you 11 understand that that refers to U.S. patent number 12 9,729,658? 13 A. Yes. 14 Q. And if we refer to the '068 patent, do 15 you understand that that refers to U.S. patent 16 number 10,334,068? 17 A. Yes. 18 Q. Okay. Dr. Martin, what did you do to 19 prepare for today's deposition? 20 MR. CARTER: And I'll just caution the 21 witness not to disclose the substance of any 22 communications you may have had with attorneys.
Page 7 1 repeated, let me know. I'll repeat it or have 2 the court reporter read it back. Is that okay? 3 A. Yes. 4 Q. Okay. So -- objections. Counsel -- your 5 counsel may object to a question. 6 You understand that, even if Mr. Carter 7 objects, you have to respond to the question 8 unless he instructs you not to respond. Is that 9 okay? 10 A. Yes. 11 Q. And as far as breaks, let me know if you 12 need a break. If a question is pending, I would 13 just ask that we finish the question -- you 14 answer the question before we go off the record. 15 Is that okay? 16 A. Of course. 17 Q. Just go over a couple of abbreviations 18 just to hopefully streamline our discussions 19 today. 20 If we refer to Twitch, you understand 21 that that refers to Twitch Interactive, Inc.? 22 A. Yes.	Page 9 1 But other than that, you can answer the question. 2 THE WITNESS: Certainly. I reviewed my 3 report. I reviewed the materials cited therein. 4 I reviewed some filings in the case after my 5 report. I discussed -- I did -- I discussed 6 these materials with counsel. 7 BY MR. DEIGHAN: 8 Q. Okay. Did you meet with counsel? 9 A. Yes. 10 Q. How long? 11 A. Not exactly sure, but I met with them a 12 few times. 13 Q. Okay. Over the course of one day? Two 14 days? 15 A. There were three days during which I met 16 with counsel, but they were not full days. 17 Q. Okay. Was it just counsel that was 18 present? 19 A. Yes. 20 Q. Okay. 21 A. Well, myself. 22 Q. Sure.

3 (Pages 6 - 9)

Page 10 1 Have you spoken with anybody at Twitch in 2 preparation for your deposition? 3 A. I don't think so. 4 MR. DEIGHAN: All right. I'm going to 5 mark a couple of documents here. Mark these as 6 Exhibit 1. 7 (Martin Deposition Exhibit 1 marked for 8 identification and attached to the 9 transcript.) 10 MR. DEIGHAN: Mark these as Exhibit 2. 11 (Martin Deposition Exhibit 2 marked for 12 identification and attached to the 13 transcript.) 14 BY MR. DEIGHAN: 15 Q. Dr. Martin, I'm handing you two documents 16 that have been marked as Exhibits 1 and 2. 17 Have you seen these before? 18 A. Yes. 19 Q. Do you understand that these are 20 deposition notices? 21 A. I do. 22 Q. And you understand that you're here today	Page 12 1 declarations? 2 A. Yes. 3 Q. And what did you do to prepare your 4 declarations? 5 MR. CARTER: Here, again, I'll just 6 caution the witness not to disclose anything that 7 might be privileged. But other than that, you 8 can answer the question. 9 THE WITNESS: Of course, yes. I did many 10 things. Some of those things included searching 11 for prior art and also writing text for 12 declarations, analyzing prior art in reference -- 13 with respect to claims in these patents, reading 14 the patents, understanding the patents and so 15 forth. 16 BY MR. DEIGHAN: 17 Q. Did anyone assist you in preparing your 18 declaration? 19 A. I don't recall if I had anybody on my 20 team assist me in preparing the declaration. I 21 think not, but it's possible in some areas of the 22 background maybe.
Page 11 1 in relation to declarations that you submitted on 2 behalf of Twitch in inter partes review 3 proceedings? 4 A. Yes. 5 Q. Do you understand that IPR number 6 202500-307 involves the '658 patent? 7 A. Yes. 8 Q. And IPR number 202500-308 involves the 9 '068 patent? 10 A. Yes. 11 Q. And you understand that your deposition 12 today relates to both proceedings? 13 A. Yes. 14 Q. Okay. You can set those aside. 15 Dr. Martin, what was your assignment in 16 this case as an expert witness? 17 A. So I was, in general, assigned to review 18 both of these patents and to consider whether or 19 not they were valid, whether or not there was 20 prior art that would have anticipated or rendered 21 claims in them obvious. 22 Q. And was part of your assignment preparing	Page 13 1 Q. What information did you consider in 2 forming your opinions? 3 A. In forming my opinions, I considered a 4 lot of materials. First, I considered my 5 knowledge and expertise. I considered a broad 6 swath of materials that I came across during my 7 research. But then in -- I especially considered 8 the materials that I cited in my report in the 9 materials considered list. 10 I considered the patents. I considered 11 the prior art materials that I cited, and I 12 considered other materials that I cited. 13 Q. Okay. In your report you said you 14 considered all of the relevant prior art. 15 What do you mean by all the relevant 16 prior art? Is that the documents that are cited, 17 or did you consider materials beyond that? 18 A. Let me see what I wrote and I can maybe 19 help you. 20 Q. All right. I'll hand you what has been 21 previously marked as Exhibit 1002. And this is 22 in the 307 IPR.

4 (Pages 10 - 13)

Page 14 1 A. Thank you. 2 Q. I'm also handing you what has been 3 previously marked as Exhibit 1002 in the 308 IPR 4 just in case you need it. 5 MR. CARTER: It should all be the same, 6 just -- 7 MR. DEIGHAN: I was going to ask that. 8 MR. CARTER: Yeah. It's -- 9 THE WITNESS: I was going to say, I don't 10 need three copies. Do I just keep one? 11 MR. CARTER: Sure. 12 MR. DEIGHAN: And I'll give you one just 13 in case... 14 BY MR. DEIGHAN: 15 Q. And I think that's in paragraph 36. 16 A. Okay. Thank you. 17 I'm sorry. Just to be clear, these are 18 two copies of the same thing, but they're from 19 different IPRs. So -- you gave me two copies. 20 Is that why? 21 Q. Yes. Yes. 22 A. Uh-huh. Yes. So in preparing this	Page 16 1 cited I relied upon in particular for forming the 2 opinions. 3 Q. So you said you -- you reviewed other 4 materials that you didn't cite. 5 Do you remember what those were? 6 A. No, but, of course, when researching 7 things for any case, you're going to research 8 things. You're going look at materials and 9 review them. So I did that. 10 Q. Okay. But you did consider materials in 11 forming your opinions that are not cited in your 12 declaration. 13 A. Anything that I considered that didn't 14 get cited would be -- fall under paragraph 37. 15 That would be my academic and professional 16 experience. It would have become a part of that. 17 Q. Okay. 18 A. Yeah. 19 Q. Do you have any changes or additions that 20 you would want to make to your report? 21 A. Not at this time, no. Not that I know 22 of.
Page 15 1 declaration and forming my opinions, I considered 2 all the exhibits cited in the declaration, my 3 experience and expertise, each of the challenged 4 patents, their file histories, all the relevant 5 prior art. 6 Sorry. Can I also ask you for my 7 materials considered list? 8 Q. I actually didn't see a materials 9 considered list. 10 A. Oh, I see. I just put it here 11 (indicating). Sure. 12 But regardless, yes, so I considered the 13 materials that I cited in here. 14 I also reviewed other materials that I 15 did not cite and that -- you know, everything 16 that I've seen and am familiar with through my 17 experience and expertise is, of course, going to 18 be in my head. 19 That's why I said I relied on my academic 20 and professional experience. That sort of 21 encompasses all of that. 22 And then, of course, the things that I	Page 17 1 Q. Do you have any other opinions relating 2 to this case that aren't in your report? 3 A. Not at this time. Not that I know of. 4 Q. Okay. Anything that you disagreed with 5 in your report? 6 A. No. 7 Q. Do you have plans to offer any other 8 opinions in this case beyond what's written in 9 your report? 10 A. I do not know if I will offer other 11 opinions or not. 12 Q. Okay. You can probably set that aside 13 before we kind of dive into your report in 14 detail. 15 A. Okay. 16 Q. Kind of start off at a high level here. 17 Are you familiar with cloud computing? 18 A. Generally? Yes. 19 Q. What is cloud computing, generally? 20 A. Let's see if I have any definitions in 21 here real quick. Just because every term has a 22 context in cases. So...

5 (Pages 14 - 17)

Page 18 1 Is there a part of my report where I 2 describe or define cloud computing or anything 3 like that? 4 Q. It's your report. 5 A. Sure. In, like, paragraph 88, for 6 instance, I say that cloud applications are 7 software that -- programs that run on remote 8 servers rather than on users' local devices. And 9 that's generally an aspect of cloud computing. 10 It's not the only aspect but, you know, to answer 11 your question generally, it encompasses that. 12 Q. What's the difference between a cloud 13 application and a local application? 14 MR. CARTER: Objection. Form. 15 MR. DEIGHAN: I'll rephrase. 16 BY MR. DEIGHAN: 17 Q. Are you familiar with local applications? 18 A. Generally, yes, though I will warn you 19 that, because we're in IPR world -- right? -- all 20 terms are kind of context-dependent based on how 21 they're used in IPRs. 22 So outside of the case, I am familiar	Page 20 1 A. Yes. 2 Q. Do you agree with that? 3 A. Yes, I agree with that. 4 Q. All right. And then in paragraph 88 you 5 say cloud applications "are software programs 6 that run on remote servers rather than on users' 7 local devices"; is that right? 8 A. That's right, either in whole or in part. 9 So part of it can run on a local device and part 10 on the remote device. 11 Q. Okay. And in that same paragraph you 12 say, users can interact with cloud applications 13 via a web page or other dedicated client 14 interfaces -- 15 A. Yes. 16 Q. -- is that right? 17 A. Yup. 18 Q. So cloud applications run on remote 19 servers? 20 A. At least in part, that is true. 21 Q. And so in that context, what is a remote 22 server?
Page 19 1 with that term. Inside of the case, I am also 2 familiar with the concept of local applications. 3 Q. Okay. And what would you say is the 4 difference between a cloud application and a 5 local application? 6 A. Let's see if I considered that. 7 Yeah, so I don't offer any opinions on 8 the boundaries between the two, and there could 9 be some overlap, but a cloud application will 10 offload some of the computing storage and 11 processing work in the cloud. 12 I don't want to get too specific because 13 there is a fuzzy line between them sometimes, 14 depending on the context. But at the very least, 15 a cloud application has some cloud components 16 where you can offload computing, storage, 17 processing work and other features to the cloud. 18 That's a feature of cloud applications. 19 Q. Okay. So in paragraph 91 you said local 20 applications usually include all application 21 components, such as network servers and operating 22 systems installed on-premise on users' devices.	Page 21 1 A. Sure. So I haven't, you know, considered 2 the boundaries of the term "remote server," but 3 generally speaking, it's a computer other than 4 the user's local device. 5 Q. So with respect to a cloud application, 6 rather than installing the application locally, 7 the application runs on the remote server? 8 A. Part of it at least. It could be part or 9 more, but at least part of the application will 10 run on the remote server. 11 Q. What do you mean by part of the 12 application will run on the remote server? Can 13 you give me an example? 14 A. Yeah, I can give you an example. So one 15 example of a cloud application that runs in part 16 on a remote server is -- let's see here if I have 17 any in the report. And if not, I will think of 18 an example for you. 19 One example is software as a service 20 applications. These applications run largely on 21 a remote server. So for instance, you might have 22 a -- my timekeeping system is software as a

6 (Pages 18 - 21)

Page 22 1 service. I have to log my hours into a 2 timekeeping system for the company I work for. 3 Part of it runs on my local computer, because I 4 have the web interface that gets displayed 5 locally, my web browser, through Java script and 6 HTML. And part of it runs on a remote server. 7 And that's the part that's -- you know, the other 8 parts of the application. 9 Q. So the -- you mentioned the web 10 interface. Is that -- that's the user interface? 11 A. For that particular application, that 12 particular software as a service. 13 Q. What does it mean that an application 14 runs on the remote server? 15 A. It means that part of that application's 16 code executes on remote servers. 17 Q. So the remote server in that context has 18 the infrastructure that allows the application to 19 run? 20 A. Yes. I think that's right. 21 Q. And basically that allows the application 22 to run without needing the infrastructure on the	Page 24 1 Q. So in paragraph 88 of your declaration, 2 you say -- you're talking about cloud 3 applications, and you say, "These applications 4 are typically accessed over a network, meaning 5 the users can interact with them via a web 6 page or other dedicated client interface (e.g. a 7 mobile app) without needing to install all 8 necessary infrastructure" -- 9 A. Yes. 10 Q. -- "such as networks, servers and 11 operating systems utilized to fulfill the 12 application's functionalities" -- 13 A. Yes. 14 Q. -- "on their own devices." 15 A. Yes. 16 Q. So what necessary infrastructure might 17 that remote server have? You've listed a couple 18 there. 19 A. Yes. Examples do include the things that 20 I've listed here. That is true. 21 Q. So when you say the necessary 22 infrastructure includes networks, what do you
Page 23 1 local device? 2 A. No. Because you still need the -- like, 3 so -- well, speaking concretely, for instance, 4 about the example I gave you, you still need that 5 local component, of course, because you can't 6 really do anything without using the local 7 component too in that particular example. 8 But I think you would need to pick any 9 example to really have a concrete conversation 10 about this. Because otherwise, these terms are 11 really abstract and they could, you know, mean 12 many different things. 13 You see -- yeah. 14 Q. What types of infrastructure might a 15 remote server have that would be used to run a 16 cloud application? 17 MR. CARTER: Object to form. 18 BY MR. DEIGHAN: 19 Q. Let me -- 20 A. Sorry. 21 Q. I'll rephrase the question. 22 A. Okay.	Page 25 1 mean by that? 2 A. To access a computer remotely, you need 3 to have some kind of a network to access it. 4 That's... 5 Q. And then you also mentioned servers. 6 What do you mean by that? 7 A. That is the -- so when I say here 8 software programs that run on remote servers, 9 those are the physical devices that they run on, 10 the servers. 11 Q. And there could be more than one? 12 A. In the general background that I'm giving 13 here of general cloud applications, I give an 14 example where there could be more than one 15 generally in the example I'm giving. I'm saying 16 cloud applications in plural, so I'm saying 17 servers in plural as well. 18 Q. Yeah, I'm just talking generally right 19 now. 20 A. Yeah. 21 Q. And then you also mentioning operating 22 systems.

7 (Pages 22 - 25)

Page 26 1 A. Correct. 2 Q. What do you mean by that? 3 A. Once you have hardware, or virtualized 4 hardware like a server, you're going to need to 5 run an operating system on that in order to 6 actually install software on it. So you might 7 install, once you have hardware servers, software 8 programs that are also called servers that 9 perform or enable server functionality. And that 10 has to be done on top of an operating system. 11 Q. Is there any other infrastructure that a 12 remote server might have? 13 A. Probably. You're going to need to 14 have -- I mean, some of these things themselves 15 comprise infrastructure; networks comprise 16 routers and switches, for instance. 17 Q. Anything else? 18 A. I'm sure the answer to that is yes, 19 depending on how hyper-detailed you want to get. 20 Q. What about something like a database? 21 A. Depends on the application. 22 Q. Sure. But generally, a database might be	Page 28 1 A. Depends where the database is located. 2 If the database is on the remote server, the 3 information would exist also on the remote 4 server, though I will warn you that information 5 can exist in more than one place, of course. 6 Q. What do you mean information can exist in 7 more than one place? 8 A. Yeah. So on computer systems, 9 information can easily be copied or copied while 10 it moves. And so you can have information in two 11 or more places at the same time. 12 Just want to make sure that the answer 13 makes room for that distinction, whether -- I 14 don't know if it's relevant or not, though. 15 Q. How do users interact with cloud 16 applications? 17 MR. CARTER: I'll object to form. 18 THE WITNESS: I think it really depends 19 on the cloud application. There are so many 20 different kinds. 21 BY MR. DEIGHAN: 22 Q. Can you give me a few examples?
Page 27 1 infrastructure that a remote server might have? 2 A. It could be. 3 Q. What is a database? 4 A. Do I talk about or define databases in 5 here, just so you can speed me along? 6 Q. Not in this -- not in your background 7 section, I don't think, but -- 8 A. Okay. Let me see here. One moment. 9 So, you know -- I need to be careful here 10 just because database is, like, a super -- there 11 are so many different contexts that have specific 12 meanings for the term "database." 13 But generally speaking, databases are 14 places where you can store data in some kind of a 15 structured way. 16 Q. And can cloud applications use databases, 17 call on databases? 18 A. Certainly some cloud applications can. 19 Yes. 20 Q. So if you had a cloud application that 21 calls on a database, the information in the 22 database exists on the remote server, right?	Page 29 1 A. Okay. One example is in the timekeeping 2 system that I described to you. Users interact 3 with it through a web interface. 4 Q. I think in paragraph 88 you mention that 5 users can interact with cloud applications via a 6 web page or other dedicated client interface -- 7 A. Sure. Yeah. 8 Q. -- for example, a mobile app. 9 A. That's right. In fact -- yes. In fact, 10 I do say that. Yes. 11 Q. So in the context of a cloud application, 12 the application doesn't exist on the user's 13 device; a user accesses it through the interface. 14 Am I getting that right? 15 A. Well, no. Depends on the application. 16 Right? Since -- like, a mobile app is an 17 application. A web app is an application. The 18 cloud application, part of -- depends what you're 19 talking about when you say cloud application. 20 Part of the cloud application doesn't exist on 21 the user's device. Part of it, if you include 22 the mobile app in the cloud application, does.

8 (Pages 26 - 29)

Page 30 1 If you refer to cloud application to mean the 2 part of the app -- the part of the system that 3 does not exist on the user's device, then sure. 4 So it really depends on how you use the 5 term. So I think the answer is it depends. 6 Q. Again -- so I'm just talking generally. 7 In paragraph 88 you say, cloud 8 applications "are software programs that run on 9 remote servers rather than on users' local 10 devices," right? 11 A. Yeah, I say that. And what I'm referring 12 to is -- here I'm using it in the context of, you 13 know, cloud applications being defined outside of 14 the parts of them that run on users' devices. 15 But I just want to be careful because 16 we're -- you said we're talking about it really 17 in the general sense, you know, to make sure that 18 we're being clear. 19 Q. So again, in that general context, if you 20 have an application that is running off the 21 remote server, what does the user see on the 22 web page or user interface?	Page 32 1 the interaction -- it's going to depend on how 2 had mobile application was coded. It's going to 3 depend on how the cloud application was coded. 4 It's going to depend on the interaction between 5 the two. 6 Q. Right. So the user doesn't necessarily 7 see everything that's on the remote server, 8 right, through the interface? 9 A. Right. Yes. There could be things on 10 the remote server that are not shown to the user. 11 That is correct. 12 Q. And again, because it depends on how the 13 application was coded? 14 A. It depends on what the software was 15 designed to do. 16 Q. Okay. So if there -- going back to the 17 database example, if there were a database on a 18 remote server, the user can't necessarily see all 19 the information in the database on the web page 20 or user interface; is that right? 21 A. It is possible that the software can be 22 designed that way.
Page 31 1 A. Oh, it depends on whatever the developer 2 cloud application coded for the user to see. 3 Q. Right. So it depends on the cloud 4 application, right? 5 A. That's right. 6 Q. The cloud application determines what the 7 user sees. 8 A. Oh. Depends. For instance, in the case 9 of the mobile app, the mobile app is going to be 10 pre-coded, at least parts of the user interface 11 are. So that would be pre-coded, and that would 12 depend on still what the cloud application 13 developer coded, but it's not going to, like, 14 depend on the cloud application directly. Maybe 15 parts of it are, the data. But the application 16 itself, parts of that are going to depend on 17 what's on the mobile app side as well. 18 Q. But again, I think, like you said, it's 19 going to depend on what -- how the application 20 was coded. 21 A. It's going to depend on how the 22 application was coded. It's going to depend on	Page 33 1 Q. The user wouldn't necessarily be able to 2 access the full database, right? 3 A. That is possible as well, if the software 4 is designed that way. 5 Q. The user can't necessarily navigate the 6 whole database. 7 A. It's possible that that's the case if it 8 were designed that way. 9 Q. The application has to be programmed or 10 coded in a certain way that would allow the user 11 to see certain information in the database 12 through the interface; is that right? 13 A. If we're talking about an application 14 that's designed to have users of that 15 application, then that application is going to be 16 coded to allow those users to do or not do 17 things. 18 Q. So if information -- if the cloud 19 application is calling on a database on a remote 20 server, the user wouldn't necessarily see updates 21 to the database on the web page or user 22 interface, right?

Page 34 1 MR. CARTER: Object to form. 2 THE WITNESS: Okay. Please ask that 3 question one more time so I can hear it again. 4 BY MR. DEIGHAN: 5 Q. If the cloud application calls on a 6 database that's on a remote server -- 7 A. Yes. 8 Q. -- the user wouldn't necessarily see 9 updates to the database on the web page or user 10 interface; is that right? 11 MR. CARTER: Same objection. 12 THE WITNESS: If a cloud application 13 calls on a database on a remote server, when it 14 makes that call, it's going to get the latest 15 data from the database. 16 So whenever that call occurs -- and if 17 that call is initiated by a user -- the user is 18 going to -- or a user client or if something 19 causes the client side to initiate that call, or 20 whatever -- what have you, the latest data will 21 be returned from the database. 22 You can't get stale data from a database	Page 36 1 back out of the database, you don't get the old 2 data. 3 So -- I think maybe you're asking if you 4 somehow code your application to keep old data in 5 the database, too, to return not the newest data? 6 I mean, you could code an application however you 7 want, I guess, is the answer. 8 Does that answer your question? 9 BY MR. DEIGHAN: 10 Q. I think so. 11 You could code a cloud application to not 12 provide updates to the user until there's, for 13 example, a refresh, right? 14 A. You can code an application to not 15 provide updates to a user until an action occurs. 16 Generally speaking, that is correct. Yes. Yes, 17 that is right. 18 Q. What does it mean if a user interface or 19 web page renders content? 20 A. Anywhere in my report specifically that 21 we're looking at? 22 Q. Just a general question.
Page 35 1 if the data has been updated because it gets 2 overwritten. 3 BY MR. DEIGHAN: 4 Q. But it does depend on how the cloud 5 application is coded, though, right? 6 A. What do you mean exactly? I'm not sure I 7 understand the question fully. 8 Q. Well, if the application was coded so 9 that a user doesn't get updated information -- 10 A. Uh-huh. 11 Q. -- right, then the user wouldn't see the 12 updated information in the web interface, right? 13 A. So -- 14 MR. CARTER: Object to form. 15 THE WITNESS: I think I might be not 16 understanding your question because of how 17 databases typically work. So databases, they 18 have, like, update commands where, when you 19 update a table in a database, you're overwriting 20 what was there before. So if you're putting new 21 information into the database, that's it; your 22 old data goes away. So when you get the data	Page 37 1 A. Let's see if I have any examples in my 2 report that I could point you to, then. 3 So I can't see any place where I've 4 specifically discussed, like, the term 5 "rendering," but -- and so I won't define it 6 specifically. 7 But generally speaking, when you're 8 rendering something, you're preparing and/or 9 displaying it or preparing it for display and 10 displaying it. But I don't want to get tied to 11 any particular definition. But in general, it's 12 part of that process of displaying it. 13 Q. I think you said preparing it -- 14 A. Uh-huh. 15 Q. -- for display. 16 What do you mean by preparing it for 17 display? 18 A. Yeah. So part of -- and again, just 19 generally, broadly speaking, without any 20 particular definition, part of the rendering 21 process often involves the process of taking 22 things that are represented in a computer and

10 (Pages 34 - 37)

Page 38 1 preparing them to be displayed on a computer 2 screen or to be output to a format that's going 3 to be transferred somewhere. 4 And so in both of those cases, you're 5 going to take something that's represented 6 abstractly and put that into some type of stream 7 of data that's going to be sent concretely 8 somewhere. 9 Q. Sorry, what do you mean by taking 10 something that's represented abstractly? I'm not 11 sure I follow. 12 A. I'll give you an example. A lot of times 13 you might want to render a 3D model. You have a 14 3D model file. It describes vertices and edges; 15 it describes shapes; it has shaders; it has 16 texels; it has all sorts of things that, you 17 know, shape the model. And you want to render -- 18 you want to make some transformations on the 19 model to create a scene, and you want to render 20 that scene, ultimately. So you're going to 21 actually perform all the calculations of how 22 light is going to interact with it and a bunch of	Page 40 1 BY MR. DEIGHAN: 2 Q. Sure. 3 A. -- without any specific definition of 4 content. 5 Q. So rendering doesn't necessarily mean 6 changing the underlying content? 7 A. I don't know. It's nothing I've thought 8 about it. I'm not sure I have -- let me see if I 9 can think about that. I'm not sure if I can. 10 I think that it's tough to answer that 11 because it depends on your use of the 12 term "content" and your use of the term "render," 13 to be honest with you. They're too broad of 14 terms to be able to answer that definitively. 15 Depends on the rendering that you're doing and 16 how you're using that, like the context of the 17 term. 18 Yeah, it makes it too hard to define it 19 without anything concrete tied to it. 20 Can you point me to something? If you 21 can, I can, like, put it into context for you. 22 But, like, generally, I don't think I can answer
Page 39 1 things to create the scenes. 2 So you're performing these calculations 3 that are going to result in a data file that's 4 like a video. That's one type of rendering. 5 Your computer does the same thing when 6 your graphics card is displaying the interface of 7 windows on your screen as they interact with each 8 other and overlap. I mean windows generically, 9 not, like, the Windows operating system. Like 10 when your windows are overlapping on your 11 desktop. 12 So those are two examples of rendering. 13 Q. So does that mean that the content is 14 somehow transformed? 15 MR. CARTER: Object to form. 16 THE WITNESS: I think that the point is 17 that the rendering process is part of making the 18 content able to be usable for output, but it 19 depends -- so I will point out that content data 20 and content applications are terms that have 21 constructions here. And so I'm just saying 22 content generally --	Page 41 1 the question. That's -- yeah, it's too broad. I 2 just can't -- I can't give you an answer. 3 Q. Yeah, I'm just -- I'm just talking 4 generally right now. 5 A. Okay. 6 Q. Let's shift gears just a little bit. 7 What's an RSS feed? 8 A. An RSS feed is a file, and it's in a 9 standard computer-readable format. Stands for 10 really simple syndication. And it contains 11 up-to-date web content that's designed to be 12 distributed. 13 Q. So an RSS feed is a file; is that right? 14 A. Yeah. It's technically an XML file. 15 Q. And the file can contain web content? 16 A. So -- sorry, one moment, please. 17 Okay. Can you please ask your question 18 again? 19 Q. Yeah. We were talking about RSS feeds. 20 A. Uh-huh. 21 Q. And I was just asking if the file can 22 contain web content.

Page 42 1 A. RSS feeds, they generally contain -- RSS 2 feeds generally contain several things. They're 3 XML formatted. They contain a URL. They contain 4 a heading. And they contain some snippet of text 5 from the source. 6 Q. I'm just referring to paragraph 100 -- 7 A. Okay. 8 Q. -- of your declaration. And you say -- 9 talking about RSS feeds, and you say, "This file 10 contains up-to-date web content that is designed 11 to be distributed." 12 A. Uh-huh. Yes. That's right. That would 13 be -- examples of that include the headings and 14 the snippets of text, or the full article. Sure. 15 Q. So is the content that's contained in the 16 file the web content itself or is it -- I think 17 you said a snippet? 18 A. It depends on the RSS feed. Some 19 RSS feeds contain -- actually, I think the answer 20 is it depends. Some RSS feeds -- it's all web 21 content. Some of it is excerpted from source 22 material -- so it's all web content. Some of it	Page 44 1 make here? I'm trying to understand. 2 Q. I'm just trying to understand kind of how 3 RSS feeds work. 4 A. Yeah. So, like, I use RSS all the time. 5 Been using it for years. Subscribe to my news 6 sources from it. I scroll through the RSS feeds. 7 The content from the server is displayed in them. 8 It's exactly the same as the content on the 9 source web pages. And I only subscribe to 10 full-text RSS feeds, too, because I don't like 11 the snippets, even though those are provided by 12 the server. 13 And it comes from the -- the RSS feeds 14 themselves come from the original server. Like, 15 they're generated by the original server, I mean. 16 So it is content generated by the server 17 in its original form. 18 I guess I disagree. That's the answer. 19 I disagree. 20 Q. So would it necessarily contain the same 21 formatting, let's say, as it exists in its 22 original form?
Page 43 1 is excerpted from source material; others are 2 complete copies of the source material is the 3 answer. 4 Q. But it's not the content in its original 5 form, right? It's -- it's changed to be in a 6 file? 7 A. There's nothing, I think, in the standard 8 that prevents you from wholesale copying the 9 content in its original form, though I don't 10 think it's common for RSS to contain -- no, 11 that's not right. 12 Yeah, you can have content in its 13 original form in RSS feeds. 14 Q. I guess -- maybe I didn't ask the 15 question in exactly the right way. 16 I don't necessarily mean just copying and 17 pasting it. I mean, it doesn't -- the content 18 that's in the RSS feed is not the actual content 19 itself as it exists from the source; is that 20 right? 21 A. What difference are you trying to draw? 22 Like, what's the distinction you're trying to	Page 45 1 A. Yes, because it is the content from the 2 server. The RSS feeds are generated by the 3 server, so they are content on the server. 4 So it's like in original form from the 5 server. 6 Q. Okay. What's an RSS reader? I think you 7 may also refer to it as an RSS aggregator. 8 A. They allow you to subscribe to different 9 RSS feeds and read through them. 10 Q. Basically an RSS reader aggregates 11 RSS feeds; is that fair? 12 A. RSS aggregators do. Yeah. 13 Q. Is that different -- you said RSS 14 aggregator. Is that different from an RSS 15 reader? 16 A. They're not always exactly the same 17 because there are some really advanced RSS tools 18 that do more than just aggregate feeds. 19 At one time, RSS aggregators were the 20 norm. 21 Q. I'm just trying to get us on the same 22 page here in terms of terminology.

12 (Pages 42 - 45)

Page 46 1 A. Uh-huh. 2 Q. If you flip to paragraph 101. 3 A. Yeah. 4 Q. You say, "RSS aggregator, also called an 5 RSS reader." 6 A. Yeah. So RSS readers are RSS 7 aggregators, but RSS -- include RSS aggregators, 8 but RSS aggregators are not always RSS readers, 9 so I think maybe that's a little bit imprecise, 10 at least in terms of the modern terminology. But 11 I did include this in the background. 12 So -- originally, the terms were one in 13 the same. So I think that's what I was getting 14 at here. But I do want to draw that -- be 15 careful with drawing that distinction. 16 Q. Okay. So -- but I think you said 17 RSS readers are RSS aggregators; is that right? 18 A. RSS readers include RSS aggregators. 19 That is correct. Um -- yes, that's right. 20 Q. Sorry. I'm just trying to understand the 21 distinction. I'm just -- still getting a little 22 bit confused.	Page 48 1 mentioned Google Reader. 2 A. Yes. 3 Q. Is Google Reader a cloud application? 4 A. I would say yes. 5 Q. Does Google Reader run on a remote 6 server? 7 A. Parts of it certainly did. Keep in mind 8 it was discontinued in 2013, so it doesn't run 9 anywhere. 10 Q. When it did run, it -- fair to say it ran 11 on a remote server? 12 A. Yeah, parts of it ran on a remote server, 13 for sure. 14 Q. All right. I think your description -- 15 let me see what paragraph. Around paragraph 111 16 is where you talk about the Google Reader. 17 Your description mentioned Google's 18 BigTable. 19 A. Yeah. 20 Q. Is Google's BigTable a database? 21 A. It's infrastructure wrapped around 22 databases. So generally, yes.
Page 47 1 I think you said RSS readers include 2 RSS aggregators, but RSS aggregators are not 3 always RSS readers; is that -- 4 A. Yes. In the past, like, few years, 5 especially the past year with AI, things have 6 changed pretty dramatically in this space. So 7 RSS readers have gotten a lot of different 8 features, AI features and things like that. 9 They've gotten really advanced, and so I just 10 need to be careful with the terminology here. 11 Q. How about back, you know, 2010 time 12 frame? 13 A. In 2010, a lot of the ones that I was 14 familiar with, I referred to them as 15 RSS aggregators here because they aggregated 16 content. So I was referring to that. Yeah. 17 Q. Okay. So back in that time frame, then, 18 you would say that an RSS reader aggregates 19 RSS feeds? 20 A. Yes. An RSS reader aggregates RSS feeds. 21 That is true. 22 Q. Okay. In your declaration I think you	Page 49 1 Q. And that exists on a remote server? 2 A. It's fair to say that. Yes. 3 Q. And in that context, the remote server 4 and Google's BigTable database retrieve and store 5 RSS feeds? 6 A. Yes, that's right. Yeah. 7 Q. And then a user would interact with 8 Google Reader through a browser; is that right? 9 A. Yes. That is definitely right. 10 Q. So in that context, the user interface is 11 a web page? 12 A. Yes. 13 Q. Okay. 14 A. There might have also been Google Reader 15 clients. I think there were. They were third 16 party, though, I believe. So a third-party 17 application or a web page. 18 Q. Okay. And RSS feeds would be presented 19 to a user on the Google Reader web page -- 20 A. Yes. 21 Q. -- is that right? 22 A. Correct.

13 (Pages 46 - 49)

Page 50 1 Q. Okay. The user doesn't see everything 2 that's in the BigTable database, right? 3 A. Yeah, that's right. 4 Q. There would be a lot of information in 5 the BigTable database that users of Google Reader 6 would never see -- 7 A. They would -- 8 Q. -- is that right? 9 A. -- they would not see other users' 10 RSS feeds, for instance. 11 Q. And there's also other portions of the 12 database that a user would never see, right? 13 A. I don't know what the database contained, 14 so I want to be careful there. But at the very 15 least, they wouldn't see other users' content, 16 like, other users' accounts and what they 17 subscribe to. 18 Q. Last couple questions and then we can 19 take a break. We've been going for about an 20 hour. 21 A. Sure. 22 Q. What is streaming?	Page 52 1 that allows users to access and consume digital 2 content over a network without the need to 3 download or install large files on their local 4 devices? 5 A. Where are you getting that from? 6 Q. I just want to know if you agree with 7 that definition. 8 A. Are you getting it from somewhere in the 9 patent or somewhere in the -- a construction 10 somewhere? Like -- 11 Q. It's not -- I don't think you defined it 12 that way in your report. I'm just asking if you 13 agree with the definition. 14 A. Oh, geez. All right. Read it again. 15 Q. Would you agree that streaming refers to 16 the process of delivering video and audio content 17 from a remote server to a user's device in 18 real time; cloud-based streaming is a technology 19 that allows users to access and consume digital 20 content over a network without the need to 21 download or install large files on their local 22 devices?
Page 51 1 A. It's discussed a fair amount in the 2 report. Do you want to point me to something 3 specific or concrete to anchor me to something 4 that we can talk about? 5 Q. I'm just asking for what your 6 understanding of what streaming is. 7 A. Okay. 8 Q. I'm not talking about anything specific. 9 A. Sure. Let me just look through here and 10 see examples of where I discuss the term, then. 11 Q. So I'll just ask the question again: 12 What is streaming? 13 A. Uh-huh. So I would generally consider 14 streaming just as one of ordinary skill in the 15 art here would. But it encompasses delivering 16 content, and it does so including transmitting 17 content, when it becomes available, without 18 significant delay between the content sources. 19 Q. Would you agree that streaming refers to 20 the process of delivering video and audio content 21 from a remote server to a user's device in 22 real time; cloud-based streaming is a technology	Page 53 1 MR. CARTER: I'll object to form. 2 THE WITNESS: So it's not a definition 3 that I had previously considered, but actually, I 4 think it's too narrow. But it's nothing that I 5 can really consider on the fly. But I think that 6 is too narrow, in fact. 7 BY MR. DEIGHAN: 8 Q. Why do you think it's too narrow? 9 A. Well, for one thing, you can stream more 10 than just audio or video content. 11 Q. Would you agree that streaming refers to 12 the process of delivering content from a remote 13 server to a user's device in real time? 14 MR. CARTER: Object to form. 15 THE WITNESS: It's not something I can 16 really do on the fly. I haven't considered it. 17 Let me -- well, let me -- I think that streaming 18 encompasses streaming content to a server when it 19 becomes available without significant delay 20 between the content sources. So... 21 BY MR. DEIGHAN: 22 Q. So you don't think it refers to

14 (Pages 50 - 53)

Page 54 1 delivering content from the server to a user's 2 device in real time? 3 A. Streaming, generally? I think that 4 streaming can stream to more than just a user's 5 device, certainly. You can stream between two 6 servers or something else in a general sense. 7 So, no, that part of the definition is too narrow 8 as well. 9 But again, I can't -- I mean, I'm 10 applying the plain and ordinary meaning of the 11 term in the context of this case. Outside the 12 context of this case, I don't know why, you know, 13 you're even asking me because it doesn't really 14 matter. 15 Q. The definition of streaming doesn't 16 matter? 17 A. Outside the context of this case, you're 18 asking me. Right? I'm saying inside the context 19 of this case, I'm applying plain and ordinary 20 meaning. 21 Q. Okay. 22 A. Yeah.	Page 56 1 viewable to a user. 2 Q. What's an example? 3 A. Content delivery networks. 4 Q. And what's that? 5 A. Where you're streaming content and it 6 goes through multiple nodes for -- ultimately, to 7 be redistributed and saved. 8 Q. In a context, aren't you just downloading 9 it at a different server? 10 A. No. Because you might have subscribers 11 that will stream it. So you're queuing it and 12 you might be -- because you have the possibility 13 of a user joining, you are also -- you're 14 streaming it to a computer, and you might also be 15 streaming it to a user. But it's a live stream. 16 Q. Well, in that example, you're talking 17 about a user, so aren't we kind of saying the 18 same thing? Aren't you saying that streaming 19 really requires a user to be able to view it? 20 MR. CARTER: Object to form. 21 THE WITNESS: I think it depends on your 22 definition of "user," I think is the concern that
Page 55 1 Q. Would you agree that streaming allows 2 users to access and consume digital content? 3 A. Say that again. 4 Q. Would you agree that streaming allows 5 users to access and consume digital content? 6 A. Again, the plain and ordinary meaning of 7 "streaming" encompasses more than just users. 8 Right? So that's the problem that I have here. 9 And so -- I guess I said it backwards in 10 the last answer. If you're asking about a 11 context outside of the context of this case where 12 it's more narrow, then I don't know why you're 13 even asking me. Inside the context of this case, 14 if we were just doing plain and ordinary meaning, 15 streaming is not so narrow. 16 So that's what I'm trying to say. 17 Q. In order to stream something, does it 18 have to be viewable by a user either on a device 19 or an interface? 20 A. With respect to plain and ordinary 21 meaning, it does not. I can think of many 22 examples where you stream things that are not	Page 57 1 I have. 2 BY MR. DEIGHAN: 3 Q. I was just using the term that you used. 4 A. Where is that? 5 Q. You said, So you're queuing it because 6 you have the possibility of a user joining. 7 A. Right. So you have the possibility of a 8 user joining -- okay -- a client device joining, 9 a computer joining, sure, as well. 10 Q. So again, that would require the content 11 to be viewable on that client device. 12 A. You are -- I can stream through a device 13 without streaming to that device. So in the 14 content delivery network example, you might 15 have -- the device in the middle is collecting 16 the content and it is still forwarding the 17 content and is streaming the content as well, is 18 another example. 19 Q. But even in that example you're giving, 20 its ultimately getting to the client device. 21 A. Okay. Sure. 22 Q. Right?

15 (Pages 54 - 57)

Page 58 1 A. It can be. Yeah. 2 Q. So again, doesn't streaming mean that the 3 content is -- reaches the client device? 4 A. The content reaches an end device. That 5 is true. 6 Q. And by end device, that can't just be 7 another server, right? 8 A. I think that depends. I don't see why it 9 can't -- necessarily cannot. 10 Q. If you just have one server sending 11 content to another server, how would that be 12 streaming? 13 A. Sure. If it happens in real time as it 14 becomes available is one example of how it could 15 be. 16 Q. But if no user can view or ultimately get 17 to that content, that's just sending content from 18 one server to another. 19 A. The server is the client in that 20 connection, so the server is the ultimate 21 destination. 22 Q. Okay. So ultimately, you would disagree,	Page 60 1 Q. And you recognize those, right? 2 A. I do. 3 Q. Okay. Are they the exact same? 4 A. I believe so. Except that they are 5 labeled differently here (indicating). 6 Q. Right. Beyond the label, though, like, 7 the content is the same? 8 A. I believe so. 9 Q. Okay. The cover page refers to both IPRs 10 and patents, so I just want to make sure that -- 11 A. Yeah. 12 Q. -- that there's not a difference between 13 the two. 14 A. No. 15 Q. Okay. 16 A. I think it's an omnibus declaration. 17 Q. Okay. So if we're just talking about one 18 declaration today, just to make things easy, is 19 that okay? 20 A. Yes. 21 Q. Okay. So you're -- okay. 22 Can you flip to -- quickly to page -- I
Page 59 1 then, that streaming refers to delivering content 2 from a remote server to a user's device in 3 real time. 4 A. Correct. I think that it's too narrow. 5 Q. Okay. 6 MR. DEIGHAN: All right. Why don't we 7 take a break. 8 THE WITNESS: Okay. Thank you. 9 (A recess was taken.) 10 BY MR. DEIGHAN: 11 Q. Hi, again, Dr. Martin. 12 A. Hello. 13 Q. Do you have any discussions with counsel 14 during the break about the substance of your 15 testimony? 16 A. No. 17 Q. Just one housekeeping thing that I didn't 18 do when I handed you your declarations earlier. 19 So I handed you copies of your 20 declarations that were submitted in the 307 and 21 308 IPRs. 22 A. Yes.	Page 61 1 think it's 269, the very end. 2 A. Okay. 3 Q. Is that your signature? 4 A. Yes. 5 Q. Okay. How would you describe yourself as 6 an expert? 7 A. What do you mean? 8 Q. What are you an expert in? 9 A. Oh -- yeah. Generally, I'm an expert in 10 computer science, computer security, networking, 11 cloud computing, cryptography, and other similar 12 related fields. 13 Q. I'll just give you this document 14 previously marked as Twitch Exhibit 1015. 15 I'm handing you the version that's in the 16 307 proceeding, but I believe that the version 17 that was submitted in the 308 proceeding is the 18 same; is that your understanding? 19 A. Yes. 20 Q. Okay. Just in case you need it. 21 So can you just walk through your 22 education background?

16 (Pages 58 - 61)

Page 62 1 A. Yes. I have a bachelor's, master's, and 2 Ph.D. in computer science all from Johns Hopkins 3 University. 4 Q. When did you get your undergrad degree? 5 A. 2011. 6 Q. And that -- you said that was in computer 7 science? 8 A. Correct. 9 Q. And then your master's, that's also in 10 computer science? 11 A. Yes. 12 Q. And that's also from Johns Hopkins? 13 A. Yes. 14 Q. And what was the year that you got your 15 master's degree? 16 A. 2013. It was part of my Ph.D. 17 Q. What does that mean it was part of your 18 Ph.D.? 19 A. As part of the Ph.D. requirements, you 20 fulfill the master's requirements, and so you 21 sort of receive your master's in passing at some 22 point when you can be bothered to file the	Page 64 1 Labs anymore; you're employed by Harbor Experts? 2 A. Yes. 3 Q. Okay. I think you said that Harbor 4 Experts provides consulting services to companies 5 in computer science-related fields. 6 Is there a specific area you focus on? 7 A. The services are in computer 8 science-related fields. The companies are not in 9 computer science-related fields, just to be 10 clear, sorry. 11 We provide computer science consulting 12 services to companies. 13 Q. Okay. I follow you. 14 A. Yeah. 15 Q. And what fields are those companies in 16 that you provide services to? 17 A. Any kind of field. 18 Q. Okay. I think -- I looked at the 19 website. I think it says, "Harbor Labs is a 20 seasoned team of computer scientists and system 21 security engineers who specialize in securing 22 connected medical technologies."
Page 63 1 paperwork. 2 Q. Ah, understood. 3 And your Ph.D. is also in computer 4 science -- 5 A. Yes. 6 Q. -- from Johns Hopkins? 7 A. Correct. 8 Q. And what year did you receive your Ph.D.? 9 A. 2016. 10 Q. All right. So undergrad 2011, master's 11 2013, Ph.D. 2016? 12 A. Correct. 13 Q. Okay. What is your current employment? 14 A. I work for a company called Harbor 15 Experts. 16 Q. And what does Harbor Experts do? 17 A. They provide consulting services to 18 companies in computer science-related fields. 19 Q. Is Harbor Experts different from Harbor 20 Labs? 21 A. It is. 22 Q. Okay. So you're not employed by Harbor	Page 65 1 A. That is Harbor Labs' focus, though it 2 wasn't always. 3 Q. Okay. But do Harbor Labs and Harbor 4 Experts have just sort of specialization in 5 working with companies in the medical technology 6 fields? 7 A. Not originally, but they developed a 8 specialization in that field at some point. 9 Q. And I think you -- I think your CV 10 indicates that you're also a lecturer at Johns 11 Hopkins? 12 A. That's right. 13 Q. What courses do you teach? 14 A. So this CV is a little out of date. I 15 teach security and privacy in computing. 16 Recently I taught intermediate programming, so C 17 and C++ programming. And I am hoping to teach a 18 class in malware analysis and forensics next 19 semester. 20 Q. Your research interests include embedded 21 system security, operating system security, 22 vulnerability analysis, reverse engineering,

17 (Pages 62 - 65)

Page 66 1 network protocol analysis, applied cryptography, 2 cryptanalysis and privacy-preserving protocols -- 3 A. Yeah. 4 Q. -- is that right? 5 A. That's right. 6 Q. So kind of a focus on security? 7 A. Network and operating system and embedded 8 security and cryptography, yes. So any part of 9 the stack from hardware all the way up to cloud 10 and the network protocol and hardware security 11 side and cryptography side of that. 12 Q. During your career, have you ever 13 designed cloud computing systems or technologies? 14 A. Yes. 15 Q. What are some examples of that? 16 A. I've designed a few. I'll give you two 17 examples. 18 Q. Sure. 19 A. Okay. One example was at Applied 20 Communication Sciences, I designed a cloud system 21 that did real-time monitoring of smart-grid 22 traffic. And so it would receive data packets	Page 68 1 A. And the browser component. Yeah. 2 Q. And that's the client component. 3 A. Correct. 4 Q. Okay. And you said that would pull for 5 updates every five seconds or so? 6 A. Yeah. I think it was configurable, if I 7 remember correctly, but I think the default was 8 five. 9 Q. Where was that pulling updates from? 10 A. The server. 11 Q. The remote server? 12 A. Uh-huh. 13 Q. Okay. Interesting. 14 Okay. And then you said you had another 15 example? 16 A. Oh, sure. In this example -- yeah. I've 17 got a bunch of examples, but I'll pick one of my 18 favorites. Let me decide what that favorite is. 19 Give me a second. 20 Okay. This was pretty cool. 21 One second. Okay. This is a pretty cool 22 one.
Page 67 1 from telephone poles around a city, and it would 2 collect those packets, send them to a back-end. 3 That part was done by the people that were there 4 already. 5 My contribution was I collected these 6 packets that formed a data stream of packets, and 7 I created a server component that would analyze 8 the packets and compute statistics on them and a 9 client-side component that would pull for updates 10 every five seconds or so and create graphs of 11 them in real time as to parameters about what was 12 going on in the smart-grid network -- so maybe 13 large number of update packets, you know, systems 14 were not responding properly, things like this -- 15 so that an entire city's power grid could be 16 monitored in real time. They actually 17 commercialized and sold that. 18 Q. So let me just ask you a couple of 19 questions about that. 20 A. Uh-huh. 21 Q. So you said you created the server 22 component --	Page 69 1 We did indoor location tracking of 2 people. And the way it worked was you would have 3 a server and you would -- and we created these -- 4 the server -- we created every component of the 5 system. It was a research project. And we 6 published it. 7 And you had these Bluetooth beacons, they 8 were called, and we created a cryptographic 9 security component for them so they had these 10 rolling codes. 11 You'd put them around a building. The 12 codes would roll with -- for cryptographic 13 reasons that I won't get into, because it's not 14 relevant -- and the server back-end would have a 15 map of the building registered and where the 16 beacons were located. And you would walk around 17 the building and it would know where the beacons 18 were and, using Bluetooth on your phone, 19 triangulate your position inside the building to 20 know your location, first of all. 21 Then it would also have an associated 22 back-end, like, data store, and it would have an

18 (Pages 66 - 69)

Page 70 1 application on your phone and it would present 2 information on your screen based on your 3 location. So if you're, like, in this lab, you 4 get to see this data. But if you're across the 5 building on the other side, you get to see 6 different data. And that's based on who's logged 7 in and where they're located in the building. 8 So the idea was that, like, you'd be on 9 one side of the building and you'd see some set 10 of data; you'd be on the other side and you'd see 11 other data. And that was a pretty fun project 12 too. 13 Q. So the mobile application you said, 14 that's like the user interface. 15 A. Yeah. It was a user interface that 16 connects to the different -- connects to one of 17 the servers in the system. 18 Q. And that server is a remote server; is 19 that what you're -- 20 A. Yeah. 21 Q. -- saying? 22 A. Uh-huh.	Page 72 1 really recent. Everything over ten years ago is 2 really old. 3 Q. Understood. 4 A. But I worked on a project related to 5 video streaming technology, and it was on how 6 video conferencing was implemented between 7 servers, clients, transcoding, and how that video 8 communication worked for a major product. Not 9 Zoom, but one of their competitors. 10 Also worked on Skype. Worked on -- oh, I 11 probably shouldn't be using names. But it is in 12 my CV, so actually, I can use names. In fact, I 13 can probably name all of these. Cisco, Webex, 14 Skype. I did source code analysis for those and, 15 like, reviewed and determined how the systems did 16 their video streaming. 17 There's probably others, but those are 18 two that stick out as relatively recent. 19 Q. Okay. In that example that you gave 20 about the cloud system for real-time monitoring 21 of smart-grid traffic, you said that that 22 involved a stream of data.
Page 71 1 Q. Okay. So that's kind of an example where 2 data that is displayed on the user device does 3 not include everything that's on the server, 4 right? It kind of depends on how the application 5 was programmed. 6 A. Correct. In fact, the point of that 7 system was to not display everything that's on 8 the server because the idea was you would get 9 things that were relevant to you based on where 10 you were in the building. 11 Q. Okay. What about streaming? Do you have 12 experience in streaming technologies? 13 A. So in -- one example was the data feed, 14 the streaming data feed coming in from the city. 15 That was a continuously streaming feed of data 16 packets. 17 And -- just going through my experience 18 here to come up with some others. 19 I worked on a project really recently 20 that would be here. Not that recently, I guess. 21 Really recently is a bit of a -- you know, 22 everything that happened in the past ten years is	Page 73 1 A. Yes. 2 Q. And you said the client side component 3 would pull for updates every five seconds or so. 4 A. Uh-huh. 5 Q. Was it -- it was programmed to provide 6 updates every five seconds, right? 7 A. It was programmed to get updates every 8 five seconds. 9 Q. It could have been programmed to pull for 10 updates every ten seconds? 11 A. I think it was configurable, so it was -- 12 actually, you could set it to what you wanted to 13 pull for. Yeah. 14 Q. Okay. So a user could set it to only 15 pull for updates every five minutes. 16 A. Yes. The default was, I think, 17 five seconds. 18 Q. So based on your CV, a lot of your 19 experience is in the area of network security; is 20 that fair to say? 21 A. No doubt that that is fair to say. Yes. 22 Q. Is that kind of your specialization?

Page 74 1 A. I do a lot of network security. Yeah. 2 Q. Is it your understanding that these IPRs 3 relate to network security? 4 A. They relate to networks, generally, and I 5 think that there's a close relationship there. 6 Q. Have you ever served as an expert witness 7 before? 8 A. Yes. 9 Q. How many times? Just roughly. 10 A. Oh, including cases where I was not 11 deposed? 12 Q. Sure. 13 A. Oh. A bunch. I don't know. Cases where 14 I was likely to be deposed, maybe 30 or more. 15 Yeah. 16 Q. I think I counted about 66 times on your 17 CV. 18 Does that sound about right? 19 A. Those were cases where I also was just a 20 consulting expert. But yeah -- actually, there's 21 probably even more than that. Those are only 22 cases with public filings.	Page 76 1 Q. Okay. In the cases that you've served as 2 an expert in, have you ever had any of your 3 testimony excluded? 4 A. No. 5 Q. Not a single time? 6 A. Not a single time. Not that I know of. 7 Q. Is it fair to say that serving as an 8 expert makes up a sizable portion of your job? 9 A. Makes up a good amount of it. Yeah. 10 Q. All right. I'm going to hand you a 11 document that has been previously marked as 12 Twitch Exhibit 1001. And this is from the 307 13 proceeding. 14 A. Okay. 15 Q. Do you recognize that document? 16 A. Yes. 17 Q. What is it? 18 A. It is the patent, the '658 patent. 19 Q. Okay. So -- and that is in -- that is 20 Exhibit 1001 in the 307 proceeding that relates 21 to the '658 patent; is that your understanding? 22 A. Yes.
Page 75 1 Q. How much are you being paid for serving 2 as an expert in these IPRs? 3 A. So I work for a company, and I do not get 4 paid the rate that they charged. I am an 5 employee. 6 They charge, I think, 675 an hour, and 7 then it -- yeah. They charge 675 an hour. 8 Q. I think in your declaration you said that 9 Harbor Experts is being compensated at a rate of 10 \$920 per hour. 11 Does that sound right? 12 A. Harbor Experts is not being compensated 13 at \$920 an hour. There was an expert finding 14 service, I think, that's being compensated at 15 that rate. 16 Q. I just want to get this clear. In 17 paragraph 6 of your declaration you say, "The 18 company I work for, Harbor Experts, is being 19 compensated at the rate of \$920 per hour for time 20 that I spend on this case." 21 A. Yeah. Harbor Experts is getting 22 compensated, I believe, at 675 an hour.	Page 77 1 Q. Okay. I'm going to hand you another 2 document that has been previously marked as 3 Twitch Exhibit 1001. And this is in the 308 4 proceeding. 5 A. Okay. 6 Q. Do you recognize that document? 7 A. Yes. 8 Q. And what is that? 9 A. It is the '068 patent. 10 Q. Okay. So that is Exhibit 1001 from the 11 308 IPR, which relates to the '068 patent; is 12 that your understanding? 13 A. Yes. 14 Q. Just to avoid any confusion, is it okay 15 if we just refer to the -- Exhibit 1001 from the 16 307 proceeding as the '658 patent? 17 A. (No verbal response.) 18 Q. And then -- can you give a verbal answer? 19 A. Yes. 20 Q. Okay. And then is it okay if we refer to 21 Exhibit 1001 from the 308 proceeding as the 22 '068 patent?

20 (Pages 74 - 77)

Page 78 1 A. Yes. 2 Q. Okay. Just trying to make it easy since 3 they are both Exhibit 1001. 4 Have you reviewed these documents? 5 A. Yes. 6 Q. When was the last time? 7 A. Yesterday. 8 Q. So you're pretty familiar with them? 9 A. Yes. 10 Q. Okay. Do you have an understanding of 11 the relationship between the two patents? 12 A. Looks like the '068 is a continuation of 13 what is now patent '658. 14 Q. So is it your understanding that they 15 have the same specification? 16 A. Yes. 17 Q. So your analysis of the specification 18 would be the same for both patents? 19 A. My review of the specification for both 20 patents was the same. My read of it was. 21 Q. Okay. I'm just trying to -- for the sake 22 of simplicity here --	Page 80 1 content applications from multiple content data 2 sources or service providers in real time. 3 BY MR. DEIGHAN: 4 Q. So that says managing and migrating 5 through content in real time, right? 6 A. It says in the abstract managing and 7 migrating through web-based content. 8 And web-based content data and content 9 applications from multiple content data sources 10 or service providers in real time. It says that. 11 Q. All right. And then the abstract goes on 12 to say that "The single-user interface is 13 preferably an icon-based master web page with a 14 slide tool that allows the user to scroll or page 15 through the content data and content applications 16 from the multiple content data sources or service 17 providers in real time from a logged-in remote 18 computer device"; is that right? 19 A. I'm so sorry, I was not with you at the 20 beginning of when you were reading, and I'm going 21 to have to ask you to point me to where you're 22 reading from.
Page 79 1 A. Yeah. 2 Q. -- can we just refer to one of the 3 patents? Can we just refer to the '658? 4 A. Yes, we can. 5 Q. Okay. Can you take a look at the 6 abstract of the '658 patent? 7 A. Yes. 8 Q. It says, "A cloud-based computer system 9 and architecture for managing and migrating 10 through web-based content data and content 11 applications from multiple content data sources 12 or service providers in real time is disclosed." 13 Do you see that? 14 A. Yes. 15 Q. So would you agree that the '658 patent 16 relates to systems for managing and migrating 17 through content in real time? 18 MR. CARTER: I'll object to form. 19 THE WITNESS: I'll say that the patent, 20 you know, states that it discloses a cloud-based 21 system and architecture for managing and 22 migrating through web-based content data and	Page 81 1 Q. Oh, sure. It's the last sentence of the 2 abstract. 3 A. Okay. I won't make you read it again. 4 I'm just going to read it quietly to myself. 5 Q. Yes. Please do. 6 A. Okay. Yes. I've read that sentence. 7 Q. So the '658 patent relates to a master 8 web page that includes a slide tool so a user can 9 scroll through content in real time from a remote 10 device; is that accurate? 11 A. The '658 patent describes a slide tool 12 that allows a user to scroll through or 13 page through the content data or content 14 applications from the content data sources or 15 service providers in realtime. Yeah, that's 16 correct. 17 Q. From a remote computing device. 18 A. Where does it say that? 19 Q. The last couple of words of that 20 sentence. 21 A. Oh, sure. From a logged-in -- in 22 real time from a logged-in remote computing

21 (Pages 78 - 81)

Page 82 1 device. Yeah. 2 Q. Okay. 3 A. It said that here at the end 4 (indicating). 5 Q. So you would agree that the patent 6 relates to a system that allows a user to scroll 7 through content in real time from a remote 8 device. 9 A. Relates to a system that allows a user -- 10 well, it describes a system that has a 11 single-user interface that allows a user to 12 scroll or page through content data and content 13 applications from multiple content sources or 14 service providers in real time from a logged-in 15 remote computer device. 16 Q. To scroll or page through content in 17 real time from a remote computer device, doesn't 18 the content have to be on the master web page? 19 A. What do you mean exactly? Like what? 20 Q. Well, how could a user scroll or 21 page through content in real time from a remote 22 device if the content wasn't on the user	Page 84 1 A. Yeah. 2 Q. So if you're scrolling through content 3 using a slide tool -- 4 A. Yeah. 5 Q. -- before you get to the end -- 6 A. Yeah. 7 Q. -- you would agree that that is not 8 scrolling through content in real time. 9 A. No. The scrolling is happening in 10 real time. So you're scrolling in real time. 11 Q. But it's not real-time content that 12 you're scrolling through. 13 A. You -- depends what the content is. The 14 content could be real-time content if you're 15 watching, for instance, a live stream of 16 something. If you're not scrolling through 17 content that's real-time content, maybe not. 18 So it depends on the content. Yeah. 19 Q. But I think the example that you gave was 20 if you get to -- if you reach the end of content 21 and -- 22 A. Uh-huh.
Page 83 1 interface? 2 A. What if I'm, like -- I'm just generally 3 answering this question here. But, like, what if 4 I'm scrolling on my computer and I hit the end of 5 content and it does, like, a -- it has a web 6 socket open and it pulls the content down as it's 7 scrolling to get more content, so that it does 8 that as I'm scrolling in real time? Like, 9 wouldn't that be fine? That seems reasonable to 10 me. 11 Q. Wouldn't that require the content to 12 update? 13 A. While scrolling? Yeah, but it would 14 still be scrolling through the content in 15 real time. 16 So to your specific question, it seems 17 like that would be fine, to answer your question. 18 Q. If we flip to column 1, lines 60 to 62. 19 A. Okay. 20 Q. Sorry. Give me one second. 21 So let me just go back to your last 22 point.	Page 85 1 Q. -- you scroll down further -- 2 A. Yeah. 3 Q. -- that updates the content; is that 4 right? 5 A. That would be fetching more content. 6 Q. Sure. So in that example, before you get 7 to the end of the content, as you're scrolling 8 through that content, it's not necessarily 9 real-time content. 10 MR. CARTER: Object to form. 11 THE WITNESS: Depends what the content 12 was. So say I am watching -- I mean, because 13 we're just talking about the patent in general 14 here. 15 BY MR. DEIGHAN: 16 Q. Yeah. 17 A. I don't know, say I'm watching -- say I'm 18 scrolling -- I'm watching a Taylor Swift concert, 19 which I would not be, on YouTube. Actually, my 20 wife might be, so I might be too. On YouTube. 21 I'm scrolling, and I get to the end of the 22 screen. And that's real-time content. And then

22 (Pages 82 - 85)

Page 86 1 I -- it's pulling down new content as I'm hitting 2 the edge there. 3 There's real-time scrolling happening 4 while I'm watching real-time content, and then 5 more content is coming down too, and so there's a 6 lot of things happening in real time there. 7 Q. I guess I don't really follow. Because 8 if you're scrolling through content before you 9 get to the end, then you scroll down further and 10 you get real-time content. 11 That's what you're saying, right? 12 A. Well, the scrolling is -- you're 13 real-time scrolling. The scrolling is in 14 real time. And then you can also have real-time 15 content. And the content could be in real time, 16 too. 17 Q. What do you mean by real-time scrolling? 18 You're doing it -- 19 A. -- in real time. I scroll, and as I 20 scroll, it's in real time. 21 Q. You're saying your scrolling is in 22 real time.	Page 88 1 If -- 2 A. You're scrolling in real time. So the 3 scrolling through the content is in real time. 4 The content itself -- it depends on what 5 the content is. If the content is real-time 6 content, that depends what your content is. Is 7 it a live stream? Is it live updated baseball 8 stats? Or is it -- I don't know -- a book from 9 1985 that hasn't been changed since then. 10 So it depends on the content. 11 Q. So it's content-dependent? 12 A. That aspect of your question is 13 content-dependent. But the scrolling through the 14 content happens in real time as you're scrolling. 15 Q. Yeah. Again, I guess the part that I'm 16 struggling with is just -- if you're saying that 17 once you get to the end of the list and you 18 update it, that is real-time content, then aren't 19 you necessarily -- before you update it, aren't 20 you necessarily scrolling through non-real-time 21 content? 22 MR. CARTER: Object to form.
Page 87 1 A. Can be. Yes. 2 Q. Like, you're doing it currently. Is that 3 what you mean by real-time scrolling? 4 A. Yeah. You can scroll in real time. 5 Q. But again, the content, before you reach 6 the end of the list -- 7 A. Uh-huh. 8 Q. -- that content would not necessarily be 9 in real time. 10 A. Depends what the content is. You're 11 scrolling through the content in real time, no 12 matter what the content is. But you could also 13 have content that's real-time content or not, 14 depending on what the content itself is as well. 15 Q. I guess the part I'm not following is, if 16 you're saying that you have to go to the end of 17 the list and scroll down to fetch new content -- 18 A. Yup. 19 Q. -- I guess I'm just -- or -- and that's 20 real-time content, I'm just struggling to 21 understand how the content you were looking at 22 previously would also be real-time content.	Page 89 1 THE WITNESS: No. Because, again, if 2 you're scrolling and your content includes, like, 3 a Taylor Swift live stream, that is definitely 4 real-time content that you're scrolling through 5 even as you're updating. 6 BY MR. DEIGHAN: 7 Q. Are you saying, like, a livestream of a 8 Taylor Swift concert? 9 A. Yeah. 10 Q. So are you drawing a distinction between, 11 like, a live broadcast versus something that 12 isn't live? 13 A. As one example. You can have a live 14 broadcast of content -- I'm not drawing a 15 distinction. I'm just saying one example is a 16 live broadcast of a concert. 17 So watching a livestream of a live Taylor 18 Swift concert -- maybe some year she'll do the 19 Super Bowl halftime show, and we're watching it 20 in real time, live, and we're scrolling through 21 that because we want to read something else 22 during halftime, and -- we're scrolling.

23 (Pages 86 - 89)

Page 90 1 That could be live content as we're 2 scrolling in real time as well. Because there's 3 no limit on what the content itself is. 4 Q. Can you give me an example of -- in this 5 context where it would not be a live broadcast? 6 A. You have a book from 1985 that is not 7 changed, and you are -- one of the pieces of 8 content is that book, and you are scrolling in 9 real time, but the book is what's being displayed 10 as one of the pieces of content. 11 Why you have the book, I don't know. 12 Maybe the book was just sent to a new server or 13 was just published by a new publisher. Whatever. 14 But maybe it ends up in your feed, but it's an 15 old book; it's not going to be updated again in 16 the feed. So... 17 Q. So scrolling through that book before you 18 get to the end of the list, you're saying that 19 just scrolling it is real-time scrolling -- 20 A. Yeah. 21 Q. -- is that right? 22 A. That's right.	Page 92 1 Q. Let's get the whole sentence. 2 So that says, "The present invention is 3 directed to a cloud-based computing system and 4 architecture for managing the content data and/or 5 services from multiple sources through a single 6 user interface in real time"; is that right? 7 A. Yes. You read that correctly, I believe. 8 Q. So the invention is -- at least as it's 9 described here, relates to managing content 10 through an interface in real time. 11 A. It's directed to managing content data 12 and/or services from multiple sources through a 13 single user interface in real time. 14 Q. The user interface, like a web page? 15 A. That could be one example. 16 Q. And so you would -- in order to manage 17 content through a web page in real time, the 18 content has to be on the web page in real time; 19 is that right? 20 MR. CARTER: Object to form. 21 THE WITNESS: So -- I think it depends -- 22 right? -- because here it says content data
Page 91 1 Q. If there was an update made to that 2 book -- 3 A. Yeah. 4 Q. -- you wouldn't see that update until you 5 scrolled to the bottom of the list and you 6 fetched new content, right? 7 A. Well, that would depend on how the thing 8 you're talking about works. If the thing you're 9 talking about doesn't get updates as they are 10 created, then it only gets them when you fetch an 11 update. That is true. 12 If it gets them as they are created, then 13 you would get it as it's created. 14 So it depends on your system. If your 15 system works such that you get it when you scroll 16 to the end of the list, that's when you would get 17 it. 18 Q. Okay. So let's go back to column 1, 19 lines 60 to 62. 20 A. Okay. 21 Q. I want to make -- I'm sorry, probably 58. 22 A. That makes more sense.	Page 93 1 and/or services. 2 You can manage services in real time by 3 clicking and selecting/unselecting services like 4 that. 5 BY MR. DEIGHAN: 6 Q. That's on the user interface, right? 7 A. On the user interface, yeah. So the user 8 interface has to allow you to use it in 9 real time. I think that's what it's saying here. 10 Q. Right. Because you can't -- if there's 11 content sitting on a server -- right? -- you 12 can't manage it through a user interface in 13 real time unless it's on the user interface in 14 real time, right? 15 A. If there's content sitting on a server, 16 you can -- okay. Say it one more time. 17 Q. If there's content sitting on a server, 18 you can't manage it through a user interface in 19 real time unless it's on the user interface in 20 real time, right? 21 A. Not necessarily true. I'll give you one 22 example.

24 (Pages 90 - 93)

Page 94 1 "Delete all" function in my e-mail. I 2 have a "delete all" function in my e-mail. I 3 click the button. It deletes all the e-mails in 4 my inbox without me actually seeing the e-mails. 5 Just one example. 6 Q. But in that instance, you're still 7 performing an action on the user interface, 8 right? 9 A. I am performing an action on the user 10 interface. 11 Q. And that affects what's on the server. 12 A. It certainly does. 13 Q. Okay. 14 THE WITNESS: Can we take a break? 15 MR. DEIGHAN: Sure. Absolutely. 16 THE WITNESS: I just need to stretch my 17 back. 18 (A recess was taken.) 19 BY MR. DEIGHAN: 20 Q. Hi again, Dr. Martin. 21 A. Hello. 22 Q. So when we left off, we were talking	Page 96 1 providers, it says here. 2 Q. What does that mean? 3 A. That the content data sources or service 4 providers, that they're communicating with the 5 log-in server or master server. They're in 6 communication with it. 7 Q. Okay. And the patent also says that the 8 master server runs a master application; is that 9 right? 10 A. Yes. It says the log-in server or master 11 server supports a program to run and execute a 12 master content application software, which is 13 hereafter going to be referred to as master 14 application in the patent specification. So 15 master application. 16 Q. And what does the master application do? 17 A. It's organizing -- it's coded for 18 organizing content data and content applications 19 from multiple content sources or web -- or server 20 providers on a master web page, it says right 21 here. 22 Q. All right. So it organizes content data
Page 95 1 about the patents, right? 2 A. Yes. 3 Q. And I was about to start asking you some 4 questions about the overall system. 5 If you take a look at column 4, starting 6 at around line 35, the patent says that the 7 cloud-based computer system includes a log-in 8 server or master server; is that right? 9 A. One moment. 10 Okay. I'm so sorry, I didn't recall your 11 question. Please ask again. 12 Q. I just said that the cloud-based computer 13 system described by the patent includes a log-in 14 server or a master server; is that your 15 understanding? 16 A. It says -- yeah, figure 1 includes a -- 17 shows a schematic representation that includes a 18 log-in server or master server? 19 Q. And what does the log-in server or the 20 master server do? 21 A. It acts as a single point of access for a 22 plurality of content data sources or service	Page 97 1 and content applications on a master web page. 2 (Discussion off the record.) 3 THE WITNESS: I'm sorry, can you please 4 ask again? 5 BY MR. DEIGHAN: 6 Q. Yeah. I just said -- we were talking 7 about the master application, and I said that 8 it's coded for organizing content data and 9 content applications on a master web page; is 10 that fair? 11 A. It's coded for organizing the content 12 data and content applications from the multiple 13 content sources or service providers and on a 14 master web page. Yes. 15 Q. Okay. And what's the master web page? 16 A. Master web page is defined in column 4, 17 20 to 25, to be a web page viewable remotely from 18 a remote computing device via through a log-in 19 server or master server and which displays a 20 slide tool that scrolls or pages through content 21 data and/or content applications from multiple 22 content data sources and/or service providers in

25 (Pages 94 - 97)

Page 98 1 real time. 2 Q. You said that that's the definition of 3 master web page. 4 Did you apply that in your analysis? 5 A. Yes. 6 Q. You applied that definition in your 7 analysis? 8 A. I applied the plain and ordinary meaning, 9 but I also recognized that the patents defined 10 the terms, and I went with this definition, yes. 11 Q. Okay. Sorry. Just to make sure I 12 understand, did you apply the plain and ordinary 13 meaning or did you apply the definition that you 14 just read? 15 A. So I applied the definition that I just 16 read, which the inventor set forth. 17 Q. So in column -- so in column 2, starting 18 at about line 47, the patent kind of describes 19 the operation of this system, right? 20 I'll give you a second to read that. 21 Column 2, starting at line 47. 22 A. Where should I read to?	Page 100 1 Q. And then the master server runs an 2 application that organizes content on a master 3 web page. 4 A. The master server is programmed to run 5 and execute a master content application 6 software. Yes. 7 Q. And then the patent says, "The master 8 web page is dynamic in the sense that the master 9 web page displays streaming content data and 10 content applications from the multiple content 11 data sources in real time"; is that right? 12 A. It says that, yes. 13 Q. So the patent says that the master 14 web page displays streaming content in real time, 15 right? 16 MR. CARTER: Object to form. 17 MR. DEIGHAN: I'll rephrase that. 18 THE WITNESS: Yeah. 19 BY MR. DEIGHAN: 20 Q. So the patent says that the master 21 web page displays streaming content data and 22 content applications from the multiple content
Page 99 1 Q. Just to the end of that paragraph, 2 line 59. 3 A. Okay. 4 Q. So can you just kind of describe how the 5 system operates? 6 MR. CARTER: Object to form. 7 THE WITNESS: Can you be a little bit 8 more specific than just generally describe how it 9 operates? Like -- 10 BY MR. DEIGHAN: 11 Q. Yeah, sure. 12 A. -- what aspect? 13 Q. Sure. So that portion that I just had 14 you read, column 2, lines 47 to 59, says that a 15 user logs into the master server, right? 16 A. Yes. 17 Q. And it says that the master server 18 accesses content data sources or providers. 19 A. It says, "The server accesses the 20 multiple content data sources or provider through 21 their respective servers in the cloud-based 22 computing environment." Yes. It says that.	Page 101 1 data sources in real time. 2 A. It says that the master web page is 3 dynamic in the sense that the master web page 4 displays streaming content -- yes, it says that. 5 Q. It doesn't say that content is streamed 6 to the master server, right? 7 MR. CARTER: Object to form. 8 THE WITNESS: You need to be more 9 specific about "it" in that sentence. This 10 sentence doesn't say -- the sentence says what it 11 says. But the patent itself -- like, we have to 12 look at the patent separately if you're asking a 13 general question about the patent. Do you see 14 what I'm saying? 15 So are you asking about the sentence or 16 the patent in general, I guess is my question. 17 BY MR. DEIGHAN: 18 Q. Oh, I mean, I was asking about the 19 sentence, but -- 20 A. Yeah. 21 Q. -- what's the distinction that you're 22 drawing?

26 (Pages 98 - 101)

Page 102 1 A. I just wanted to make sure that we were 2 talking only about the sentence because I don't 3 want to, when you say "it," answer some question 4 accidentally about the entire patent when I'm 5 talking about a sentence. That's all. 6 Q. So you seem to be drawing a distinction 7 between what it says here and what it says 8 elsewhere. 9 A. Yes, but I will always do that when you 10 point me out a specific sentence. So it's not 11 necessarily the case that I'm doing it for any 12 reason other than I want to be precise. 13 Q. Where in the patent does it say anything 14 that's inconsistent with that sentence? Can you 15 point me to anything? 16 A. You were -- so are you asking if I -- if 17 this sentence is contradicted elsewhere in the 18 patent? That's what you're asking? 19 Q. Let me rephrase. 20 I mean, is this a fair characterization 21 of what the master web page does, based on your 22 understanding of the invention?	Page 104 1 description and the patent as a whole to have an 2 understanding of the patent. There is an 3 explicit definition for the term "master 4 web page," though. And then of course the claims 5 themselves say what things do, and the reference 6 to that specific claim, which, in general, should 7 be taken in the context of the patent as a whole 8 unless the claim somehow defines something in 9 contradiction to that. 10 Q. Is the sentence in column 2, lines 56 to 11 59, that we were just looking at, is that 12 inconsistent with the definition of the master 13 web page that you're referring to? 14 A. I don't believe that they are 15 inconsistent with one another or that they 16 contradict one another. 17 Q. Okay. So then -- you would agree, then, 18 that the master web page displays streaming 19 content data and content applications from the 20 multiple content data sources in real time. 21 MR. CARTER: Object to form. 22 THE WITNESS: I think that it's possible
Page 103 1 MR. CARTER: Object to form. 2 THE WITNESS: So the master web page is 3 dynamic. But the definition for master web page 4 is in column 4 because the inventor explicitly 5 defined it as such. 6 BY MR. DEIGHAN: 7 Q. So you're saying that the master web page 8 does not need to display streaming content data 9 and content applications from multiple content 10 data sources in real time? 11 A. I'm saying that a dynamic web page -- 12 sorry. A master web page is a web page viewable 13 remotely from a remote computing device through a 14 log-in server or master server which displays a 15 slide tool that scrolls through or pages through 16 content data and/or content applications from 17 multiple content data sources and/or service 18 providers in real time. 19 Q. Don't you have to read the patent as a 20 whole to understand what the master web page 21 does? 22 A. You do have to read the patent	Page 105 1 for the master web page to do that, but the 2 definition of master web page, I think, is in 3 column 4. 4 BY MR. DEIGHAN: 5 Q. So the master web page has to display 6 content in real time, right? 7 MR. CARTER: Object to form. 8 THE WITNESS: I don't think that it has 9 to display content in real time, but I think it 10 can display content in real time. 11 I think that the master web page has to 12 display a slide tool that scrolls through 13 pages -- scrolls or pages through content data or 14 content application from multiple content data 15 sources and/or service providers in real time, 16 though. I think it has to do that. 17 BY MR. DEIGHAN: 18 Q. In column 4, there's also a definition of 19 the log-in server or the master server. 20 Do you see that? 21 A. Yes. 22 Q. Does that say anything about streaming

27 (Pages 102 - 105)

Page 106 1 content in real time? 2 A. It says, "A log-in server or master 3 server is a dedicated server for supporting a 4 master program and user interface to access and 5 view content data and applications from multiple 6 content data sources or providers through a 7 single user interface." 8 So it doesn't have the words "real time" 9 in there. 10 Q. And did you apply that definition in your 11 analysis? 12 A. Yes. 13 Q. So it refers to a single user interface. 14 What is that? 15 A. So I applied plain and ordinary meaning 16 to single user interface, and so that term is 17 generally just what it says. It's a single user 18 interface, an interface that's -- collects things 19 for a single user, broadly, but without any 20 specific nuance, like, on-the-fly definition. 21 Q. I mean, in the context of the patent, 22 it's saying that -- or let me rephrase that.	Page 108 1 master web page provides a single user interface 2 when it's rendered and displayed on the client 3 computer. 4 Q. And when it's -- and it's rendered and 5 displayed on the client computer as the master 6 web page? 7 A. Yes. But it is generated on a server, of 8 course. 9 I'm not sure if this is a distinction 10 that's important for you. I'm just trying to be 11 careful with my language. 12 Q. Yeah, I guess I'm -- I guess I'm just not 13 really understanding the distinction you're 14 drawing. 15 I mean, are you saying the single user 16 interface could refer more broadly to, like, the 17 remote device? Is that what you're saying? 18 A. No. I'm just trying to say that the 19 master web page provides that interface, but you 20 need to actually show the web page somewhere. 21 But -- because web pages are files. So until 22 you, like, actually show the file, you're not
Page 107 1 In the context of the patent, it's really 2 talking about the master web page, isn't it? 3 Sorry, that got a little jumbled. Let me 4 ask that more clearly. 5 A. Yeah. 6 Q. In the context of the patent, single user 7 interface is talking about the master web page, 8 right? 9 A. The two concepts are closely related. 10 Q. What do you mean by that? 11 A. So the master web page provides an 12 interface to the user. 13 Q. I think what you're saying -- correct me 14 if I'm wrong, but I think what you're saying is 15 that a single user interface could include the 16 master web page. 17 A. The opposite, I think. The master 18 web page can include a single user interface, I 19 think. 20 Q. I don't -- I'm not sure I follow. 21 Can you explain that? 22 A. The single user interface prov- -- the	Page 109 1 presenting an interface. 2 Q. I see. I see. Okay. 3 So when it's presented, right, the master 4 web page is -- 5 A. It's providing interface. 6 Q. It's providing interface. Okay. 7 A. Yeah. 8 Q. Okay. All right. We're on the same 9 page. 10 So in that definition of master server, 11 it says the user interface -- or the master 12 server supports the user interface to access and 13 view content through the single user interface, 14 right? 15 A. I'm sorry, ask again. 16 Q. Yeah. The patent says that the master 17 server -- and I'm paraphrasing a little bit, but 18 the master server supports a user interface to 19 access and view content through a single user 20 interface. 21 A. The master server supports a master 22 programming user interface to access and view

28 (Pages 106 - 109)

Page 110 1 content data and applications from multiple 2 content data sources and providers through a 3 single user interface. Yes. 4 Q. And you need that user interface to view 5 content data and applications from multiple 6 content data sources or providers, right? 7 A. The viewing of that content will occur 8 through that interface. 9 Q. And like we said, that interface is the 10 master web page as it's displayed. 11 A. I think that's right. At least it 12 encompasses that. I don't want to tie myself to 13 any particular, you know, nuanced definition -- 14 Q. Sure. 15 A. -- on the fly. 16 Q. All right. I'm going down a little bit 17 further here, but in that same discussion -- I 18 think is in column 5. But it talks about the 19 master application, also including a tool box. 20 A. Where in column 5? 21 Q. I think it starts at around line 31-ish. 22 A. Okay.	Page 112 1 applications. 2 You know, it's not clear just from this 3 sentence that the examples are modifying just 4 tool box. It looks like master application and 5 corresponding tool box is being modified there. 6 Q. In line 31 it says the master application 7 is equipped with a tool box. 8 A. It does say that. 9 Q. So the master application -- let me 10 rephrase. I'm thinking about how to phrase this. 11 The master application has a tool box, 12 right, that provides for those features? 13 A. The master application has a tool box. 14 It's just not clear to me that -- and certainly 15 some of these features are provided by the 16 tool box. 17 It's just not clear to me that all of 18 these features are, based on this sentence. 19 Q. Okay. 20 A. If some of them are master application 21 features only, I don't know. 22 Q. Okay. What are lock-out controls?
Page 111 1 Q. Do you see that? 2 A. I do. 3 Q. What's the tool box? 4 A. Tool box is defined in column 4. "A 5 tool box is a set of subfeatures, generally 6 accessible through an administrator account or 7 password, that allow a web page layout and/or 8 operation to be customized by linking tools with 9 content applications." 10 Q. So then going back to column 5, it gives, 11 I think, some examples of some tool box 12 capabilities, including things like lock-out 13 controls, history analytics, and subsets of 14 accessible content data or content applications. 15 Do you see that? Line 48. 16 A. Okay. I am looking now. 17 Actually, I think here it's saying the 18 master application and corresponding tool box. 19 So it's not clear, just from this quote, 20 that the tool box provides, for instance, those 21 capabilities, like collect history and analytics 22 and have subsets of accessible content or content	Page 113 1 A. I don't know if they're referenced 2 anywhere else in the patent. I don't think they 3 are. But to me, they are likely referring to 4 some type of feature to prevent things from being 5 changed somewhere in the system. I'm not exactly 6 sure, without more description here in the 7 patent, what they're referring to exactly. 8 Q. What do you mean prevent things from 9 being changed? 10 A. Well, just when I see the 11 phrase "lock-out control," you're locking 12 something. You're preventing it from being 13 changed. Right? A lock-out control. You're, 14 like, locking it out from being changed is how it 15 reads to me. 16 Q. What about things like parental controls? 17 A. It's possible. I don't -- if you can 18 point me to something else in the specification 19 that describes lock-out controls in more detail, 20 that would inform me in more detail. But -- 21 Q. I was just asking generally. 22 A. Yeah, I don't -- I don't really have any

29 (Pages 110 - 113)

Page 114 1 more context to -- you know, beyond the language. 2 Q. Okay. What's your understanding of 3 history analytics? What does that mean? 4 A. I think I do discuss that in my report. 5 So I provide a fair number of examples of 6 analytics in my report at, like, paragraph -- 7 starting at 444. 8 Would you like me to kind of enumerate 9 some from here? 10 Q. I was just kind of asking for what your 11 general understanding of history analytics are. 12 A. It's really -- can encompass many 13 different things, everything from data related to 14 the recency or quality of content to insights 15 about users' preferences and interest patterns. 16 That's just a few examples but, you know, 17 it can encompass a whole bunch of things that can 18 fall into the umbrella. 19 Recency of data or a recency of how -- 20 when data was accessed is another example. 21 Just some examples. 22 But, you know, history analytics	Page 116 1 controls, history analytics, subsets of 2 content -- doesn't that require the content 3 itself to be on the master web page? 4 A. No, I don't think so. For example, say I 5 want to lock out a category of content, content 6 from a particular provider. Right? Those are 7 just lock-out controls. I could say, hey, don't 8 show me things with this word in it. That would 9 be, you know, a control that you could toggle 10 that wouldn't require any particular content on 11 the web page. Say it's even an search box, so I 12 enter it myself, that the server could process. 13 That's just an example off the top of my 14 head here. 15 Q. How would you collect history analytics 16 if the content wasn't displayed to a user? 17 A. Depends what history analytics you're 18 collecting. You could collect the history 19 analytics of all of the content that you've 20 collected at the server but not the history of 21 the contents you send to the user. 22 You could collect the history of the
Page 115 1 encompasses a lot of things. 2 Q. Okay. And then the last example in that 3 portion of the patent that we were looking at 4 says, "subsets of accessible content data or 5 content applications." 6 Does that refer to, like, limiting the 7 content that is accessible for a certain user? 8 A. One moment. 9 It says, "have subsets of accessible 10 content data or content applications." 11 I think it depends on your 12 phrase "limiting." But I think it's -- you know, 13 allows you to make subsets of the content data 14 and the content applications. That doesn't 15 necessarily mean limiting, but it could mean 16 grouping, for instance. It could mean -- it 17 could mean limiting. It could mean -- it could 18 mean hiding. Could mean excerpting. It could 19 mean any number of different things. 20 But, you know, they both broadly fall 21 into that umbrella. 22 Q. So for all those examples -- the lock-out	Page 117 1 content you have sent to the user but not 2 necessarily the content the user looked at. 3 You could collect history of how 4 frequency -- frequently a content provider sent 5 information to a server. 6 So just -- you know, it depends what the 7 history analytics are referring to here. So just 8 from this brief section you pointed to, not 9 clear. But if you point me elsewhere in the 10 specification -- I don't have it memorized -- 11 Q. No, I understand. 12 A. -- I'm sure that I could -- yeah. 13 MR. DEIGHAN: Now would not be a bad time 14 for a break. Do you guys want to -- 15 THE WITNESS: That works. 16 (A recess was taken.) 17 BY MR. DEIGHAN: 18 Q. Hi, Dr. Martin. 19 A. Hello. 20 Q. Did you have a good lunch? 21 A. Yeah. Thank you. I hope you did, too. 22 Q. Thank you.

Page 118 1 Did you have any discussions with counsel 2 about the substance of your testimony? 3 A. No. 4 Q. Anything about your expert report? 5 A. No. 6 Q. Okay. Let's turn to paragraphs 85 and 86 7 of your report. 8 A. Okay. 9 Q. All right. Are you there? 10 A. Yes. 11 Q. So you say that you are asked to assume 12 that the challenged patents claim priority to 13 October 12th, 2010; is that right? 14 A. That's right. 15 Q. So you -- in your analysis, you assumed a 16 priority date of October 12th, 2010 for the 17 patents? 18 A. Yes. 19 Q. All right. Let's go to paragraph 119. 20 A. Okay. 21 Q. Sorry, I should say the section starting 22 at paragraph 119.	Page 120 1 Q. Okay. Did you have a degree in October 2 of 2010? 3 A. I did not have my bachelor's in 4 October of 2010. 5 Q. Okay. So you were not a person of 6 ordinary skill in the art in October 2010? 7 A. I had a good amount of experience in 8 October of 2010, so I would say that I was a 9 person of ordinary skill in October of 2010. 10 Q. But here you say that the person of 11 ordinary skill in the art would have had a 12 bachelor's degree or equivalent or a master's 13 degree. 14 You don't say anything about people 15 without a degree and experience, right? 16 MR. CARTER: Object to form. 17 THE WITNESS: Additional education 18 substituting for experience, and vice versa. 19 BY MR. DEIGHAN: 20 Q. Okay. So you think a person of ordinary 21 skill in the art could be somebody who does not 22 have a degree?
Page 119 1 And here you provide your opinion on the 2 level of ordinary skill in the art? 3 A. Yes. 4 Q. In paragraph 121 I think is where you 5 actually define it. And you say, "That person 6 would have had a bachelor's degree in computer 7 science, or a related field, and at least two 8 years of experience in research, design, and 9 development of cloud computing and network 10 systems, or the equivalent of a master's degree 11 in computer science or similar field, with 12 additional education substituting for experience, 13 and vice versa." 14 A. Yes. 15 Q. That's your definition that you applied? 16 A. It is. 17 Q. So a person of ordinary skill in the art 18 would have had a bachelor's degree and two years 19 of experience or a master's degree. 20 Am I summarizing that right? 21 A. Or additional education substituting for 22 that experience, or vice versa.	Page 121 1 A. Depends. But in certain instances, sure. 2 Q. Okay. So you don't agree with the 3 definition as written in your report in 4 paragraph 121? 5 MR. CARTER: Object to form. 6 THE WITNESS: I agree precisely with the 7 definition as written in my report. 8 BY MR. DEIGHAN: 9 Q. And that's because you're saying that the 10 last sentence, with additional education 11 substituting for experience -- 12 A. And vice versa. 13 Q. That's not modifying the "equivalent or a 14 master's degree in computer science or similar 15 field"? 16 A. Correct. It's modifying education in 17 general. 18 Q. Okay. 19 A. Since in 2012 I was just about to be 20 offered a Ph.D. position and I had a fair amount 21 of experience, yes. Sorry. In 2010 I was just 22 about to be offered a Ph.D. experience.

Page 122 1 October 12, 2010. 2 Q. Okay. Let's flip to section V of your 3 report. Starts in paragraph 56. 4 A. You said paragraph 56? 5 Q. Yeah. The section starting at 6 paragraph 56. 7 A. Okay. Okay. 8 Q. In this section, you are providing an 9 overview of the '658 and '068 patents, right? 10 A. Yes. 11 Q. Okay. I'm just going to ask you a couple 12 of questions about a few of the paragraphs in 13 this section. You can go ahead and read them if 14 you need to. 15 So the first paragraph is paragraph 57. 16 A. Okay. 17 Q. Go ahead and read that if you would like. 18 A. Okay. 19 Q. So based on that description, the 20 patented system allows users to access, manage, 21 and navigate content from the master web page, 22 right?	Page 124 1 A. All right. I'll read them. 2 Okay. Yes. I remember this. 3 Q. Okay. And one challenge that you talk 4 about is that, in traditional cloud-based 5 systems, users needed to log into each content 6 source separately; is that right? 7 A. The patent explains that multiple log-ins 8 are required to access content from different 9 content sources in some cloud-based systems. 10 Yes. 11 Q. And the inventors solved that problem by 12 providing a single user interface that allows 13 users to access, manage, and migrate through 14 content; is that right? 15 A. The inventors claimed to solve this 16 problem by doing so. Yes. 17 Q. Okay. And that's providing that content 18 on the single user interface? 19 A. They provide the single user interface, 20 and that allows users to access the content from 21 various sources. 22 Q. Okay. And we talked about this earlier,
Page 123 1 A. It "purportedly enables users to interact 2 with multiple data sources, accessing, managing, 3 and navigating content from a centralized master 4 web page on remote devices such as computers, 5 tablets, and smartphones." Yes. 6 Q. Okay. So you agree that the patents 7 allow users to access, manage, and navigate 8 content from the master web page. 9 A. The patent's description describes users 10 interacting with multiple data sources, 11 accessing, managing, and navigating content on 12 the master web page -- or from a master web page 13 on remote computing devices. 14 Q. All right. Paragraphs 58 to 60. 15 You summarize some challenges that the 16 patents aim to solve; is that right? 17 A. Yes. 18 Q. Again, take -- if you want to read 19 through those, go ahead. 20 A. Oh, you said 58 through 60, what we'll 21 discuss? 22 Q. Yes. Just right around there.	Page 125 1 but the single user interface is the master 2 web page provided to the user. 3 A. As displayed to the user. 4 Q. Displayed to the user. Okay. 5 The master web page displayed to the 6 user. 7 A. Say that one more time. The single user 8 interface is the master web page displayed to the 9 user -- at least it encompasses that. 10 Q. Okay. Paragraph -- let's see -- 63. You 11 describe the cloud-based computer system that was 12 proposed by the patents; is that right? 13 A. Yes. 14 Q. You can go ahead and read it if you would 15 like. 16 A. Okay. 17 Q. And so the architecture of the system 18 allows users to scroll or page through content in 19 real time on the master web page, right? 20 A. It includes a master web page that users 21 can view from a remote computing device, and that 22 enables them to scroll or page through the

Page 126 1 content data or content applications from the 2 multiple content data sources or service 3 providers in real time. Yes. 4 Q. All right. Paragraph 123. 5 A. Okay. 6 Q. This section is where you talk about 7 claim construction. 8 A. Yes. 9 Q. And in paragraph 123, you indicate that 10 you gave all claim terms of the challenged 11 patents their plain and ordinary meaning; is that 12 correct? 13 A. Yes. 14 Q. And you did give all the claim terms -- I 15 know that that's what you indicated here, but you 16 did apply the plain and ordinary meaning of the 17 terms in your analysis? 18 A. Yes. 19 Q. Okay. In paragraph 124, you provide a 20 list of terms, and I think we've talked about 21 some of these. 22 Are you on paragraph 24 --	Page 128 1 analysis"? 2 A. I considered these definitions when 3 applying my analysis. Yes. 4 Q. I'm just trying to make sure that I 5 understand the difference between guiding and 6 applying. 7 A. I think that they are the same. 8 Q. Okay. 142 of your declaration. Again, 9 the section starting at paragraph 142. 10 You're providing a summary of your 11 opinions as it relates to the '658 and the 12 '068 patent; is that right? 13 A. Yes. 14 Q. All right. And you -- 15 A. There is a typo here. 16 Q. Oh. What's the typo? 17 A. I say, "education in applied mathematics 18 and electrical engineering." 19 That should say "computer science," of 20 course. 21 Q. Do you also have education in applied 22 mathematics and electrical engineering?
Page 127 1 A. Yes. 2 Q. -- 124, I'm sorry? 3 A. I am. 4 Q. So you provide here a list of terms and 5 constructions. 6 Did you apply these constructions in your 7 analysis? 8 A. I used these constructions to guide my 9 analysis. 10 Q. Okay. 11 A. Yes. 12 Q. Okay. And we talked about master server. 13 And you applied that definition of master server 14 in your analysis? 15 A. Yes. I used this definition in guiding 16 my analysis. 17 Q. Okay. And the same goes for the master 18 web page. You applied the definition here in 19 your analysis? 20 A. I used this in guiding my analysis as 21 well. 22 Q. What do you mean by "guiding my	Page 129 1 A. I took some applied mathematics classes, 2 and my dissertation incorporates a fair amount of 3 electrical systems analysis, but I do not have a 4 formal degree in either of those subjects. 5 Q. What was your dissertation in? 6 A. It was in security and privacy, and our 7 funding was for medical applications of it. So I 8 just applied it to medical devices. 9 Q. Was this copied and pasted from another 10 declaration, I assume? 11 A. I am not sure, but I wouldn't -- 12 certainly -- I see that -- it's some kind of an 13 error that propagated here that... 14 Q. No worries. 15 Okay. So your opinions as to the 16 '658 patent. It looks like you're presenting 17 them in grounds 1A, 1B, 2A and 2B. 18 A. Say one more time. 19 Q. The opinion -- your opinions as it 20 relates to the '658 patent, you're presenting 21 those in a couple of different grounds: 1A, 1B, 22 2A, 2B.

Page 130 1 A. Yes. 2 Q. All right. And all those are based on 3 some combination of Darnell, Kim, and Dasgupta, 4 right? 5 A. Yeah. That's right. 6 Q. All right. No other references, just 7 those three? 8 A. That's right. 9 Q. Okay. All those are obviousness grounds? 10 A. Yes. 11 Q. Okay. No -- you're not presenting any 12 anticipation grounds? 13 A. Not at this time, no. That I know of. 14 Q. Okay. I'm just checking because, in 15 paragraph 142, it says, "In my opinion, all 16 challenged claims are invalid as either 17 anticipated or obvious." 18 I'm not trying to trick you here. I'm 19 just trying to make sure that -- 20 A. No, I understand. 21 Q. -- they're obviousness grounds, not 22 anticipation grounds?	Page 132 1 Q. The last sentence. 2 A. Oh, I see. Yes, yes, yes. Right. 3 That's just -- sure. It's stock language. Sure. 4 Okay. Yeah. No, that's right, they're 5 all obviousness grounds. 6 Q. Okay. 7 A. We're good. 8 Q. All right. I just wanted to make sure. 9 A. Yeah. It's anticipated and/or obvious 10 for the stock language, and then I provide 11 specific language for the patents. And they're 12 all obviousness grounds. That is correct. 13 Q. Okay. 14 A. And that is certainly in line with my 15 recollection -- 16 Q. Okay. 17 A. -- so... 18 Q. Just making sure we're on the same page. 19 A. Okay. 20 Q. So then, just to finish this up for the 21 '068, you said that grounds 1 and 2 based on some 22 combination of Darnell, Kim, and Dasgupta?
Page 131 1 A. Yes. The reason I'm checking is just to 2 make sure that -- I believe that's correct, 3 they're all obviousness grounds. If my report 4 somehow is written in a way that that's not true, 5 then okay. But I think that that's not right, so 6 I think that's correct; they're all obviousness 7 grounds, I believe. 8 Q. Okay. And then the next page, again, you 9 have your -- a summary of your opinions as it 10 relates to the '068 patent. And those are 11 presented in grounds 1 and 2. 12 A. Yes, that's right. 13 Q. Okay. And again, all based -- I guess 14 both grounds are based on some combination of 15 Darnell, Kim, and Dasgupta? 16 A. Yes. 17 Q. Again, just those three references? 18 A. Correct. Where do we -- I'm sorry, where 19 was the anticipation language? I'm just trying 20 to -- 21 Q. It's in paragraph 142. 22 A. 142?	Page 133 1 A. Correct. 2 Q. And just those three references? 3 A. Yes. 4 Q. All obviousness grounds? 5 A. Correct. I will point out, though, that 6 I also combine all of these references with 7 knowledge of a POSITA in various points. 8 Q. Okay. So none of the references that you 9 relied on anticipate any of the claims of the 10 '658 or the '068 patent? 11 A. I haven't performed that analysis, but I 12 don't have any opinions that they do. 13 Q. Okay. I'm going to hand you a document 14 that has been previously marked as Twitch 15 Exhibit 1004 in the 00307 proceeding. 16 A. Okay. 17 THE WITNESS: And can I please take a 18 quick bathroom break? 19 MR. DEIGHAN: Sure. 20 (A recess was taken.) 21 BY MR. DEIGHAN: 22 Q. All right. I'm going to start that over.

Page 134 1 So I've handed you a document that has 2 been previously marked as Twitch Exhibit 1004 in 3 the 00307 proceeding. 4 Do you have that? 5 A. Yes. 6 Q. All right. Do you recognize that 7 document? 8 A. Yes. 9 Q. What is it? 10 A. Darnell. It is one of the references 11 that I discuss. 12 Q. Okay. So this is the -- this exhibit is 13 the Darnell reference that you referred to in 14 your declaration, right? 15 A. Correct. 16 Q. Okay. I've given you the version that 17 was submitted in the 307 proceeding. I believe 18 that this same document was marked as 19 Exhibit 1004 in the 308 proceeding. 20 Do you understand them to be the same? 21 A. I would expect that to be the case. 22 Q. Okay. And we can just talk about the	Page 136 1 Q. All right. And I think in paragraph 128 2 of your declaration you also call it the content 3 feed aggregation system. 4 A. Yes. I refer to the content feed 5 aggregation system in Darnell in paragraph 128. 6 Because that's the language Darnell uses, of 7 course. 8 Q. Darnell's system aggregates content, 9 right? 10 A. One of the things that Darnell's system 11 does is it collects content. It collects it into 12 a single point. Yeah. 13 So in that respect, that's why I think it 14 refers to itself as a feed aggregation system. 15 It collects feeds, I guess is a better way to put 16 it. 17 Q. It aggregates feeds? 18 A. It is -- yes. It says here specifically, 19 "In a content feed aggregation system, a user may 20 subscribe to one or more content feeds and be 21 presented to the items presented in those content 22 feeds."
Page 135 1 version that I've given you, right? 2 A. Let's do that. 3 Q. Okay. Make this easy on ourselves here. 4 Okay. Is it fair to characterize 5 Darnell's system as an aggregator? 6 A. What do you mean by "aggregator"? 7 Q. How would you interpret that? 8 A. I think it's a -- could mean many 9 different things. Broad term. 10 Parts of Darnell collect content, but 11 Darnell does more than just that, I guess. 12 Q. I'll give you a couple of examples. 13 So paragraph 32 of Darnell. 14 A. Sure. 15 Q. It refers to the content feed aggregation 16 system. 17 A. Okay. I am looking now to see what it 18 says about that. Give me one moment. 19 So 32, the language of Darnell is 20 referring to a content feed aggregation system, 21 presumably because one of its functions is to 22 collect content feeds together.	Page 137 1 Q. Where were you reading from? 2 A. Darnell at paragraph 30. 3 Q. Got you. Okay. 4 So looking at paragraph 32, Darnell's 5 content feed aggregation system includes a server 6 system 104, coupled to client systems 102, right? 7 A. Please repeat. 8 Q. Do you want a second to review 9 paragraph 32? 10 A. Oh, yes. That was... 11 Okay. Please repeat. 12 Q. Darnell's content feed aggregation system 13 includes a server system 104 -- 14 A. Yes. 15 Q. -- which is coupled to client systems 102 16 and hosts 120, right? 17 A. Yes. It says that. 18 Q. Okay. What's the server system 104? 19 A. The server system 104 accesses content 20 feeds from the feed sources, and it also does 21 other things too. 22 Q. And the server system 104 includes a

35 (Pages 134 - 137)

Page 138 1 server 108 and a database 110; is that right? 2 A. Yes. 3 Q. What's the server 108? 4 A. Server 108, which is sometimes called a 5 front-end server, retrieves the content feeds 6 from the feed sources. 7 Q. What's a front-end server? 8 A. Broadly speaking, without giving a 9 specific definition, a front-end server is 10 generally a server that is the interface point 11 for other systems. 12 Q. Is there such a thing as a back-end 13 server? 14 A. There can be. 15 Q. And just generally speaking, what is a 16 back-end server? 17 A. A back-end server, just like front-end 18 server, can be used in different contexts. The 19 back-end server, generally, can be a server that 20 does things that are not facing other systems 21 except for the front-end servers. 22 Q. Sorry, what do you mean by does things	Page 140 1 A. It's like -- so the front-end systems, 2 they typically allow you to interface to 3 computers. One of those computers might be a 4 back-end system, so one that's not really 5 designed to be communicating directly with other 6 computer systems. 7 Q. Okay. 8 A. But that's just a general, off-the-cuff 9 term. 10 Q. All right. Then we talked about the 11 client system in Darnell's content feed 12 aggregation system. 13 What does that do? 14 Just to move this along a little bit -- 15 A. Yeah. 16 Q. -- paragraph 39. I'm not trying to limit 17 you to that, but that might be a good place to -- 18 A. Thank you. 19 Q. Sure. So I'll ask the question again. 20 What does the client system in Darnell's 21 content feed aggregation system do? 22 A. So the user interfaces with the server
Page 139 1 that are not facing other systems? 2 A. So this is general; it's not something 3 that I think I've specifically opined on. But a 4 back-end server, you know, can do tasks that 5 are -- I'm trying to find a word there -- not 6 directly facing -- they're often tasks that are, 7 well, on the back-end. 8 I'm trying to it describe it without 9 using the word "back-end." 10 But it's not something I've officially 11 actually opined on directly. Maybe you can point 12 me to where it appears here and I can, like, 13 describe it off of the context, the word 14 "back-end." Front-end appears here, so I can 15 talk about that. 16 But, like, back-end, does it appear here? 17 So I can, like... 18 Q. I'm just asking generally. Honestly, I 19 just kind of want to -- 20 A. Yeah. 21 Q. Wanted to better understand the 22 difference.	Page 141 1 system and these content items at a client system 2 or device. And that's going to be called the 3 client system. 4 The client system, it includes a computer 5 or other computery [sic] devices like PDAs, cell 6 phones, or the like. 7 Q. And how does a user interact with the 8 server system 104? 9 A. They view content items at the client 10 system -- through the client system. 11 Q. Is that through feed reader user 12 interface 116? 13 A. Yes. Client system 102 includes a 14 computer 118. And computer 118 typically will 15 have a display 114. And therefore, in some 16 embodiments at least, a user may interact with 17 the server system through the feed reader user 18 interface that may be presented on that display 19 114, which is a part of the display of the client 20 system 102, which includes a computer 118. 21 Q. In Darnell's system, content items in 22 feeds are stored in a database before being

36 (Pages 138 - 141)

Page 142 1 presented to the user via the feed reader user 2 interface, right? 3 A. Is there a section here that you're 4 quoting as I look through, maybe? 5 Q. Sure. Paragraph 34, for example, says, 6 "The server system 104 stores content items in 7 the content feeds in the database 110." 8 A. Okay. So 34 says the server system 9 stores content items in the content feed 10 from [sic] the database. In some embodiments, 11 the database stores both metadata and the 12 content of each content item. However, in some 13 other embodiments, the database stores the 14 metadata but not the content for each content 15 item. Yes. 16 Q. Okay. So content items in the content 17 feeds are stored in a database before being 18 presented to the user? 19 MR. CARTER: Object to form. 20 THE WITNESS: So the server system stores 21 those. That was part 1 that I just answered. 22 Part 2 is whether that occurs before it's	Page 144 1 A. It can get stored on the way to the user, 2 at least. 3 Q. Paragraph 167 of your declaration talks 4 about the feed content database. It says, "The 5 content data is received at the server and stored 6 remotely in a database before being sent over the 7 internet to the user through the feed reader 8 interface." 9 A. Yes. 10 Q. Okay. 11 A. And that's along the path. 12 Q. Okay. So again, the content items are 13 stored in the database before being presented to 14 the user? 15 MR. CARTER: Object to form. 16 THE WITNESS: That's the quote from -- 17 that I'm referencing from the patent here. So in 18 that embodiment it's describing the content is 19 received at the server and stored remotely in a 20 database before being sent over the internet to 21 the user through the feed reader interface. 22 That's right.
Page 143 1 being presented to the user. 2 Is that correct? I just want to 3 understand your question. 4 BY MR. DEIGHAN: 5 Q. I was just -- that's kind of what I'm 6 asking you. 7 A. Okay. Let me take a look. 8 It looks like Darnell, at least in some 9 embodiments, describes content being stored in 10 the database in its transmission path to the 11 user. So along that transmission path it gets 12 stored. 13 Q. But what you're getting hung up on, I 14 guess, is that -- whether or not it's stored in 15 the database before it's sent to a user; is that 16 right? 17 A. No. As part of the transmission path, it 18 goes into the database -- in some embodiments it 19 goes into the database as part of the 20 transmission path to the user. So it gets stored 21 on the way to the user. Yes. 22 Q. Okay.	Page 145 1 BY MR. DEIGHAN: 2 Q. Is there another embodiment? 3 A. Well, it describes an embodiment here. I 4 don't know -- 5 Q. Okay. 6 A. -- whether other embodiments exist. 7 Q. Okay. So figure 5, which is discussed in 8 Darnell starting around paragraph 74 -- I'm 9 sorry, 71, that discusses Darnell's server 10 computer, right? 11 A. Figure 5 is a block diagram illustrating 12 a server computer in accordance with some 13 embodiments. 14 Q. All right. And that server computer, it 15 includes a feed tracker module; is that right? 16 A. The memory of the server computer has 17 instructions that appear to comprise a feed 18 tracker module. 19 Q. All right. And it says that the feed 20 tracker module is for receiving [sic] content 21 items for storage periodically and/or as content 22 feeds are updated.

Page 146 1 That's in paragraph 74. 2 A. A feed tracker module for retrieving 3 content items for storage periodically and/or as 4 content feeds are updated. 5 Q. Right. And then the server computer also 6 includes a feed content database; is that right? 7 A. Yes. 8 Q. And what's that for? 9 A. I should say yes for this embodiment. 10 Feed content database for storing content 11 items from content feeds and user information 12 about content items that respective users have 13 read, labeled, and so on. 14 Q. All right. So the feed track- -- sorry, 15 the feed content database stores content items 16 from feeds? 17 A. Feed content database for storing content 18 items from content feeds and user information 19 about content items. Yes -- 20 Q. Okay. 21 A. -- it says that. 22 Q. So this is kind of similar to the cloud	Page 148 1 A. Yes. I recall that. 2 Q. We were talking about interfaces. 3 A. Yes. 4 Q. User interfaces. 5 And we were talking about how, in some 6 instances, you can have remote servers that call 7 on databases, right? 8 A. Yes. That is something you can have. 9 Q. And so Darnell's system is similar to 10 that; it includes a server system with a 11 database, right? 12 A. Darnell's system includes a remote server 13 or a server system that contains or has access to 14 a database. That is correct. 15 Q. Okay. 16 A. Yes. 17 Q. All right. So -- 18 A. You -- 19 Q. Sorry, I thought you were -- 20 A. I was going to ask for a restroom break. 21 MR. DEIGHAN: Sure. 22 THE WITNESS: Thanks.
Page 147 1 computing system that we were talking about 2 earlier, right? It includes a server system with 3 a database? We talked about that earlier? 4 MR. CARTER: Object to form. 5 THE WITNESS: I'm so sorry, we talked 6 about several cloud computing systems earlier. 7 BY MR. DEIGHAN: 8 Q. We were just generally discussing cloud 9 computing systems, right? 10 A. Oh, geez. 11 MR. CARTER: Same objection. 12 THE WITNESS: I don't really -- okay. 13 Maybe you could ask the question in a way that 14 refreshes my memory of which aspects of which 15 system we were talking about, or something along 16 those lines just so that I -- yeah. 17 BY MR. DEIGHAN: 18 Q. You recall earlier that we were talking 19 about general aspects of cloud computing systems. 20 A. I do recall that. 21 Q. And we were talking about cloud 22 applications.	Page 149 1 (A recess was taken.) 2 BY MR. DEIGHAN: 3 Q. Hi again, Dr. Martin. 4 A. Hello. 5 Q. All right. So would you agree that the 6 role of the server in Darnell's system is to 7 aggregate content? 8 A. Not only. So it describes itself as 9 containing a feed aggregation system, but it does 10 other things, too. It presents a user interface. 11 It serves data. It fetches at that time. It 12 does a whole bunch of different things. Yeah. 13 Q. Looking at paragraph 155 of your 14 declaration. 15 A. Uh-huh. 16 Q. You're talking about the structure of 17 Darnell. And you say figure 1 depicts a 18 server-client setup designed to aggregate and 19 distribute content across a network -- 20 A. Uh-huh. 21 Q. -- right? 22 A. Yup. Sorry, ask your question.

Page 150 1 Q. Oh, no, that's okay. 2 So based on your description, Darnell's 3 structure is designed to aggregate and distribute 4 content? 5 A. Yes. It aggregates content. It 6 distributes content. And it does some other 7 things, too, yeah. 8 Q. Okay. So content is aggregated at the 9 server and then distributed across the network? 10 A. Those are two things that the server 11 does. 12 Q. Okay. Referring to paragraph 156 -- why 13 don't you go ahead and read that and then I'm 14 going to ask you a couple of questions about it. 15 A. Okay. 16 Q. So in your view, Darnell's server and 17 client systems have specific roles in the system. 18 A. I think that's fair to say. 19 Q. And you say, "Darnell describes that 20 client systems may be configured to receive, 21 store, and organize feed content aggregated by 22 the server."	Page 152 1 Q. And then I think you go on to say that 2 databases manage content aggregation? 3 A. Darnell also describes using databases to 4 manage content aggregation and access. 5 Q. Okay. The next paragraph, 158. 6 A. Okay. 7 Q. If you want to read that really quickly. 8 A. Okay. 9 Q. So again, you're saying here that the 10 server system collects feed content and 11 aggregates it, right? 12 A. I think the point of 158 is actually what 13 happens after the aggregation of the content. 14 Now it's talking about the structure of Darnell's 15 network and how it supports flexible and scalable 16 access to the content that has been aggregated. 17 And it talks about the server system, 18 once it's collected the content and aggregated it 19 from the host, is going to allow client systems 20 to access that content in various ways and to do 21 things with it on the client side. Yeah. 22 Q. Okay.
Page 151 1 A. That's an example that I give. Yes. 2 Q. And so the role -- or one of the roles of 3 the server is to aggregate content? 4 A. Yes. That's one of the things that 5 server can do -- 6 Q. Okay. 7 A. -- it can aggregate -- it is a content 8 feed aggregation system, among other things. 9 Q. And then the role of the client system is 10 to receive, store, and organize content? 11 A. Those are some things that the client 12 system can do. They can receive, store, and 13 organize feed content, yup. Also display it, of 14 course, and some other things, too. 15 Q. All right. And then paragraph 157. If 16 you want to go ahead and read that. 17 A. Okay. 18 Q. So Darnell's system includes databases 19 that are configured to store the feeds, right? 20 A. Darnell explains that the server may 21 include or have access to one or more databases 22 configured to store the feeds. That's true.	Page 153 1 A. So I think we're past the -- past that 2 part of it here. 3 Q. All right. So based on the parts of your 4 declaration that we just went over, fair to say 5 that Darnell's server aggregates content before 6 it's sent to users? 7 A. One of the things that Darnell's server 8 does is aggregate content. That is part of what 9 it does, though I'm still not entirely clear on 10 the definition you're using for "aggregate." 11 At least as Darnell described it, it 12 aggregates content. 13 Q. Okay. For content to be aggregated, it 14 has to be received in its entirety, right? 15 A. Well, that depends on the definition that 16 you use for aggregate and for content, I think. 17 Q. How so? 18 A. I can aggregate things and receive parts 19 of them. I can aggregate things and receive the 20 whole of them. 21 I'm just talking about the general 22 English use of the words "aggregate" and

Page 154 1 "content," for instance. Right? So I think it 2 depends. 3 Maybe you can point me to an example or 4 something like that and I can more concretely, 5 like, anchor that to something in my report or 6 something. That would be helpful. 7 Q. Well, I'm just going -- asking you 8 questions about Darnell -- 9 A. Yeah, point me to something in Darnell, 10 maybe, and I can, like, talk about it in that 11 way. 12 Q. Well, like I said, I'm just asking you 13 questions about Darnell. 14 A. Uh-huh. 15 Q. So from your understanding of Darnell and 16 the way it describes an aggregation system, 17 right -- 18 A. Okay. 19 Q. -- for content to be aggregated, how 20 could it be -- let me rephrase that. 21 How could content be aggregated if it's 22 not received in its entirety first?	Page 156 1 Okay. We can look at paragraph 36, I 2 guess. It says here, "Content feed is a resource 3 or service that provides a list of content items 4 that are present, recently added, or recently 5 updated at a feed source. A content item in a 6 content feed made include the content associated 7 with the item itself," and in parentheses says, 8 "(the actual content that the content item 9 specifies), a title (sometimes called a 10 headline), and/or a description of the content, a 11 network location, and -- or locator of the 12 content, or any combination thereof." 13 So the content item may include the 14 content associated with the item itself, or it 15 could include something related to the content. 16 And something related to the content would be a 17 part of the content, I guess. So I guess content 18 could be a part of the content. 19 Also -- the reason I'm getting hung up on 20 this is that I'm trying to figure out if you're 21 asking me, like, what if the content gets cut off 22 or something? Like, is that what you're asking?
Page 155 1 A. So what does it mean from your question 2 for content to not be received in its entirety? 3 Isn't a piece of content still content? 4 So I guess what I'm asking is, are you 5 implying that a piece of content is not content? 6 Q. Can content be a piece of content, in 7 your view? 8 A. In what context? Content data? Content 9 applications? Just the word content? And -- 10 content as used in Darnell? Like, what are we -- 11 what are we trying to talk about here? 12 Q. Well, I was asking you questions about 13 Darnell specifically. 14 A. So -- okay. So what is your question? 15 Q. Well, again, how -- in Darnell's system, 16 how could content be aggregated if it's not 17 received by the server in its entirety first? 18 A. Well, let's look for an instance where 19 Darnell talks about receiving content from the 20 server, and maybe we can look at that and get an 21 understanding. 22 So let me look for that here.	Page 157 1 If there's an error in transmission and the 2 content gets cut off, is it still going to work? 3 Like, what is the -- what are you trying to get 4 at? 5 Q. I mean, that's one example. Or let's say 6 that content -- it's a large piece of content, 7 and it's only partially received. 8 A. Okay. 9 Q. Could that be aggregated in Darnell's 10 system? 11 A. I don't think that Darnell explicitly 12 describes what would happen on the case of, like, 13 an error condition. My experience with errors in 14 systems is that it very well could end up like 15 that -- a system both -- from Darnell would 16 actually display it, but incorrectly if it gets 17 cut off. But -- I've seen lots of examples of 18 that. 19 But it's unclear what would happen if the 20 content gets cut off and you get partial content. 21 I guess that technically could still be content 22 and it could technically still work in the sense

40 (Pages 154 - 157)

Page 158 1 that it displays, but it could display improperly 2 or something, I guess. 3 Q. So was that -- you were talking 4 specifically there about an error condition. 5 Would that be the same if a piece of 6 content was large and it was only partially 7 received? 8 A. That's what I took it to mean when you 9 say the content is large and it's only partially 10 received. Like, the download of the content gets 11 cut off prematurely or something like that. 12 Did you mean something else? 13 Q. Well, I'm just thinking of a situation 14 where you have content that is in the process of 15 being received at the server -- 16 A. Right. 17 Q. -- right? While it's being received and 18 it's not entirely received, could that content be 19 aggregated, or do you have to wait until it's 20 fully received? 21 A. Oh. I think I understand what you're 22 saying. Okay. It actually entirely depends on	Page 160 1 So I think it depends on the context, is 2 the answer. 3 So it depends on the content and how it's 4 designed to be transmitted. 5 Q. Okay. Are there any examples in Darnell 6 that you're aware of where Darnell's system 7 aggregated partial content? 8 A. I think so. 9 Okay. Darnell at 76. No, that's not 10 right. Darnell at 36. I'm sorry. 11 Ah. It says at the very end of that 12 paragraph, the next page, the content may include 13 the data, including, but not limited to 14 web pages, images, digital audio, digital video, 15 portable document format documents, and so forth. 16 So like, at least to me, in the case of 17 describing digital audio and digital video, those 18 types of content are often chunked and streamed 19 in that way. So those are two examples where it, 20 you know, points to cases where that could occur. 21 It's transmitted in chunks like that. Yeah. 22 Q. But would Darnell's system aggregate one
Page 159 1 the content and how it's being sent and -- it 2 depends. 3 So like, for instance, live video is 4 chunked up into smaller chunks. So, like, you 5 might get 2-megabyte chunks, and you'll just be 6 receiving a 2-megabyte chunk, 2-megabyte chunk, 7 2-megabyte chunk, et cetera, and you'll be 8 displaying each 2-megabyte chunk as you get it, 9 and that's how the content is actually sent 10 because live video just continuously rolls, if 11 you will. 12 And so -- that's one example. 13 If you're downloading a bulk data file 14 that's encrypted and you need to wait until the 15 very end to decrypt the file, then you're going 16 to have to wait until the end for the content to 17 be received. If it gets cut off halfway through, 18 there's going to be an error; you're not going to 19 be able to do anything with it, probably. I 20 mean, your system might still treat it like it 21 was real content. It might not know it was cut 22 off, but it won't work right.	Page 161 1 of those chunks, or would it wait until the full 2 content is received before it aggregates it? 3 A. I would think that Darnell's system -- I 4 think it would -- it could work in a variety of 5 ways, but one thing it could do is actually 6 aggregate each chunk as it comes in. And also, 7 like, forward those chunks on. So that's one 8 possibility. 9 Yeah, I don't know. I would have to 10 consider that -- 11 Q. Wouldn't -- 12 A. -- in more detail. 13 Q. If that were the case, though, wouldn't 14 you end up with multiple instances in your feed 15 where it's talking about -- or the content is 16 showing up in multiple -- let me rephrase that. 17 If that were the case, wouldn't there be 18 multiple instances of the same content in your 19 feed? 20 A. I think it depends on how it's presented. 21 It could be presented in the feed such that when 22 you click it, it enables the playing, and then

41 (Pages 158 - 161)

Page 162 1 that's what kicks off the stream, but the stream 2 is still collected through the server. 3 It could be presented in a bunch of 4 different ways, so it would depend, I think, on 5 how it's designed. Yeah. 6 Q. Do you -- 7 A. I'd have to think more about it, but... 8 Q. Is that something that you're actually 9 pulling from Darnell, or are you just saying 10 that's how it could work? 11 A. That -- it's -- you know, Darnell just 12 has audio and video, and I'm just thinking to 13 respond to your question. But I'm not -- it's 14 not something that I've thought about previously. 15 Q. Well, let me direct you to a couple 16 paragraphs, and then I'll ask you a couple of 17 questions. 18 A. Sure. 19 Q. So paragraphs 106, 107, and 108 of 20 Darnell basically relate to figure 9A, which is 21 illustrating a process for retrieving and storing 22 content items for subsequent transmission to the	Page 164 1 discussion about a partial piece of content -- 2 right -- 3 A. Uh-huh. 4 Q. -- wouldn't a partial piece of content 5 have a different identifier from another partial 6 piece of that same content? 7 A. Oh, I see. That actually depends on how 8 the content gets chopped up and transmitted. 9 So if it gets chopped up into chunks for 10 all the same subscribers and transmitted, they'll 11 all get the same piece, and they'll just start 12 playing from that piece, and so it will actually 13 end up being the case that that deduplication can 14 still occur. 15 But again, this is something that I would 16 need to think more about. I'm not -- you know, 17 I'm just trying to answer your question. 18 Q. Okay. So it's your testimony, then, that 19 a partial piece of content could be aggregated in 20 Darnell's system? 21 A. It's not -- it doesn't -- nothing in 22 Darnell prevents that from occurring. It would
Page 163 1 client computer, right? 2 A. Yes. 3 Q. And feel free to read it. 4 A. Uh-huh. 5 Q. Actually, I'll just give you a second to 6 read through it and then I'll ask you a couple of 7 questions. 8 A. Okay. I'm reading 107 now. Okay. 9 Q. So it talks about how content items are 10 merged into a stored set of previously published 11 content items, right? 12 A. Yes. 13 Q. And then it talks about how content 14 that's being merged is identified, right? 15 A. Yes. 16 Q. And isn't the reason why they're doing 17 that identification so that the system can 18 recognize if it's the same piece of content so 19 it's not merging the same piece of content into 20 the feed multiple times? 21 A. Yes. 22 Q. So if you had -- going back to our	Page 165 1 depend on how the content is structured. Yeah. 2 Q. Okay. But nothing in Darnell's 3 description says that that occurs. 4 A. Well, by talking about video and audio, 5 it seems to me that Darnell at least contemplates 6 the idea for those applications where there are 7 common applications. 8 I don't know about partial content for 9 things like incorrect or errored-out data 10 transfers or things like that. But at least in 11 some context, I think that Darnell contemplates 12 it. 13 Q. And that's just based on the fact that 14 Darnell says that the content can include video 15 and audio? 16 A. Yeah. That's right. 17 THE WITNESS: New line of questioning? 18 MR. DEIGHAN: Yes. We can take a break. 19 THE WITNESS: Thanks. 20 (A recess was taken.) 21 BY MR. DEIGHAN: 22 Q. Hi, again, Dr. Martin. I had one last

Page 166 1 question on that last line of questioning. 2 A. Oh, okay. 3 Q. There's nothing beyond the fact -- or let 4 me restart. 5 There's nothing in Darnell beyond the 6 fact that it says that it can include video and 7 audio that discloses that Darnell can aggregate 8 partial content, right? 9 A. Haven't looked for that yet. I could do 10 so now, but it's not something that I've, like, 11 actually looked through Darnell for, because 12 these partial content questions you are kind of 13 just throwing at me now. 14 So -- I can look for it. Do you want me 15 to? 16 Q. How long do you think it would take you 17 to look for that? 18 A. It might be tough because I'll have to 19 kind of, like, do a deep dive through it. It 20 sort of will take a long time to do it on the 21 fly, I think. 22 Q. How familiar are you with Darnell?	Page 168 1 you'd like. 2 A. Sure. 3 Q. So in this paragraph you're providing a 4 quote from the patents, and you say that what 5 that means is that content updates and 6 transmissions occur with minimum lag, right? 7 A. Yes. 8 Q. And you say, which a person of ordinary 9 skill in the art would have recognized to ensure 10 users can access the most current data from 11 multiple sources in real time. 12 A. I say that. 13 Q. So for a user to access the most current 14 data in real time, doesn't it have to be made 15 available to the user on the master web page? 16 A. Okay. Ask that question again just so I 17 can understand it. 18 Q. For a user to access the most current 19 data in real time, doesn't it have to be made 20 available to the user on the master web page? 21 A. For the user to access the most current 22 data in real time, the user would access that
Page 167 1 A. Pretty familiar with Darnell. I mean 2 quite -- very familiar with Darnell. 3 Q. I mean, as you sit here today, can you 4 think of anything else where Darnell talked about 5 aggregating partial content? 6 A. Yeah, like -- that's why I said, you 7 know, like, pretty familiar. Like, without 8 doing -- I'm not familiar to the point that I 9 have it memorized, but I'm familiar with all the 10 parts that I've cited in my report. 11 So -- for the other parts, I would have 12 to, like -- I'd have to really do a deep dive to 13 see if I could find anything else. 14 Q. Nothing in your report talks about 15 aggregating partial content in Darnell? 16 A. Other than the citation to that passage, 17 I don't think anything else is specifically 18 directed at that in Darnell. 19 Q. All right. Let's turn to paragraph 179 20 of your declaration. 21 A. Okay. 22 Q. I'll give you a second to read it if	Page 169 1 data through the master web page. 2 Q. Right. Because a user can't access the 3 most current data if it's just sitting on the 4 remote server, right? 5 A. The data travels from the server to the 6 user through -- and the master web page is how 7 the user accesses it. Through the interface 8 provided by the master web page. 9 Q. Okay. Again, so the -- in order for a 10 user to have access to the most current data, it 11 has to be displayed on the master web page. 12 A. The data will ultimately be displayed on 13 the master web page. Correct. 14 Q. Paragraph 151. You quote the patents 15 and you say, "As content updates on a source 16 server, the master application, which organizes 17 and displays content on the master web page, 18 receives [sic] this content promptly to ensure 19 users experience minimal delay when viewing 20 updated data." 21 MR. CARTER: Sorry, I think you said 22 paragraph 151, and I believe you meant

Page 170 1 paragraph 181. 2 MR. DEIGHAN: Oh, I'm sorry. Did I -- 3 yes. I apologize. 4 THE WITNESS: Okay. 5 MR. DEIGHAN: I meant 181. Sorry about 6 that. 7 THE WITNESS: Okay. Can you please say 8 whatever you were saying again, because I was 9 reading 151 when you were talking. 10 MR. DEIGHAN: I -- I apologize. Slip of 11 the tongue. 12 BY MR. DEIGHAN: 13 Q. So in paragraph 181 -- right? -- you 14 provide a quote from the patent, and what you say 15 is the "description shows that, as content 16 updates on a source server, the master 17 application, which organizes and displays content 18 on the master web page, retrieves this content 19 promptly to ensure users experience minimal delay 20 when viewing updated data." 21 A. Exactly. Yes. 22 Q. So doesn't that mean that the patent	Page 172 1 A. Master application organizes and displays 2 content on the master web page, and it's going to 3 be shown on the user's computer, or however the 4 user is accessing the master application. 5 Q. Okay. Because a user would experience 6 delay when viewing the data if the information 7 was on the server but not showing on the 8 web page. 9 A. If the information were on the server but 10 not shown on the web page, then the user would 11 not see the data that was on the server but not 12 on the web page. 13 Q. All right. Paragraph 182. Not 152. 14 182. 15 A. Very good. 16 Q. Go ahead and read that. 17 A. Okay. 18 Q. So in your opinion, "simultaneously" and 19 "real time" mean a system where content from 20 multiple sources is updated and displayed as soon 21 as it becomes available; is that right? 22 A. I don't think I would say that they mean
Page 171 1 requires that users experience minimal delay -- 2 I'm sorry. 3 If content is updated on the source 4 server but it's not provided on the master 5 web page, wouldn't the user experience delay in 6 viewing that data? 7 A. If content is updated on a source server, 8 the master application, which is putting together 9 the master web page, will retrieve that content 10 promptly, and that way they'll ensure the users 11 experience minimal delay when viewing the data. 12 Q. So you said the master application, which 13 is putting together the master web page, 14 retrieves the content promptly. 15 A. Yes. 16 Q. But that still has to be shown on the 17 master web page, right? 18 A. Yes. The content is going to ultimately 19 be organized and displayed on the master 20 web page. Yeah. 21 Q. What do you mean when you say ultimately 22 organized and displayed?	Page 173 1 a system where content from multiple sources is 2 updated and displayed as soon as it becomes 3 available, but I think a POSITA could understand 4 them to describe such a system. 5 Q. What's the difference between "mean" and 6 "describe"? 7 A. When you mean something, you're saying 8 this thing is that thing. When you're describing 9 something, you're describing characteristics of a 10 thing or you're understanding a thing to have 11 certain characteristics, but it might have other 12 aspects, too. So it's not a definition. 13 Q. So in your view, simultaneously -- a 14 characteristic of "simultaneously" and 15 "real time" is that it's a system where content 16 is updated and displayed as soon as it becomes 17 available? 18 A. "Simultaneously" and "real time" a POSITA 19 could understand to be describing a system where 20 content from multiple sources is updated and 21 displayed as soon as it becomes available, I 22 think is what I'm saying here.

Page 174 1 Q. What about a system where content is only 2 updated but not displayed? Would that system be 3 simultaneous and in real time? 4 A. I think, here, we're talking about this 5 particular claim in the patent, so I think that, 6 in the context of this particular claim, that 7 type of system. So I don't want to say any 8 system. 9 But for the purposes of claim 1 10 limitation (b)(2), I think what we're saying here 11 is that it could encompass a situation where a 12 POSITA would understand that these "simultaneous" 13 and "real time" terms are describing a system 14 where content from multiple sources is updated 15 and displayed as soon as it becomes available. 16 Q. Again -- I think what you're saying is 17 that content has to be updated and displayed, 18 right? 19 MR. CARTER: Object to form. 20 THE WITNESS: I'm not saying that it has 21 to be. I'm saying that, at the very least, a 22 POSITA -- the claims are broad enough to	Page 176 1 Q. So again, a system where content is only 2 updated but not displayed wouldn't meet that 3 description? 4 A. I think that these terms -- a POSITA 5 would have understood them to be describing a 6 system where the content is updated and 7 displayed. And so that's at the very least how I 8 was thinking about them here. 9 Q. The next -- sorry, not -- paragraph 184. 10 I'll give you a minute to read that. 11 A. Okay. Okay. 12 Q. So in this paragraph you refer to the 13 feed tracker module, right? 14 A. I do. 15 Q. And that's part of the server computer, 16 right? 17 A. Ah, yes. It is. 18 Q. Okay. It's not part of the client? 19 A. The feed reader module is part of the 20 client. 21 Q. Okay. So the feed tracker module doesn't 22 display any content to the user, right?
Page 175 1 encompass such a system, and a POSITA could 2 understand that. 3 BY MR. DEIGHAN: 4 Q. They're broad enough to encompass a 5 system that requires content be updated and 6 displayed is what you're saying. 7 A. Yes. I don't know if they have to be or 8 not. I haven't considered that. But at the very 9 least, it encompasses a system or could encompass 10 a system where that occurs. 11 Q. So this is -- is this your definition of 12 "simultaneously" and "real time"? 13 A. It's not the definition of 14 "simultaneously" and "real time." Instead, I'm 15 saying that these are terms that are being used 16 to describe a system. 17 And so I'm saying, based on that 18 description of the system, a POSITA, you know, 19 would have understood that system to be a system 20 where content from multiple sources is updated 21 and displayed as soon as it becomes available. 22 That's what I'm saying here.	Page 177 1 A. The feed tracker module retrieves content 2 items periodically and/or as content feeds are 3 updated. 4 And the feed reader module is what 5 displays feeds to the user, or part of what 6 displays feeds to the user. 7 Q. Okay. I'm going to backtrack just a bit 8 here. 9 Paragraph 178. 10 A. Okay. 11 Q. You say a POSITA would have understood 12 the terms "simultaneously" or "real time" to mean 13 that the content from more than one source is 14 sent to the server when it is available, right? 15 A. Yes. That is something that a POSITA 16 would understand. 17 Q. And you said that that's in the context 18 of the '658 patent specification, right, and file 19 history? 20 A. Yes. Also, just to be clear, when we're 21 talking about the '658 patent specification, we 22 are also talking about the specification for the

45 (Pages 174 - 177)

Page 178 1 '068 patent. Is that okay? 2 Q. Yes. Of course. 3 A. Okay. Very good. 4 Q. Where in the specification does it 5 provide support for that definition? 6 A. Paragraph 179 is where I provide that 7 support, it looks like. 8 Q. Okay. And how does that support your 9 definition there? 10 A. Also paragraph 180, sorry, and 181. 11 So it's 179 through 181, just to be clear 12 for the record. 13 Q. Okay. And how did those portions of the 14 specification provide support for your definition 15 of "simultaneously" and "real time"? 16 A. So column 1:51 says, "Cloud-based 17 computing can include the delivery of any kind of 18 content data and/or services in real time, which 19 extend the capabilities to a remote computing 20 device, typically over the internet." 21 So -- oh, sorry, I was actually looking 22 there. Also, though -- so that is one place.	Page 180 1 that extends the capability of the remote 2 computing device, typically over the internet. 3 And that's a description of a cloud-based system 4 and it means that content updates and 5 transmission, they occur with minimal lag. 6 And so a POSITA would understand that to 7 be recognizing that users can access the most 8 current data from multiple sources in real time. 9 Then in column 4, lines 1 through 3 -- 10 Q. Before we go there, can I just ask you a 11 couple of questions about what you -- 12 A. Yeah. 13 Q. -- just read? 14 A. Do you want to do it by paragraph? 15 Q. Sure. 16 A. It might be easier to just do it that 17 way. 18 Q. Yeah. Sure. 19 So in that discussion -- or in that 20 description that you just read, doesn't delivery 21 refer to delivery to the client? 22 A. I'm sorry, what line number?
Page 179 1 And also 38, "More particularly, the present 2 invention relates to computer systems for 3 managing and migrating through web-based content 4 data in a cloud-based computing environment from 5 multiple content data sources through a single 6 point of access and/or user interface from a 7 remote computing device." 8 So here they're describing -- and also it 9 continues, "Cloud-based computing provides 10 computation, software, data access, and storage 11 services that do not require a user to have 12 knowledge of the physical location and 13 configuration of the system and architecture that 14 delivered the content data and/or services. 15 Cloud-based computing can include the delivery of 16 any kind of content data and/or services in 17 real time, which extend the capabilities to a 18 remote computing device, typically over the 19 internet." 20 Okay. So here I'm basically just saying 21 that it can include the delivery of any kind of 22 content data and/or services in real time, and	Page 181 1 Q. It was just in the -- 2 A. No, I know. I just lost my place. 3 Q. Well, in your declaration, you're citing 4 to column 1, lines 43 to 46. 5 A. Okay. So here it's just talking about 6 delivery generally, so it's just saying 7 cloud-based computing generally can include the 8 delivery of any kind of content data and/or 9 services in real time. 10 So it's just saying what the cloud 11 enables. It can extend the capabilities to a 12 remote computing device, typically over the 13 internet. It's not really saying what kind of 14 remote computing device it is, at least not yet, 15 not here. It's because it's the background of 16 the invention. Just talking about what the cloud 17 enables. 18 Q. So in that paragraph of your declaration 19 where you're talking about this, though, 20 paragraph 179 -- 21 A. Uh-huh. 22 Q. -- and you talked about this a little

Page 182 1 earlier -- but you said that a person of ordinary 2 skill in the art would have recognized that this 3 ensures users can access the most current data 4 from multiple sources in real time, right? 5 A. That is correct. 6 Q. So ensuring users can access the most 7 current data, doesn't that require the data to 8 actually be displayed to the user? 9 A. Ensuring users can access the most 10 current data -- here, this is talking about data 11 making its ways to users in the abstract, this 12 particular sentence. 13 And here we're talking about users 14 accessing current data from multiple sources in 15 real time. 16 And here we're talking about, in the 17 patent, data-reaching devices because we're still 18 talking in the abstract. And I'm saying the 19 implication of that sentence is that a POSITA 20 would recognize that one implication of that is 21 it would ensure that users can access the most 22 current data from multiple sources in real time.	Page 184 1 real time would be something a POSITA would 2 understand is signifying that content from 3 multiple sources is transmitted to the server 4 when it becomes available without significant 5 delay between the content sources. 6 And I go on with other sources of 7 evidence, too, other things to support that. 8 This is just one piece of the whole puzzle, of 9 course. 10 Q. Yeah, I'm not sure I'm entirely 11 following. Because your definition is that 12 content from more than one source is sent from 13 the server when it becomes available. And then, 14 in paragraph 179, you're saying that the portion 15 of the patent that you cite would have been 16 recognized by a person of ordinary skill in the 17 art to ensure users can access the most current 18 data from multiple sources in real time, right? 19 A. Oh, I think you're taking just issue with 20 the fact that it says the word "users" here? You 21 can replace the word "users" with "computers" and 22 the sentence would still hold true, if that's
Page 183 1 Q. Right. You're saying that this portion 2 of the patent -- or you're saying this 3 description -- right? And that refers to those 4 lines in the patent. 5 A. Yes. 6 Q. So again, back to my original question, 7 how does that support your definition of 8 "simultaneously" and "real time"? 9 A. Right. So what I'm saying with that, 10 though, for your previous question, you're 11 saying -- I think you were saying has to be 12 viewed. But here we're talking about the 13 delivery of any kind of content -- right? -- 14 because we're in the context of the background. 15 That could be content that's not even viewable. 16 So here we're just talking about the delivery of 17 content; the cloud enables it to be transmitted 18 with minimal lag. And a POSITA would recognize 19 that would ensure that users can access the most 20 current data from multiple sources in real time. 21 That's all they're saying here. 22 And it supports, though, the notion that	Page 185 1 what the issue is. 2 Q. I mean, the issue is -- that I'm trying 3 to get at here is that your definition requires 4 that content is sent to the server, but -- 5 A. Uh-huh. 6 Q. -- in this paragraph you're talking about 7 users accessing current data. 8 And what I'm saying is that, in order for 9 users to access current data, just having content 10 sent to the server is not enough. 11 A. Oh, I think I understand what your 12 question is. 13 No. Actually, if your users are 14 accessing data through a server, if you minimize 15 the delay of transmission of the data to the 16 server and the users are accessing data from that 17 server instantaneously, you can minimize the lag 18 that the users access that data with. Just 19 because it goes through a server doesn't mean 20 that it can't be transmitted with minimal lag. 21 Q. So are you adding something to your 22 definition of "real time" and "simultaneously,"

Page 186 1 then? 2 A. No. I'm just describing to you what it 3 says here. 4 I wrote here, "This description of a 5 cloud-based system means that content updates and 6 transmissions occur with minimal lag." 7 So pause there. Okay? 8 My definition is, the terms signify that 9 the content from multiple sources is transmitted 10 to the server when it becomes available. 11 Next I'm going to jump to 179: The 12 description of a cloud-based system means that 13 the content and transmission occurs with minimal 14 lag. 15 Then, "A POSITA would have recognized to 16 ensure that users can access the most current 17 data from multiple sources in real time." 18 If the server collects the data from 19 multiple sources, it's going to want to have 20 minimal lag when it collects that data. The 21 users will also want to have minimal lag when 22 they access it from the server. That could still	Page 188 1 you're discussing this portion of the patent, 2 you're talking about it being displayed or 3 received by a user. 4 And so, in your definition, I'm saying it 5 doesn't seem like it's enough for content to be 6 sent to the server. It's got to be also 7 accessible to a user. 8 MR. CARTER: Object to form. 9 THE WITNESS: I don't see how those two 10 things follow from one another. 11 So yes, it needs to be sent to the 12 server, and that is the definition of real time. 13 Later I talk about how users want to 14 access data from multiple sources in real time as 15 well and that how one way that that needs to 16 occur is, at the very least -- and I'm telling 17 you one way that that needs to occur at the very 18 least is for the data to be transmitted from the 19 multiple sources to the server when it becomes 20 available without significant delay. 21 Whether or not users want to access 22 things and how they want to access things would
Page 187 1 be real time even if it goes through the server. 2 Q. Yeah. So again, it's -- you're talking 3 about the users there. 4 A. The users might -- 5 Q. -- you're not just limiting it to the 6 data being sent to the server; you're also saying 7 that the users have to get it with minimal lag. 8 A. Okay. But a POSITA would recognize that 9 users want to access the data from multiple 10 sources in real time. And if the users are 11 accessing that data through a server, that 12 doesn't change anything in terms of what I've 13 written here, or my meaning. I think that that's 14 what I'm saying here. Right? 15 So I guess I'm still confused with what 16 the -- like, what you're getting at. 17 Q. What I'm getting at is that, in your 18 definition, you're saying that content sent to 19 the server -- 20 A. Right. 21 Q. -- is enough to meet the definition of 22 "real time" and "simultaneous," right? And when	Page 189 1 need to be something that's contemplated by the 2 claims if that's something that would appear in a 3 definition. 4 So maybe if we anchored a discussion to 5 the claims, that would help us out here. But if 6 you're just asking about the definition I've 7 used, I'm looking at the claim language 8 specifically when using a definition here. 9 BY MR. DEIGHAN: 10 Q. All right. So outside of the claim 11 language, though, where in the spec does it say 12 that content sent to a server means real time or 13 simultaneous? 14 MR. CARTER: Object to form. 15 THE WITNESS: Well, first of all, I don't 16 say means; I say signify. Right? It's an 17 aspect. Right? I'm not defining anything here. 18 I am just saying that the terms signify an aspect 19 of what "real time" is. 20 But regardless, so when we go to 21 column 4, lines 1 to 3 -- that's the next example 22 I use.

48 (Pages 186 - 189)

Page 190 1 Do you want me to jump there? 2 BY MR. DEIGHAN: 3 Q. Sure. 4 A. Okay. I think it's actually lines 13 5 through 15. Because it says -- refers to content 6 data as "data or information that is stored 7 remotely on servers that are generally accessible 8 over the internet/intranet via service provided 9 servers." 10 And here the point that I'm trying to 11 make is that the setup indicates that the content 12 is dynamically available and that it has to be 13 readily retrievable by the master server, and 14 that the expectation of a prompt retrieval is 15 going to suggest that the content updates from 16 each service provider would appear on the master 17 server as soon as they're available, 18 concurrently, given the system's design to 19 integrate various feeds into a cohesive and 20 accessible interface. 21 Q. Okay. And then paragraph 181. You said 22 that that also supports your definition?	Page 192 1 perspective of this claim, is to make sure that 2 the server gets the content as soon as it becomes 3 available. 4 Q. Once again, your discussion there 5 referred to ensuring that the users experience 6 minimal delay, right? 7 A. Yes. 8 Q. It doesn't say that the server 9 experiences minimal delay, right? 10 A. Well, part of it is that the server has 11 to experience minimal delay in order for the user 12 to experience minimal delay. 13 Q. Right. And then it has to be shown to 14 the user and the user has to experience minimal 15 delay. 16 MR. CARTER: Object to form. 17 THE WITNESS: At some point, things will 18 be shown to the user, and the user might want to 19 experience minimal delay. But we would have to 20 talk about that part of the claim to the extent 21 that that's what we would talk about for that to 22 be the part that we are discussing.
Page 191 1 A. Yes. 181, column 4, lines 4 through 6, 2 discusses content applications. The patent 3 numbers are slightly different. So I've been 4 looking at the '068 patent, and that's why my 5 line numbers are slightly off. So I apologize 6 for that. 7 Q. That's all right. 8 A. The line numbers in the report are 9 accurate, it appears, so I'm just going to... 10 It says, "Content applications are 11 software applications that accesses display and 12 organized content data generally from websites." 13 And here it shows that content updates on 14 a source server -- that as content updates on a 15 source server, the master application, which is 16 organizing and displaying the content in the 17 master web page, is going to be retrieving the 18 content promptly to ensure that the users 19 experience minimal delay when viewing the data. 20 The goal is to minimize the delay that 21 the users experience when viewing the data. But 22 the way that you achieve that goal, from the	Page 193 1 BY MR. DEIGHAN: 2 Q. Isn't the whole point of the patents to 3 provide a system that displays content to a user 4 with minimal delay? 5 A. So I think that an aspect of the system 6 is that it's going to want to display content to 7 the users so that they can see it with minimal 8 delay and scroll through it with minimal delay in 9 the scrolling. 10 Q. And so, in other words, an aspect of the 11 system is that it's going to want to display 12 content to the users so they can see it in 13 real time and scroll through it in real time in 14 the scrolling. 15 MR. CARTER: Object to form. 16 THE WITNESS: I think that -- I think 17 that the claim requires that the system -- so an 18 aspect of the system is actually that it includes 19 software coded for organizing content data and 20 content applications from multiple content 21 sources or service providers in real time from 22 their respective servers on a master web page.

49 (Pages 190 - 193)

Page 194 1 And then that is viewable from remote computing 2 devices through the master server on the master 3 web page. 4 That doesn't say that the viewing has to 5 occur in real time. 6 And then there has to be a scrolling or 7 paging through the content data or content 8 applications from multiple content sources or 9 service providers simultaneously and through the 10 master server in real time from the master 11 web page. 12 So I think that there are two uses of 13 realtime here that are different from each other. 14 BY MR. DEIGHAN: 15 Q. I think you skipped some words there in 16 your reading of the claim, but -- 17 A. I did, to group them. Like, to group my 18 reading of the claim, if that makes sense. 19 Q. Right. Because you said that -- let me 20 see where you state it. 21 All right. You say that software coded 22 for organizing content and content applications	Page 196 1 Q. Well, that clause you're referring to, 2 viewable -- it says, "are viewable from the 3 remote computer devices through the master server 4 on the master web page." 5 A. Correct. 6 Q. So why would the preceding "on a master 7 web page" be referring to that clause? 8 A. No. It says, "in real time, from their 9 respective servers on a master web page." 10 So -- let me take a step back. So it 11 says here, "organizing content data and content 12 application from multiple content sources or 13 service providers preselected by the user and 14 streamed to the master server simultaneously in 15 real time from their respective servers." 16 The organizing is being done on the 17 master web page, and it is viewable from remote 18 computer devices through the master server on the 19 master web page. 20 Do you see what I'm saying? That's why I 21 skipped some words, so that the "organizing" goes 22 to the point where I'm trying to connect it,
Page 195 1 from multiple content sources or service 2 providers in real time. 3 A. Oh, did I skip an entire line? I 4 apologize. 5 Service -- content sources or service 6 providers preselected by the user and streamed to 7 the master server simultaneous in real time. 8 So the streaming is to the master server 9 simultaneously in real time. 10 Q. But then why does it say "from their 11 respective servers on a master web page"? 12 A. They are streamed to the master server in 13 real time from their respective servers. And the 14 "on a master web page" goes with the "and are 15 viewable from the remote computer." 16 So the content sources get put onto a 17 master web page and they are viewable from a 18 remote computer. The "being put onto the master 19 web page" occurs on the server. The viewing 20 occurs on the remote computer. Those two steps 21 are separated by a sending of the master 22 web page.	Page 197 1 which is how I think you're supposed to read 2 this. 3 Q. Yeah. I mean, we don't need to keep 4 going around in circles. But again, where else 5 in the patent other than the claim does it say 6 that simply organizing content on the master 7 web page is enough? Doesn't the rest of the 8 patent talk about how the content has to be 9 realtime on the master web page? 10 A. If it does, you're going to need to point 11 me to some examples, because I think that the 12 places that I saw real time are referring to 13 real time retrieval by the server or being 14 streamed to the server in real time. 15 Q. I think we talked about a lot of these 16 earlier. I mean, column 2, lines 56 to 59, for 17 example. 18 A. Well, that just says that the master 19 web page is dynamic. It's kind of describing 20 what "dynamic" means. 21 Q. Yeah, "in the sense that the master 22 web page displays streaming content data and

50 (Pages 194 - 197)

Page 198 1 content applications from the multiple content 2 data sources in real time." 3 A. So it's possible that the master web page 4 could display some things in real time. But 5 claim 1 doesn't require that. 6 Q. Once again, it seems like you're basing 7 your interpretation on claim 1, and then I'm 8 showing you parts of the spec that would 9 contradict that interpretation, and then you're 10 disputing that by going back to claim 1. 11 Don't you have to read the claim language 12 in the context of the whole specification? 13 MR. CARTER: I'm going to object to the 14 form of that question. 15 THE WITNESS: So you have to read claim 16 language in the context of the specification. 17 But when the language says something explicit and 18 clear, it is what it is. If they wanted to 19 incorporate part of what claim 2 said in terms of 20 realtime content being on the page, they could 21 certainly have said so. They didn't say so, but 22 they could have. They could have used the exact	Page 200 1 part of what claim 2 said in terms of realtime 2 content being on a page. 3 A. That doesn't sound like it transcribed my 4 words correctly. 5 Q. For what it's worth, that's what I heard, 6 but -- 7 A. Okay. Maybe I should just reanswer the 8 question, then. 9 What was your question? 10 Q. Claim 2 doesn't say anything about that, 11 right? 12 A. No. Claim 2 doesn't say anything about 13 that. I wasn't talking about claim 2. I'm not 14 sure where that came from. 15 Q. Okay. 16 MR. DEIGHAN: All right. Do you guys 17 want to take a break? 18 THE WITNESS: Yeah. 19 MR. DEIGHAN: I think I've got just a 20 little bit left here. 21 MR. CARTER: Sounds good. 22 (A recess was taken.)
Page 199 1 language they used in the specification in 2 claim 1 to put it that way. But they didn't. 3 They only talked about realtime streaming to the 4 server. 5 They could have talked about it to a 6 user, too, if they wanted to incorporate that 7 into their patent claim, or into a dependent 8 claim. They didn't do that, but they could have. 9 BY MR. DEIGHAN: 10 Q. You referenced claim 2. What do you mean 11 claim 2? 12 A. What? 13 Q. You said if they wanted to incorporate 14 part of what claim 2 said. 15 A. I'm not sure that transcribed it 16 correctly. They could have done it into -- oh, a 17 hypothetical claim 2, I think. What I was 18 saying -- like a dependent claim. Or it didn't 19 transcribe correctly. One of the two. I can't 20 see what your transcript says, so I don't know 21 exactly what... 22 Q. You said, if they wanted to incorporate	Page 201 1 BY MR. DEIGHAN: 2 Q. Welcome back, Dr. Martin. 3 A. Thank you. 4 Q. I'm going to hand you what has been 5 previously marked as Twitch Exhibit 1006 in the 6 0037 [sic] IPR. 7 A. Thank you. 8 Q. Do you recognize this document? 9 A. I do. 10 Q. And what is it? 11 A. It is Dasgupta. 12 Q. All right. So this is the Dasgupta 13 reference that you refer to in your declaration, 14 right? 15 A. Correct. 16 Q. Okay. And same thing as last time: This 17 was submitted as Exhibit 1006 in both IPRs. 18 A. Okay. 19 Q. Is it okay if we just refer to the 307 20 version? 21 A. Yes. 22 Q. Okay. It was the same exhibit in both

51 (Pages 198 - 201)

Page 202 1 IPRs, right? 2 A. That's my recollection, actually. Yes. 3 Q. Okay. Dasgupta relates to media content 4 access systems; is that right? 5 A. Generally, that's right. 6 Q. What types of media content access 7 systems does Dasgupta relate to? 8 A. Can you be more specific? 9 Q. I mean, it refers to something like a 10 set-top box, right? 11 A. Oh, I see. It refers to things like 12 set-top boxes, IPTV devices, and generally that 13 sort of thing. At least in part it refers to 14 that. Yes. 15 Q. And a set-top box, that's like a cable 16 box, right? 17 A. One example of a set-top box is a cable 18 box. 19 Q. And just generally speaking, Dasgupta 20 describes systems for improving the graphical 21 user interface on set-top boxes; is that fair? 22 A. Say one more time.	Page 204 1 A. It can be implemented on remote devices, 2 including a personal computer, and it facilitates 3 access to user content. Yes. 4 Q. Paragraph 314. You say that content is 5 presented to users through a graphical user 6 interface, or GUI, displaying a channel guide? 7 A. Yes. I say that Dasgupta explains that 8 channel guide facility, advertisement facility, 9 and user interface facility interact to arrange 10 and present content to users, particularly 11 through a graphical user interface displaying a 12 channel guide with icons representing various 13 media content channels. 14 Q. All right. And then paragraph 315. I 15 think what you say is that a person of ordinary 16 skill in the art would have understood Dasgupta's 17 channel icons to be content data and content 18 applications; is that right? 19 A. A person of ordinary skill in the art 20 would have understood Dasgupta's channel icons 21 to represent content data and content 22 applications.
Page 203 1 Q. Generally speaking, Dasgupta describes 2 systems for improving the graphical user 3 interface on set-top boxes. 4 A. I think that's right. The title is, 5 "User interface enhancements for media content 6 access systems and methods." 7 And one of the places that Dasgupta can 8 run is on a set-top box. Parts of Dasgupta can 9 run, I should say, because there are multiple 10 parts of it. But the interface part can run on 11 set-top boxes. 12 Q. All right. I'm going to refer to your 13 declaration right around paragraph 311, just 14 to kind of lay some foundation here for 15 Dasgupta and make sure we're talking about the 16 same thing. 17 In your view, Dasgupta's subsystem 202 -- 18 that's the server, right? 19 A. Yeah. Subsystem 202 would map to the 20 master server. It's a server. 21 Q. And Dasgupta's subsystem 204 are remote 22 devices?	Page 205 1 Q. And then paragraphs 317 through 319, I 2 think you're listing reasons why, in your view, 3 Dasgupta's channel icons are preselected by a 4 user. 5 A. Okay. Say that one more time, please. 6 Q. In paragraphs 317 to 19, I think you're 7 listing reasons why, in your view, Dasgupta's 8 channel icons are preselected by a user. 9 A. That appears to be generally accurate. 10 Q. All right. And so those paragraphs, they 11 all relate to preselecting channels like HBO, 12 right? 13 A. Certainly the paragraphs relate to 14 preselecting channels, and HBO is an example. 15 Sure. 16 Q. All right. You don't talk anywhere in 17 those paragraphs about a user preselecting 18 anything else, right? 19 A. What do you mean by "anything else"? 20 Like a channel that's not HBO or something? 21 Q. Well, you don't say anything here about a 22 user preselecting advertisements, right?

Page 206 1 A. So the user preselects channels, and then 2 content from the channel would be purchased 3 before it could be presented in the UI. 4 When you mouse over the -- scroll over 5 the channels, you get content associated with 6 them, like advertisements related to the channels 7 and things like that. 8 I don't know if that's what you're 9 asking. But, like, figure -- 10 Q. I'm just kind of talking about what's in 11 these paragraphs. 12 A. Yeah, I'm just going to need to see what 13 I cited here, then. 14 So in, for instance, 318, talking about 15 Dasgupta's UI, which can be configured to control 16 the contents -- so there I'm talking about 17 Dasgupta's UI and populating content with the UI. 18 So 318 is kind of talking about something other 19 than just preselecting HBO. Right? 20 HBO is an example that I give in these, I 21 think, is the best way to answer the question. 22 Q. Okay. And just to be clear, in 318 you	Page 208 1 Q. And other examples of a content source 2 would be other channels? 3 A. Those could be other channels. 4 Q. Turning back to 314, paragraph 314 of 5 your declaration. 6 You can go ahead and read it if you want. 7 I'll ask you just a few questions about it. 8 A. Okay. 9 Q. So in that paragraph, you're saying that 10 Dasgupta's GUI displays a channel guide with 11 icons that represent media content channels, 12 right? 13 A. Yes. 14 Q. And you say that the interface serves as 15 a platform for accessing content because the 16 channel icons are configured as launching points 17 to interactive portals, right? 18 A. The interface serves as a centralized 19 platform for accessing the content. The icons 20 are configured as launching points to the 21 interactive portals. So that's going to provide 22 users access to diverse content sources directly
Page 207 1 say that the UI system can populate GUI with 2 content, right? 3 A. Correct. 4 Q. Okay. And then paragraphs 320 to 21, you 5 give your opinion that, in your view, it would 6 have been obvious to incorporate Darnell's feed 7 subscription methods into Dasgupta's access 8 facility; is that right? 9 A. Yes. POSITAs would have been motivated 10 to incorporate Darnell's feed subscription method 11 into Dasgupta's access facility. 12 Q. Right. Because you say the user could 13 preselect and organize specific content sources 14 within the UI, right? 15 A. By applying Darnell's feed selection and 16 management to Dasgupta's system, the user could 17 preselect and organize specific content sources 18 within the UI. Yes. 19 Q. Okay. So again, that's content sources 20 like HBO. 21 A. That would be one example of a content 22 source. Sure.	Page 209 1 within that system. Yeah. 2 Q. So Dasgupta's system allows users to 3 navigate to external interactive portals. 4 A. So it's more like it provides the 5 ability to navigate to portals, but they are 6 still within the Dasgupta system. So they can 7 get to the content sources directly within the 8 system, even though they are interactive portals. 9 They are external content in the interactive 10 portals. 11 Q. The interactive portals are different 12 from the channel guide, right? 13 A. They're different from the channel 14 guide -- 15 Q. Okay. 16 A. -- in -- well, the channel guide contains 17 the icons that are launching points to the 18 interactive portals. I think I would put it that 19 way. 20 Q. Okay. And I'll just refer you to 21 Dasgupta column 13, around line 9. 22 A. Okay.

Page 210 1 Q. I'll give you a second to read it. 2 A. Okay. Where do you want me to stop 3 reading? 4 Q. Just the end of that paragraph. 5 A. Okay. I've stopped. 6 Q. So Dasgupta's channel icons are 7 associated with a media content channel, right? 8 A. Yes. That's right. It says that. 9 Q. So you could have, like, an icon that 10 shows the HBO logo, right, and that would be 11 associated with HBO? 12 A. It would be associated with the HBO media 13 content channel. Yes. 14 Q. And if a user clicked on that logo, it 15 would take them to the interactive portal for 16 HBO. 17 A. By clicking on that portal, the user 18 would navigate to the interactive portal for HBO 19 within the system. 20 Q. Okay. The channel icons, they're just 21 static images of logos, right? 22 A. The channel icons are logos of channels.	Page 212 1 THE WITNESS: Thank you. 2 (Whereupon at 3:51 p.m., the deposition 3 of Paul D. Martin, Ph.D., was concluded.) 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Page 211 1 Q. And if you look at figure 7, that's what 2 it shows, right? 3 A. Referring specifically to the channel 4 icons in figure 7 I assume you mean? 5 Q. Yeah. 6 A. Yes. The channel icons in figure 7 are 7 showing logos for channels. 8 Q. Okay. 9 MR. DEIGHAN: Okay. I think I'm about 10 wrapped up. Can you just give me, like, five 11 minutes? 12 MR. CARTER: Sure. 13 MR. DEIGHAN: And let me just make sure 14 that I've covered everything. 15 (A recess was taken.) 16 MR. DEIGHAN: I have no further questions 17 for you, Dr. Martin. 18 THE WITNESS: Okay. Thank you. 19 MR. CARTER: No redirect from me. 20 THE WITNESS: Okay. Thank you, both. 21 MR. DEIGHAN: Thank you very much for 22 your time today. Appreciate it.	Page 213 1 CERTIFICATE OF NOTARY PUBLIC 2 I, CHRISTINA S. HOTSKO, the officer before 3 whom the foregoing deposition was taken, do hereby 4 certify that the witness whose testimony appears in 5 the foregoing deposition was duly sworn by me; that 6 the testimony of said witness was taken by me in 7 stenotypy and thereafter reduced to typewriting under 8 my direction; that said statement is a true record of 9 the proceedings; that I am neither counsel for, 10 related to, nor employed by any of the parties to the 11 action in which this statement was taken; and, 12 further, that I am not a relative or employee of any 13 counsel or attorney employed by the parties hereto, 14 nor financially or otherwise interested in the 15 outcome of this action. 16 17 18  19 CHRISTINA S. HOTSKO 20 Notary Public in and for the 21 District of Columbia 22 My commission expires: 23 1 January 2027

&	1002 3:11,12	120 137:16	186:11
& 2:7 4:13	13:21 14:3	121 119:4	18 1:18
0	1004 3:16	121:4	180 178:10
00307 133:15	133:15 134:2	123 126:4,9	181 170:1,5,13
134:3	134:19	124 126:19	178:10,11
0037 201:6	1006 3:17	127:2	190:21 191:1
04 3:3	201:5,17	128 136:1,5	182 172:13,14
068 8:14 11:9	101 46:2	12th 118:13,16	184 176:9
77:9,11,22	1015 3:18	13 1:13 3:11	19 1:19 205:6
78:12 122:9	61:14	190:4 209:21	1985 88:9 90:6
128:12 131:10	102 137:6,15	133 3:16	1:51 178:16
132:21 133:10	141:13,20	13th 1:18 2:3	1a 129:17,21
178:1 191:4	104 137:6,13,18	14 1:14 3:12	1b 129:17,21
1	137:19,22	142 128:8,9	2
1 1:1 3:7 10:6,7	141:8 142:6	130:15 131:21	2 1:2 3:8 10:10
10:16 83:18	106 162:19	131:22	10:11,16 98:17
91:18 95:16	107 162:19	14615 213:17	98:21 99:14
131:11 132:21	163:8	15 1:15 5:18	104:10 131:11
142:21 149:17	108 138:1,3,4	190:5	132:21 142:22
174:9 180:9	162:19	151 169:14,22	159:5,6,6,7,8
181:4 189:21	11 1:11	170:9	174:10 197:16
198:5,7,10	110 138:1	152 172:13	198:19 199:10
199:2 213:22	142:7	155 149:13	199:11,14,17
10 1:9,10 3:7,8	11008 5:3	156 150:12	200:1,10,12,13
10,334,068 1:7	111 48:15	157 151:15	20 1:20 97:17
3:14 8:16	1120 2:7	158 152:5,12	20005 1:19 2:4
100 42:6	114 141:15,19	16 1:16	20006-4127 2:8
1001 3:13,14	116 141:12	1627 2:7	201 3:17
76:12,20 77:3	118 141:14,14	167 144:3	2010 47:11,13
77:10,15,21	141:20	17 1:17	118:13,16
78:3	119 118:19,22	178 177:9	120:2,4,6,8,9
	12 1:12 5:18	179 167:19	121:21 122:1
	122:1	178:6,11	
		181:20 184:14	

2011 62:5 63:10 2012 121:19 2013 48:8 62:16 63:11 2016 63:9,11 202 2:4,8 203:17,19 2025 1:9 202500-307 11:6 202500-308 11:8 2027 213:22 204 203:21 20854 5:4 21 1:21 207:4 22 1:22 24 126:22 25 97:17 269 61:1 2a 129:17,22 2b 129:17,22	308 3:12,15 14:3 59:21 61:17 77:3,11 77:21 134:19 31 110:21 112:6 311 203:13 314 204:4 208:4,4 315 204:14 317 205:1,6 318 206:14,18 206:22 319 205:1 32 135:13,19 137:4,9 320 207:4 330-4642 2:8 34 142:5,8 35 95:6 36 14:15 156:1 160:10 37 16:14 38 179:1 39 140:16 3:51 212:2 3d 38:13,14	43 181:4 444 114:7 46 181:4 47 98:18,21 99:14 48 111:15 5 5 1:5 110:18,20 111:10 145:7 145:11 56 104:10 122:3,4,6 197:16 57 122:15 58 91:21 123:14,20 59 99:2,14 104:11 197:16 6 6 1:7 75:17 191:1 60 83:18 91:19 123:14,20 600 1:18 2:3 61 3:18 62 83:18 91:19 63 125:10 654-6200 2:4 658 8:10 11:6 76:18,21 77:16 78:13 79:3,6 79:15 81:7,11 122:9 128:11	129:16,20 133:10 177:18 177:21 66 74:16 675 75:6,7,22 7 7 211:1,4,6 700 1:18 2:3 71 145:9 74 145:8 146:1 76 3:13 160:9 77 3:14 8 85 118:6 86 118:6 88 18:5 20:4 24:1 29:4 30:7 9 9 1:9 209:21 9,729,658 1:5 3:13 8:12 91 19:19 920 75:10,13,19 9:09 1:21 9a 162:20 a a.m. 1:21 abbreviations 7:17 ability 5:13 209:5
3	4		
3 1:3 180:9 189:21 30 74:14 137:2 307 3:11,13,17 13:22 59:20 61:16 76:12,20 77:16 134:17 201:19	4 1:4 95:5 97:16 103:4 105:3,18 111:4 180:9 189:21 191:1,1		

able 33:1 39:18 40:14 56:19 159:19 absolutely 94:15 abstract 23:11 79:6 80:6,11 81:2 182:11,18 abstractly 38:6 38:10 academic 15:19 16:15 access 25:2,3 33:2 52:1,19 55:2,5 95:21 106:4 109:12 109:19,22 122:20 123:7 124:8,13,20 148:13 151:21 152:4,16,20 168:10,13,18 168:21,22 169:2,10 179:6 179:10 180:7 182:3,6,9,21 183:19 184:17 185:9,18 186:16,22 187:9 188:14 188:21,22 202:4,6 203:6 204:3 207:7,11 208:22	accessed 24:4 114:20 accesses 29:13 99:18,19 137:19 169:7 191:11 accessible 111:6,14,22 115:4,7,9 188:7 190:7,20 accessing 123:2 123:11 172:4 182:14 185:7 185:14,16 187:11 208:15 208:19 accidentally 102:4 accordance 145:12 account 111:6 accounts 50:16 accurate 81:10 191:9 205:9 achieve 191:22 action 36:15 94:7,9 213:11 213:15 acts 95:21 actual 43:18 156:8 actually 15:8 26:6 38:21 42:19 53:3	67:16 72:12 73:12 74:20 85:19 94:4 108:20,22 111:17 119:5 139:11 152:12 157:16 158:22 159:9 161:5 162:8 163:5 164:7,12 166:11 178:21 182:8 185:13 190:4 193:18 202:2 added 156:4 adding 185:21 additional 119:12,21 120:17 121:10 additions 16:19 address 5:1 administrator 111:6 advanced 45:17 47:9 advertisement 204:8 advertisements 205:22 206:6 affect 5:12 affects 94:11 affirmed 4:4 aggregate 45:18 149:7,18	150:3 151:3,7 153:8,10,16,18 153:19,22 160:22 161:6 166:7 aggregated 47:15 150:8,21 152:16,18 153:13 154:19 154:21 155:16 157:9 158:19 160:7 164:19 aggregates 45:10 47:18,20 136:8,17 150:5 152:11 153:5 153:12 161:2 aggregating 167:5,15 aggregation 135:15,20 136:3,5,14,19 137:5,12 140:12,21 149:9 151:8 152:2,4,13 154:16 aggregator 45:7,14 46:4 135:5,6 aggregators 45:12,19 46:7 46:7,8,17,18 47:2,2,15
--	--	---	--

ago 72:1	98:4,7 106:11	anticipated	31:15,19,22
agree 20:2,3	118:15 126:17	11:20 130:17	32:2,3,13 33:9
51:19 52:6,13	127:7,9,14,16	132:9	33:13,15,15,19
52:15 53:11	127:19,20	anticipation	34:5,12 35:5,8
55:1,4 79:15	128:1,3 129:3	130:12,22	36:4,6,11,14
82:5 84:7	133:11	131:19	48:3 49:17
104:17 121:2,6	analytics	anybody 10:1	70:1,13 71:4
123:6 149:5	111:13,21	12:19	96:8,12,14,15
ah 63:2 160:11	114:3,6,11,22	anymore 64:1	96:16 97:7
176:17	116:1,15,17,19	apologize 170:3	100:2,5 105:14
ahead 122:13	117:7	170:10 191:5	110:19 111:18
122:17 123:19	analyze 67:7	195:4	112:4,6,9,11,13
125:14 150:13	analyzing	app 24:7 29:8	112:20 169:16
151:16 172:16	12:12	29:16,17,22	170:17 171:8
208:6	anchor 51:3	30:2 31:9,9,17	171:12 172:1,4
ai 47:5,8	154:5	appeal 1:2	191:15 196:12
aim 123:16	anchored 189:4	appear 139:16	application's
allow 33:10,16	answer 6:19	145:17 189:2	22:15 24:12
45:8 93:8	7:14 9:1 12:8	190:16	applications
111:7 123:7	18:10 26:18	appears 139:12	18:6,17 19:2
140:2 152:19	28:12 30:5	139:14 191:9	19:18,20 20:5
allows 22:18,21	36:7,8 40:10	205:9 213:4	20:12,18 21:20
52:1,19 55:1,4	40:14,22 41:2	application	21:20 24:3,3
80:14 81:12	42:19 43:3	18:13,13 19:4	25:13,16 27:16
82:6,9,11	44:18 55:10	19:5,9,15,20	27:18 28:16
115:13 122:20	77:18 83:17	21:5,6,7,9,12	29:5 30:8,13
124:12,20	102:3 160:2	21:15 22:8,11	39:20 79:11
125:18 209:2	164:17 206:21	22:13,18,21	80:1,9,15
amount 51:1	answered	23:16 26:21	81:14 82:13
76:9 120:7	142:21	27:20 28:19	96:18 97:1,9
121:20 129:2	answering 83:3	29:11,12,15,17	97:12,21
analysis 65:18	answers 6:7,9	29:17,18,19,20	100:10,22
65:22 66:1	anticipate	29:22 30:1,20	103:9,16
72:14 78:17	133:9	31:2,4,6,12,14	104:19 106:5

110:1,5 111:9 111:14 112:1 115:5,10,14 126:1 129:7 147:22 155:9 165:6,7 191:2 191:10,11 193:20 194:8 194:22 198:1 204:18,22 applied 66:1,19 98:6,8,15 106:15 119:15 127:13,18 128:17,21 129:1,8 apply 98:4,12 98:13 106:10 126:16 127:6 applying 54:10 54:19 128:3,6 207:15 appreciate 211:22 architecture 79:9,21 92:4 125:17 179:13 area 64:6 73:19 areas 12:21 arrange 204:9 art 11:20 12:11 12:12 13:11,14 13:16 15:5 51:15 119:2,17	120:6,11,21 168:9 182:2 184:17 204:16 204:19 article 42:14 aside 11:14 17:12 asked 118:11 asking 36:3 41:21 51:5 52:12 54:13,18 55:10,13 95:3 101:12,15,18 102:16,18 113:21 114:10 139:18 143:6 154:7,12 155:4 155:12 156:21 156:22 189:6 206:9 aspect 18:9,10 88:12 99:12 189:17,18 193:5,10,18 aspects 147:14 147:19 173:12 assigned 11:17 assignment 11:15,22 assist 12:17,20 associated 69:21 156:6,14 206:5 210:7,11 210:12	assume 6:19 118:11 129:10 211:4 assumed 118:15 attached 3:21 10:8,12 attorney 213:13 attorneys 8:22 audio 51:20 52:16 53:10 160:14,17 162:12 165:4 165:15 166:7 available 51:17 53:19 58:14 168:15,20 172:21 173:3 173:17,21 174:15 175:21 177:14 184:4 184:13 186:10 188:20 190:12 190:17 192:3 avoid 6:12 77:14 aware 160:6 b b 174:10 bachelor's 62:1 119:6,18 120:3 120:12	back 7:2 32:16 36:1 47:11,17 67:2 69:14,22 83:21 91:18 94:17 111:10 138:12,16,17 138:19 139:4,7 139:9,14,16 140:4 163:22 183:6 196:10 198:10 201:2 208:4 background 12:22 25:12 27:6 46:11 61:22 181:15 183:14 backtrack 177:7 backwards 55:9 bad 117:13 baseball 88:7 based 18:20 51:22 52:18 70:2,6 71:9 73:18 79:8,10 79:20,22 80:7 80:8,13 92:3 95:7,12 99:21 102:21 112:18 122:19 124:4,9 125:11 130:2 131:13,14
--	---	--	---

132:21 150:2 153:3 165:13 175:17 178:16 179:3,4,9,15 180:3 181:7 186:5,12 basically 22:21 45:10 162:20 179:20 basing 198:6 bathroom 133:18 beacons 69:7 69:16,17 beginning 1:21 80:20 behalf 1:22 2:2 2:6 4:13,17 11:2 believe 49:16 60:4,8 61:16 75:22 92:7 104:14 131:2,7 134:17 169:22 best 206:21 better 136:15 139:21 beyond 13:17 17:8 60:6 114:1 166:3,5 bigtable 48:18 48:20 49:4 50:2,5	bit 41:6 46:9,22 71:21 99:7 109:17 110:16 140:14 177:7 200:20 block 145:11 bluetooth 69:7 69:18 board 1:2 book 88:8 90:6 90:8,9,11,12,15 90:17 91:2 bothered 62:22 bottom 91:5 boundaries 19:8 21:2 bowl 89:19 box 110:19 111:3,4,5,11,18 111:20 112:4,5 112:7,11,13,16 116:11 202:10 202:15,16,17 202:18 203:8 boxes 202:12 202:21 203:3 203:11 break 7:12 50:19 59:7,14 94:14 117:14 133:18 148:20 165:18 200:17 breaks 7:11	brief 117:8 broad 13:5 40:13 41:1 135:9 174:22 175:4 broadcast 89:11,14,16 90:5 broadly 37:19 106:19 108:16 115:20 138:8 browser 22:5 49:8 68:1 building 69:11 69:15,17,19 70:5,7,9 71:10 bulk 159:13 bunch 38:22 68:17 74:13 114:17 149:12 162:3 button 94:3	called 1:16 26:8 46:4 63:14 69:8 138:4 141:2 156:9 calling 33:19 calls 27:21 34:5 34:13 capabilities 111:12,21 178:19 179:17 181:11 capability 180:1 card 39:6 career 66:12 careful 27:9 30:15 46:15 47:10 50:14 108:11 carter 2:2 4:16 4:16 7:6 8:20 12:5 14:5,8,11 18:14 23:17 28:17 34:1,11 35:14 39:15 53:1,14 56:20 79:18 85:10 88:22 92:20 99:6 100:16 101:7 103:1 104:21 105:7 120:16 121:5 142:19 144:15 147:4,11
		c	
		c 2:1 3:1 4:1 65:16,17 ca 1:20 cable 202:15,17 calculations 38:21 39:2 calfee 2:7 4:13 call 27:17 34:14,16,17,19 136:2 148:6	

169:21 174:19 188:8 189:14 192:16 193:15 198:13 200:21 211:12,19 case 1:5,6 9:4 11:16 14:4,13 16:7 17:2,8 18:22 19:1 31:8 33:7 54:11,12,17,19 55:11,13 61:20 75:20 102:11 134:21 157:12 160:16 161:13 161:17 164:13 cases 17:22 38:4 74:10,13 74:19,22 76:1 160:20 category 116:5 causes 34:19 caution 8:20 12:6 cell 141:5 centralized 123:3 208:18 certain 33:10 33:11 115:7 121:1 173:11 certainly 9:2 27:18 48:7 54:5 94:12 112:14 129:12	132:14 198:21 205:13 certificate 213:1 certify 213:4 cetera 159:7 challenge 124:3 challenged 15:3 118:12 126:10 130:16 challenges 123:15 change 187:12 changed 43:5 47:6 88:9 90:7 113:5,9,13,14 changes 16:19 changing 40:6 channel 204:6 204:8,12,17,20 205:3,8,20 206:2 208:10 208:16 209:12 209:13,16 210:6,7,13,20 210:22 211:3,6 channels 204:13 205:11 205:14 206:1,5 206:6 208:2,3 208:11 210:22 211:7 characteristic 173:14	characteristics 173:9,11 characterizati... 102:20 characterize 135:4 charge 75:6,7 charged 75:4 checking 130:14 131:1 chopped 164:8 164:9 christina 1:19 213:2,18 chunk 159:6,6 159:7,8 161:6 chunked 159:4 160:18 chunks 159:4,5 160:21 161:1,7 164:9 circles 197:4 cisco 72:13 citation 167:16 cite 15:15 16:4 184:15 cited 9:3 13:8 13:11,12,16 15:2,13 16:1 16:11,14 167:10 206:13 citing 181:3 city 67:1 71:14	city's 67:15 claim 104:6,8 118:12 126:7 126:10,14 174:5,6,9 189:7,10 192:1 192:20 193:17 194:16,18 197:5 198:5,7 198:10,11,15 198:19 199:2,7 199:8,10,11,14 199:17,18 200:1,10,12,13 claimed 124:15 claims 11:21 12:13 104:4 130:16 133:9 174:22 189:2,5 class 65:18 classes 129:1 clause 196:1,7 clear 14:17 30:18 64:10 75:16 111:19 112:2,14,17 117:9 153:9 177:20 178:11 198:18 206:22 clearly 107:4 click 94:3 161:22 clicked 210:14
---	--	---	--

clicking 93:3 210:17 client 20:13 24:6 29:6 34:18,19 57:8 57:11,20 58:3 58:19 67:9 68:2 73:2 108:2,5 137:6 137:15 140:11 140:20 141:1,3 141:4,9,10,13 141:19 149:18 150:17,20 151:9,11 152:19,21 163:1 176:18 176:20 180:21 clients 49:15 72:7 close 74:5 closely 107:9 cloud 17:17,19 18:2,6,9,12 19:4,9,11,15,15 19:17,18 20:5 20:12,18 21:5 21:15 23:16 24:2 25:13,16 27:16,18,20 28:15,19 29:5 29:11,18,19,20 29:22 30:1,7 30:13 31:2,3,6	31:12,14 32:3 33:18 34:5,12 35:4 36:11 48:3 51:22 52:18 61:11 66:9,13,20 72:20 79:8,20 92:3 95:7,12 99:21 119:9 124:4,9 125:11 146:22 147:6,8 147:19,21 178:16 179:4,9 179:15 180:3 181:7,10,16 183:17 186:5 186:12 code 22:16 36:4 36:6,11,14 72:14 coded 31:2,10 31:11,13,20,22 32:2,3,13 33:10,16 35:5 35:8 96:17 97:8,11 193:19 194:21 codes 69:10,12 cohesive 190:19 coie 1:18 2:3 4:17 collect 67:2 111:21 116:15	116:18,22 117:3 135:10 135:22 collected 67:5 116:20 152:18 162:2 collecting 57:15 116:18 collects 106:18 136:11,11,15 152:10 186:18 186:20 columbia 1:21 213:20 column 83:18 91:18 95:5 97:16 98:17,17 98:21 99:14 103:4 104:10 105:3,18 110:18,20 111:4,10 178:16 180:9 181:4 189:21 191:1 197:16 209:21 combination 130:3 131:14 132:22 156:12 combine 133:6 come 44:14 71:18 comes 44:13 161:6	coming 71:14 86:5 commands 35:18 commercializ... 67:17 commission 213:21 common 43:10 165:7 communicating 96:4 140:5 communication 66:20 72:8 96:6 communicati... 8:22 companies 63:18 64:4,8 64:12,15 65:5 company 22:2 63:14 75:3,18 compensated 75:9,12,14,19 75:22 competitors 72:9 complete 6:13 43:2 component 23:5,7 67:7,9 67:22 68:1,2 69:4,9 73:2
--	--	---	---

components 19:15,21 comprise 26:15 26:15 145:17 computation 179:10 compute 67:8 computer 21:3 22:3 25:2 28:8 37:22 38:1 39:5 41:9 56:14 57:9 61:10,10 62:2 62:6,10 63:3 63:18 64:5,7,9 64:11,20 79:8 80:18 82:15,17 83:4 95:7,12 108:3,5 119:6 119:11 121:14 125:11 128:19 140:6 141:4,14 141:14,20 145:10,12,14 145:16 146:5 163:1 172:3 176:15 179:2 195:15,18,20 196:3,18 204:2 computers 123:4 140:3,3 184:21 computery 141:5	computing 17:17,19 18:2 18:9 19:10,16 61:11 65:15 66:13 81:17,22 92:3 97:18 99:22 103:13 119:9 123:13 125:21 147:1,6 147:9,19 178:17,19 179:4,7,9,15,18 180:2 181:7,12 181:14 194:1 concept 19:2 concepts 107:9 concern 56:22 concert 85:18 89:8,16,18 concluded 212:3 concrete 23:9 40:19 51:3 concretely 23:3 38:7 154:4 concurrently 190:18 condition 157:13 158:4 conditions 5:12 conferencing 72:6 configurable 68:6 73:11	configuration 179:13 configured 150:20 151:19 151:22 206:15 208:16,20 confused 46:22 187:15 confusion 77:14 connect 196:22 connected 64:22 connection 58:20 connects 70:16 70:16 consider 11:18 13:1,17 16:10 51:13 53:5 161:10 considered 13:3,4,5,7,9,10 13:10,12,14 15:1,7,9,12 16:13 19:6 21:1 53:3,16 128:2 175:8 construction 52:9 126:7 constructions 39:21 127:5,6 127:8	consulting 63:17 64:4,11 74:20 consume 52:1 52:19 55:2,5 contain 41:15 41:22 42:1,2,3 42:3,4,19 43:10 44:20 contained 42:15 50:13 containing 149:9 contains 41:10 42:10 148:13 209:16 contemplated 189:1 contemplates 165:5,11 content 36:19 39:13,18,19,20 39:22 40:4,6 40:12 41:11,15 41:22 42:10,15 42:16,21,22 43:4,9,12,17,18 44:7,8,16 45:1 45:3 47:16 50:15 51:16,17 51:18,20 52:2 52:16,20 53:10 53:12,18,20 54:1 55:2,5
---	---	--	--

56:3,5 57:10	100:5,9,10,10	145:20,21	169:15,17,18
57:14,16,17,17	100:14,21,22	146:3,4,6,10,10	170:15,17,18
58:3,4,11,17,17	100:22 101:4,5	146:11,12,15	171:3,7,9,14,18
59:1 60:7	103:8,9,9,16,16	146:15,17,17	172:2,19 173:1
79:10,10,11,17	103:17 104:19	146:18,19	173:15,20
79:22 80:1,1,5	104:19,20	149:7,19 150:4	174:1,14,17
80:7,8,8,9,15	105:6,9,10,13	150:5,6,8,21	175:5,20 176:1
80:15,16 81:9	105:14,14	151:3,7,10,13	176:6,22 177:1
81:13,13,14	106:1,5,6	152:2,4,10,13	177:2,13
82:7,12,12,13	109:13,19	152:16,18,20	178:18 179:3,5
82:16,18,21,22	110:1,2,5,6,7	153:5,8,12,13	179:14,16,22
83:5,6,7,11,14	111:9,14,14,22	153:16 154:1	180:4 181:8
84:2,8,11,13,14	111:22 114:14	154:19,21	183:13,15,17
84:14,17,17,18	115:4,5,7,10,10	155:2,3,3,5,5,6	184:2,5,12
84:20 85:3,5,7	115:13,14	155:6,8,8,9,10	185:4,9 186:5
85:8,9,11,22	116:2,2,5,5,10	155:16,19	186:9,13
86:1,4,5,8,10	116:16,19	156:2,3,5,6,6,8	187:18 188:5
86:15,15 87:5	117:1,2,4	156:8,10,12,13	189:12 190:5
87:8,10,11,12	122:21 123:3,8	156:14,15,16	190:11,15
87:13,13,14,17	123:11 124:5,8	156:17,17,18	191:2,10,12,13
87:20,21,22	124:9,14,17,20	156:21 157:2,6	191:14,16,18
88:3,4,5,5,6,6	125:18 126:1,1	157:6,20,20,21	192:2 193:3,6
88:10,11,13,14	126:2 135:10	158:6,9,10,14	193:12,19,20
88:18,21 89:2	135:15,20,22	158:18 159:1,9	193:20 194:7,7
89:4,14 90:1,3	136:2,4,8,11,19	159:16,21	194:8,22,22
90:8,10 91:6	136:20,21	160:3,7,12,18	195:1,5,16
92:4,9,11,17,18	137:5,12,19	161:2,15,18	196:11,11,12
92:22 93:11,15	138:5 140:11	162:22 163:9	197:6,8,22
93:17 95:22	140:21 141:1,9	163:11,13,18	198:1,1,20
96:3,12,18,18	141:21 142:6,7	163:19 164:1,4	200:2 202:3,6
96:19,22 97:1	142:9,9,12,12	164:6,8,19	203:5 204:3,4
97:8,9,11,12,13	142:14,14,16	165:1,8,14	204:10,13,17
97:20,21,22	142:16 143:9	166:8,12 167:5	204:17,21,21
99:18,20 100:2	144:4,5,12,18	167:15 168:5	206:2,5,17

207:2,13,17,19 207:21 208:1 208:11,15,19 208:22 209:7,9 210:7,13 contents 116:21 206:16 context 17:22 18:20 19:14 20:21 22:17 29:11 30:12,19 40:16,21 49:3 49:10 54:11,12 54:17,18 55:11 55:11,13 56:8 90:5 104:7 106:21 107:1,6 114:1 139:13 155:8 160:1 165:11 174:6 177:17 183:14 198:12,16 contexts 27:11 138:18 continuation 78:12 continues 179:9 continuously 71:15 159:10 contradict 104:16 198:9 contradicted 102:17	contradiction 104:9 contribution 67:5 control 113:11 113:13 116:9 206:15 controls 111:13 112:22 113:16 113:19 116:1,7 conversation 23:9 cool 68:20,21 copied 28:9,9 129:9 copies 14:10,18 14:19 43:2 59:19 copying 43:8 43:16 correct 26:1 32:11 36:16 46:19 49:22 59:4 62:8 63:7 63:12 68:3 71:6 81:16 107:13 121:16 126:12 131:2,6 131:18 132:12 133:1,5 134:15 143:2 148:14 169:13 182:5 196:5 201:15 207:3	correctly 68:7 92:7 199:16,19 200:4 corresponding 111:18 112:5 counsel 1:16 3:3 4:7 7:4,5 9:6,8,16,17 59:13 118:1 213:9,13 counted 74:16 couple 7:17 10:5 24:17 50:18 67:18 81:19 122:11 129:21 135:12 150:14 162:15 162:16 163:6 180:11 coupled 137:6 137:15 course 7:16 9:13 12:9 15:17,22 16:6 23:5 28:5 104:4 108:8 128:20 136:7 151:14 178:2 184:9 courses 65:13 court 6:7 7:2 cover 60:9 covered 211:14	create 38:19 39:1 67:10 created 67:7,21 69:3,4,8 91:10 91:12,13 crr 1:20 cryptanalysis 66:2 cryptographic 69:8,12 cryptography 61:11 66:1,8 66:11 csr 1:20 cuff 140:8 current 63:13 168:10,13,18 168:21 169:3 169:10 180:8 182:3,7,10,14 182:22 183:20 184:17 185:7,9 186:16 currently 87:2 customized 111:8 cut 156:21 157:2,17,20 158:11 159:17 159:21 cv 3:18 65:9,14 72:12 73:18 74:17
--	---	--	---

d	161:3 164:20	97:21,22 99:18	193:19 194:7
d 1:15 4:1,3	165:2 207:6,10	99:20 100:9,11	196:11 197:22
212:3	207:15	100:21 101:1	198:2 204:17
d.c. 1:10,19 2:4	dasgupta 3:17	103:8,10,16,17	204:21
2:8	130:3 131:15	104:19,20	database 26:20
darnell 3:16	132:22 201:11	105:13,14	26:22 27:3,10
130:3 131:15	201:12 202:3,7	106:5,6 110:1	27:12,21,22
132:22 134:10	202:19 203:1,7	110:2,5,6	28:1,2 32:17
134:13 135:10	203:8,15 204:7	111:14 114:13	32:17,19 33:2
135:11,13,19	209:6,21	114:19,20	33:6,11,19,21
136:5,6 137:2	dasgupta's	115:4,10,13	34:6,9,13,15,21
143:8 145:8	203:17,21	123:2,10 126:1	34:22 35:19,21
149:17 150:19	204:16,20	126:2 144:5	36:1,5 48:20
151:20 152:3	205:3,7 206:15	149:11 155:8	49:4 50:2,5,12
153:11 154:8,9	206:17 207:7	159:13 160:13	50:13 138:1
154:13,15	207:11,16	165:9 168:10	141:22 142:7
155:10,13,19	208:10 209:2	168:14,19,22	142:10,11,13
157:11,15	210:6	169:1,3,5,10,12	142:17 143:10
160:5,9,10	data 27:14	169:20 170:20	143:15,18,19
162:9,11,20	31:15 34:15,20	171:6,11 172:6	144:4,6,13,20
164:22 165:5	34:22 35:1,22	172:11 178:18	146:6,10,15,17
165:11,14	35:22 36:2,4,5	179:4,5,10,14	147:3 148:11
166:5,7,11,22	38:7 39:3,19	179:16,22	148:14
167:1,2,4,15,18	66:22 67:6	180:8 181:8	databases 27:4
darnell's 135:5	69:22 70:4,6	182:3,7,7,10,10	27:13,16,17
136:8,10 137:4	70:10,11 71:2	182:14,17,22	35:17,17 48:22
137:12 140:11	71:13,14,15	183:20 184:18	148:7 151:18
140:20 141:21	72:22 79:10,11	185:7,9,14,15	151:21 152:2,3
145:9 148:9,12	79:22 80:1,8,9	185:16,18	date 41:11
149:6 150:2,16	80:15,16 81:13	186:17,18,20	42:10 65:14
151:18 152:14	81:14 82:12	187:6,9,11	118:16
153:5,7 155:15	92:4,11,22	188:14,18	day 9:13
157:9 160:6,22	95:22 96:3,18	190:6,6 191:12	days 9:14,15,16
	96:22 97:8,12	191:19,21	

decide 68:18 declaration 3:11,12 12:18 12:20 15:1,2 16:12 24:1 42:8 47:22 60:16,18 75:8 75:17 128:8 129:10 134:14 136:2 144:3 149:14 153:4 167:20 181:3 181:18 201:13 203:13 208:5 declarations 11:1 12:1,4,12 59:18,20 decrypt 159:15 dedicated 20:13 24:6 29:6 106:3 deduplication 164:13 deep 166:19 167:12 default 68:7 73:16 define 18:2 27:4 37:5 40:18 119:5 defined 30:13 52:11 97:16 98:9 103:5 111:4	defines 104:8 defining 189:17 definitely 49:9 89:3 definition 37:11,20 40:3 52:7,13 53:2 54:7,15 56:22 98:2,6,10,13,15 103:3 104:3,12 105:2,18 106:10,20 109:10 110:13 119:15 121:3,7 127:13,15,18 138:9 153:10 153:15 173:12 175:11,13 178:5,9,14 183:7 184:11 185:3,22 186:8 187:18,21 188:4,12 189:3 189:6,8 190:22 definitions 17:20 128:2 definitively 40:14 degree 62:4,15 119:6,10,18,19 120:1,12,13,15 120:22 121:14 129:4	deighan 2:6 4:8 4:12,15,18,19 9:7 10:4,10,14 12:16 14:7,12 14:14 18:15,16 23:18 28:21 34:4 35:3 36:9 40:1 53:7,21 57:2 59:6,10 80:3 85:15 89:6 93:5 94:15,19 97:5 99:10 100:17 100:19 101:17 103:6 105:4,17 117:13,17 120:19 121:8 133:19,21 143:4 145:1 147:7,17 148:21 149:2 165:18,21 170:2,5,10,12 175:3 189:9 190:2 193:1 194:14 199:9 200:16,19 201:1 211:9,13 211:16,21 delay 51:18 53:19 169:19 170:19 171:1,5 171:11 172:6 184:5 185:15	188:20 191:19 191:20 192:6,9 192:11,12,15 192:19 193:4,8 193:8 delete 94:1,2 deletes 94:3 delivered 179:14 delivering 51:15,20 52:16 53:12 54:1 59:1 delivery 56:3 57:14 178:17 179:15,21 180:20,21 181:6,8 183:13 183:16 depend 31:12 31:14,16,19,21 31:22 32:1,3,4 35:4 91:7 162:4 165:1 dependent 18:20 88:11,13 199:7,18 depending 19:14 26:19 87:14 depends 26:21 28:1,18 29:15 29:18 30:4,5 31:1,3,8 32:12
---	---	---	--

32:14 39:19 40:11,15 42:18 42:20 56:21 58:8 71:4 84:13,18 85:11 87:10 88:4,6 88:10 91:14 92:21 115:11 116:17 117:6 121:1 153:15 154:2 158:22 159:2 160:1,3 161:20 164:7 depicts 149:17 deposed 5:15 5:22 74:11,14 deposition 1:14 3:6,7,8 8:19 10:2,7,11,20 11:11 212:2 213:3,5 describe 18:2 61:5 99:4,8 125:11 139:8 139:13 173:4,6 175:16 described 29:2 92:9 95:13 153:11 describes 38:14 38:15 81:11 82:10 98:18 113:19 123:9 143:9 145:3	149:8 150:19 152:3 154:16 157:12 202:20 203:1 describing 144:18 160:17 173:8,9,19 174:13 176:5 179:8 186:2 197:19 description 48:14,17 104:1 113:6 122:19 123:9 150:2 156:10 165:3 170:15 175:18 176:3 180:3,20 183:3 186:4,12 design 119:8 190:18 designed 32:15 32:22 33:4,8 33:14 41:11 42:10 66:13,16 66:20 140:5 149:18 150:3 160:4 162:5 desktop 39:11 destination 58:21 detail 17:14 113:19,20 161:12	detailed 26:19 determined 72:15 determines 31:6 developed 65:7 developer 31:1 31:13 development 119:9 device 20:9,10 21:4 23:1 29:13,21 30:3 51:21 52:17 53:13 54:2,5 55:18 57:8,11 57:12,13,15,20 58:3,4,6 59:2 71:2 80:18 81:10,17 82:1 82:8,15,17,22 97:18 103:13 108:17 125:21 141:2 178:20 179:7,18 180:2 181:12,14 devices 18:8 19:22 20:7 24:14 25:9 30:10,14 52:4 52:22 123:4,13 129:8 141:5 182:17 194:2 196:3,18	202:12 203:22 204:1 diagram 145:11 difference 18:12 19:4 43:21 60:12 128:5 139:22 173:5 different 14:19 23:12 27:11 28:20 45:8,13 45:14 47:7 56:9 63:19 70:6,16 114:13 115:19 124:8 129:21 135:9 138:18 149:12 162:4 164:5 191:3 194:13 209:11,13 differently 60:5 digital 52:1,19 55:2,5 160:14 160:14,17,17 direct 162:15 directed 92:3 92:11 167:18 direction 213:8 directly 31:14 139:6,11 140:5 208:22 209:7 disagree 44:18 44:19 58:22
---	---	---	---

disagreed 17:4 disclose 8:21 12:6 disclosed 79:12 discloses 79:20 166:7 discontinued 48:8 discuss 51:10 114:4 123:21 134:11 discussed 9:5,5 37:4 51:1 145:7 discusses 145:9 191:2 discussing 147:8 188:1 192:22 discussion 97:2 110:17 164:1 180:19 189:4 192:4 discussions 7:18 59:13 118:1 display 37:9,15 37:17 71:7 103:8 105:5,9 105:10,12 141:15,18,19 151:13 157:16 158:1 176:22 191:11 193:6	193:11 198:4 displayed 22:4 38:1 44:7 71:2 90:9 108:2,5 110:10 116:16 125:3,4,5,8 169:11,12 171:19,22 172:20 173:2 173:16,21 174:2,15,17 175:6,21 176:2 176:7 182:8 188:2 displaying 37:9 37:10,12 39:6 159:8 191:16 204:6,11 displays 97:19 100:9,14,21 101:4 103:14 104:18 158:1 169:17 170:17 172:1 177:5,6 193:3 197:22 208:10 disputing 198:10 dissertation 129:2,5 distinction 28:13 43:22 46:15,21 89:10 89:15 101:21	102:6 108:9,13 distribute 149:19 150:3 distributed 41:12 42:11 150:9 distributes 150:6 district 1:21 213:20 dive 17:13 166:19 167:12 diverse 208:22 document 61:13 76:11,15 77:2,6 133:13 134:1,7,18 160:15 201:8 documents 10:5,15 13:16 78:4 160:15 doing 40:15 55:14 86:18 87:2 102:11 124:16 163:16 167:8 doubt 73:21 download 52:3 52:21 158:10 downloading 56:8 159:13 dr 4:9,20 8:18 10:15 11:15 59:11 94:20	117:18 149:3 165:22 201:2 211:17 dramatically 47:6 draw 43:21 46:14 drawing 46:15 89:10,14 101:22 102:6 108:14 duly 4:4 213:5 dynamic 100:8 101:3 103:3,11 197:19,20 dynamically 190:12
e			
e 2:1,1 3:1 4:1,1 94:1,2,3,4 e.g. 24:6 earlier 59:18 124:22 147:2,3 147:6,18 182:1 197:16 easier 180:16 easily 28:9 easy 60:18 78:2 135:3 edge 86:2 edges 38:14 education 61:22 119:12			

119:21 120:17 121:10,16 128:17,21 efficient 6:5 either 20:8 55:18 129:4 130:16 electrical 128:18,22 129:3 embedded 65:20 66:7 embodiment 144:18 145:2,3 146:9 embodiments 141:16 142:10 142:13 143:9 143:18 145:6 145:13 employed 63:22 64:1 213:10,13 employee 75:5 213:12 employment 63:13 enable 26:9 enables 123:1 125:22 161:22 181:11,17 183:17 encompass 114:12,17	174:11 175:1,4 175:9 encompasses 15:21 18:11 51:15 53:18 55:7 110:12 115:1 125:9 175:9 encrypted 159:14 ends 90:14 engineering 65:22 128:18 128:22 engineers 64:21 english 153:22 enhancements 203:5 ensure 168:9 169:18 170:19 171:10 182:21 183:19 184:17 186:16 191:18 ensures 182:3 ensuring 182:6 182:9 192:5 enter 116:12 entire 67:15 102:4 195:3 entirely 153:9 158:18,22 184:10	entirety 153:14 154:22 155:2 155:17 enumerate 114:8 environment 99:22 179:4 equipped 112:7 equivalent 119:10 120:12 121:13 error 129:13 157:1,13 158:4 159:18 errored 165:9 errors 157:13 especially 13:7 47:5 esquire 2:2,6 et 159:7 evidence 184:7 exact 60:3 198:22 exactly 9:11 35:6 43:15 44:8 45:16 82:19 113:5,7 170:21 199:21 examination 1:16 3:2 4:7 examined 4:6 example 21:13 21:14,15,18,19 23:4,7,9 25:14	25:15 29:1,8 32:17 36:13 38:12 56:2,16 57:14,18,19 58:14 66:19 68:15,16 71:1 71:13 72:19 84:19 85:6 89:13,15 90:4 92:15 93:22 94:5 114:20 115:2 116:4,13 142:5 151:1 154:3 157:5 159:12 189:21 197:17 202:17 205:14 206:20 207:21 examples 24:19 28:22 37:1 39:12 42:13 51:10 55:22 66:15,17 68:17 111:11 112:3 114:5,16,21 115:22 135:12 157:17 160:5 160:19 197:11 208:1 except 60:4 138:21 excerpted 42:21 43:1
--	---	---	---

excerpting 115:18	157:13 169:19	f	112:15,18,21
excluded 76:3	170:19 171:1,5	facilitates	feed 41:7,8,13
execute 96:11	171:11 172:5	204:2	42:18 43:18
100:5	191:19,21	facility 204:8,8	71:13,14,15
executes 22:16	192:5,11,12,14	204:9 207:8,11	90:14,16
exhibit 3:7,8,11	192:19	facing 138:20	135:15,20
3:12,13,14,16	experienced	139:1,6	136:3,4,14,19
3:17,18 10:6,7	6:4	fact 29:9,9 53:6	137:5,12,20
10:10,11 13:21	experiences	71:6 72:12	138:6 140:11
14:3 61:14	192:9	165:13 166:3,6	140:21 141:11
76:12,20 77:3	expert 11:16	184:20	141:17 142:1,9
77:10,15,21	61:6,8,9 74:6	fair 45:11	144:4,7,21
78:3 133:15	74:20 75:2,13	48:10 49:2	145:15,17,19
134:2,12,19	76:2,8 118:4	51:1 73:20,21	146:2,6,10,14
201:5,17,22	expertise 13:5	76:7 97:10	146:15,17
exhibits 3:6,10	15:3,17	102:20 114:5	149:9 150:21
3:21 10:16	experts 63:15	121:20 129:2	151:8,13
15:2	63:16,19 64:1	135:4 150:18	152:10 156:2,5
exist 28:3,5,6	64:4 65:4 75:9	153:4 202:21	156:6 161:14
29:12,20 30:3	75:12,18,21	fall 16:14	161:19,21
145:6	expires 213:21	114:18 115:20	163:20 176:13
exists 27:22	explain 107:21	familiar 15:16	176:19,21
43:19 44:21	explains 124:7	17:17 18:17,22	177:1,4 207:6
49:1	151:20 204:7	19:2 47:14	207:10,15
expect 134:21	explicit 104:3	78:8 166:22	feeds 41:19
expectation	198:17	167:1,2,7,8,9	42:1,2,9,19,20
190:14	explicitly 103:4	far 7:11	43:13 44:3,6
experience 15:3	157:11	favorite 68:18	44:10,13 45:2
15:17,20 16:16	extend 178:19	favorites 68:18	45:9,11,18
71:12,17 73:19	179:17 181:11	feature 19:18	47:19,20 49:5
119:8,12,19,22	extends 180:1	113:4	49:18 50:10
120:7,15,18	extent 192:20	features 19:17	135:22 136:15
121:11,21,22	external 209:3	47:8,8 112:12	136:17,20,22
	209:9		137:20 138:5

141:22 142:7 142:17 145:22 146:4,11,16,18 151:19,22 177:2,5,6 190:19 feel 163:3 fetch 87:17 91:10 fetches 91:6 fetches 149:11 fetching 85:5 field 64:17 65:8 119:7,11 121:15 fields 61:12 63:18 64:5,8,9 64:15 65:6 figure 95:16 145:7,11 149:17 156:20 162:20 206:9 211:1,4,6 file 15:4 38:14 39:3 41:8,13 41:14,15,21 42:9,16 43:6 62:22 108:22 159:13,15 177:18 files 52:3,21 108:21 filings 9:4 74:22	financially 213:14 find 139:5 167:13 finding 75:13 fine 83:9,17 finish 7:13 132:20 first 4:4 13:4 69:20 122:15 154:22 155:17 189:15 five 67:10 68:5 68:8 73:3,6,8 73:15,17 211:10 flexible 152:15 flip 46:2 60:22 83:18 122:2 fly 53:5,16 106:20 110:15 166:21 focus 64:6 65:1 66:6 follow 38:11 64:13 86:7 107:20 188:10 following 87:15 184:11 follows 4:6 foregoing 213:3,5 forensics 65:18	form 18:14 23:17 28:17 34:1 35:14 39:15 43:5,9 43:13 44:17,22 45:4 53:1,14 56:20 79:18 85:10 88:22 92:20 99:6 100:16 101:7 103:1 104:21 105:7 120:16 121:5 142:19 144:15 147:4 174:19 188:8 189:14 192:16 193:15 198:14 formal 129:4 format 38:2 41:9 160:15 formatted 42:3 formatting 44:21 formed 67:6 forming 13:2,3 15:1 16:1,11 forth 12:15 98:16 160:15 forward 161:7 forwarding 57:16 foundation 203:14	frame 47:12,17 free 163:3 frequency 117:4 frequently 117:4 friday 1:9 front 138:5,7,9 138:17,21 139:14 140:1 fulfill 24:11 62:20 full 5:1 9:16 33:2 42:14 44:10 161:1 fully 35:7 158:20 fun 70:11 function 94:1,2 functionalities 24:12 functionality 26:9 functions 135:21 funding 129:7 further 85:1 86:9 110:17 211:16 213:12 fuzzy 19:13
			g
			g 4:1

gears 41:6	generically	189:20 208:6	197:10 198:10
geez 52:14	39:8	goal 191:20,22	198:13 201:4
147:10	getting 29:14	goes 35:22 56:6	203:12 206:12
general 11:17	46:13,21 52:5	80:11 127:17	208:21
25:12,13 30:17	52:8 57:20	143:18,19	good 4:9,10
30:19 36:22	75:21 143:13	185:19 187:1	76:9 117:20
37:11 54:6	156:19 187:16	195:14 196:21	120:7 132:7
85:13 101:13	187:17	going 4:21,22	140:17 172:15
101:16 104:6	give 6:6,8 14:12	10:4 14:7,9	178:3 200:21
114:11 121:17	21:13,14 25:13	15:17 16:7,8	google 48:1,3,5
139:2 140:8	28:22 38:12	26:4,13 31:9	48:16 49:8,14
147:19 153:21	41:2 61:13	31:13,16,19,21	49:19 50:5
generally 17:18	66:16 68:19	31:22 32:1,2,4	google's 48:17
17:19 18:9,11	77:18 83:20	32:16 33:15	48:20 49:4
18:18 21:3	90:4 93:21	34:14,18 38:2	gotten 47:7,9
25:15,18 26:22	98:20 126:14	38:5,7,20,22	graphical
27:13 30:6	135:12,18	39:3 50:19	202:20 203:2
36:16 37:7,19	151:1 163:5	67:12 71:17	204:5,11
39:22 40:22	167:22 176:10	76:10 77:1	graphics 39:6
41:4 42:1,2	206:20 207:5	80:20 81:4	graphs 67:10
48:22 51:13	210:1 211:10	90:15 96:13	great 4:22
54:3 61:9 74:4	given 134:16	110:16 111:10	grid 66:21
83:2 99:8	135:1 190:18	122:11 133:13	67:12,15 72:21
106:17 111:5	gives 111:10	133:22 141:2	griswold 2:7
113:21 138:10	giving 25:12,15	148:20 150:14	4:13
138:15,19	57:19 138:8	152:19 154:7	ground 6:4
139:18 147:8	go 6:4 7:14,17	157:2 159:15	grounds 129:17
181:6,7 190:7	83:21 87:16	159:18,18	129:21 130:9
191:12 202:5	91:18 118:19	163:22 171:18	130:12,21,22
202:12,19	122:13,17	172:2 177:7	131:3,7,11,14
203:1 205:9	123:19 125:14	186:11,19	132:5,12,21
generated	150:13 151:16	190:15 191:9	133:4
44:15,16 45:2	152:1 172:16	191:17 193:6	group 194:17
108:7	180:10 184:6	193:11 197:4	194:17

grouping 115:16 guess 36:7 43:14 44:18 55:9 71:20 86:7 87:15,19 88:15 101:16 108:12,12 131:13 135:11 136:15 143:14 155:4 156:2,17 156:17 157:21 158:2 187:15 gui 204:6 207:1 208:10 guide 127:8 204:6,8,12 208:10 209:12 209:14,16 guiding 127:15 127:20,22 128:5 guys 117:14 200:16	handed 59:18 59:19 134:1 handing 10:15 14:2 61:15 happen 157:12 157:19 happened 71:22 happening 84:9 86:3,6 happens 58:13 88:14 152:13 harbor 63:14 63:16,19,19,22 64:1,3,19 65:1 65:3,3 75:9,12 75:18,21 hard 40:18 hardware 26:3 26:4,7 66:9,10 hbo 205:11,14 205:20 206:19 206:20 207:20 210:10,11,12 210:16,18 head 6:7 15:18 116:14 heading 42:4 headings 42:13 headline 156:10 hear 34:3 heard 200:5	hello 59:12 94:21 117:19 149:4 help 13:19 189:5 helpful 154:6 hereto 213:13 hey 116:7 hi 59:11 94:20 117:18 149:3 165:22 hiding 115:18 high 17:16 histories 15:4 history 111:13 111:21 114:3 114:11,22 116:1,15,17,18 116:20,22 117:3,7 177:19 hit 83:4 hitting 86:1 hold 184:22 holdings 1:7,17 3:3 4:7,14 8:5 homeplace 5:3 honest 40:13 honestly 139:18 hope 117:21 hopefully 7:18 hoping 65:17 hopkins 62:2 62:12 63:6	65:11 host 152:19 hosts 137:16 hotsko 1:19 213:2,18 hour 50:20 75:6,7,10,13,19 75:22 hours 22:1 housekeeping 59:17 html 22:6 huh 14:22 35:10 37:14 41:20 42:12 46:1 51:13 67:20 68:12 70:22 73:4 84:22 87:7 149:15,20 154:14 163:4 164:3 181:21 185:5 hung 143:13 156:19 hyper 26:19 hypothetical 199:17
h			i
halftime 89:19 89:22 halfway 159:17 halter 2:7 4:13 hand 13:20 76:10 77:1 133:13 201:4			icon 80:13 210:9 icons 204:12,17 204:20 205:3,8

208:11,16,19 209:17 210:6 210:20,22 211:4,6 idea 70:8 71:8 165:6 identification 10:8,12 163:17 identified 163:14 identifier 164:5 illustrating 145:11 162:21 images 160:14 210:21 implemented 72:6 204:1 implication 182:19,20 implying 155:5 important 108:10 imprecise 46:9 improperly 158:1 improving 202:20 203:2 inbox 94:4 include 19:20 24:19 29:21 42:13 46:7,11 46:18 47:1 65:20 71:3 107:15,18	151:21 156:6 156:13,15 160:12 165:14 166:6 178:17 179:15,21 181:7 included 12:10 includes 24:22 81:8 89:2 95:7 95:13,16,17 125:20 137:5 137:13,22 141:4,13,20 145:15 146:6 147:2 148:10 148:12 151:18 193:18 including 51:16 74:10 110:19 111:12 160:13 204:2 inconsistent 102:14 104:12 104:15 incorporate 198:19 199:6 199:13,22 207:6,10 incorporates 129:2 incorrect 165:9 incorrectly 157:16	indicate 126:9 indicated 126:15 indicates 65:10 190:11 indicating 15:11 60:5 82:4 indoor 69:1 inform 113:20 information 13:1 27:21 28:3,4,6,9,10 32:19 33:11,18 35:9,12,21 50:4 70:2 117:5 146:11 146:18 172:6,9 190:6 infrastructure 22:18,22 23:14 24:8,16,22 26:11,15 27:1 48:21 initiate 34:19 initiated 34:17 ins 124:7 inside 19:1 54:18 55:13 69:19 insights 114:14 install 24:7 26:6,7 52:3,21	installed 19:22 installing 21:6 instance 18:6 21:21 23:3 26:16 31:8 50:10 84:15 94:6 111:20 115:16 154:1 155:18 159:3 206:14 instances 121:1 148:6 161:14 161:18 instantaneous... 185:17 instructions 145:17 instructs 7:8 integrate 190:19 inter 11:2 interact 20:12 24:5 28:15 29:2,5 38:22 39:7 49:7 123:1 141:7,16 204:9 interacting 123:10 interaction 32:1,4 interactive 1:4 7:21 208:17,21 209:3,8,9,11,18
--	---	--	---

210:15,18 interest 114:15 interested 213:14 interesting 68:13 interests 65:20 interface 22:4 22:10,10 24:6 29:3,6,13 30:22 31:10 32:8,20 33:12 33:22 34:10 35:12 36:18 39:6 49:10 55:19 70:14,15 80:12 82:11 83:1 92:6,10 92:13,14 93:6 93:7,8,12,13,18 93:19 94:7,10 106:4,7,13,16 106:18,18 107:7,12,15,18 107:22 108:1 108:16,19 109:1,5,6,11,12 109:13,18,20 109:22 110:3,4 110:8,9 124:12 124:18,19 125:1,8 138:10 140:2 141:12 141:18 142:2	144:8,21 149:10 169:7 179:6 190:20 202:21 203:3,5 203:10 204:6,9 204:11 208:14 208:18 interfaces 20:14 140:22 148:2,4 intermediate 65:16 internet 144:7 144:20 178:20 179:19 180:2 181:13 190:8 interpret 135:7 interpretation 198:7,9 intranet 190:8 introduce 4:11 invalid 130:16 invention 92:2 92:8 102:22 179:2 181:16 inventor 98:16 103:4 inventors 124:11,15 involved 72:22 involves 11:6,8 37:21 ipr 3:11,12,13 3:15,17 6:1,2	11:5,8 13:22 14:3 18:19 77:11 201:6 ipr2025-00307 1:5 ipr2025-00308 1:6 iprs 14:19 18:21 59:21 60:9 74:2 75:2 201:17 202:1 iptv 202:12 ish 110:21 issue 184:19 185:1,2 item 142:12,15 156:5,7,8,13,14 items 136:21 141:1,9,21 142:6,9,16 144:12 145:21 146:3,11,12,15 146:18,19 156:3 162:22 163:9,11 177:2	jon 2:2 4:15,16 jumbled 107:3 jump 186:11 190:1
			k
			keep 14:10 36:4 48:7 197:3 kicks 162:1 kim 130:3 131:15 132:22 kind 17:13,16 18:20 25:3 27:14 44:2 56:17 64:17 66:6 71:1,4 73:22 98:18 99:4 114:8,10 129:12 139:19 143:5 146:22 166:12,19 178:17 179:16 179:21 181:8 181:13 183:13 197:19 203:14 206:10,18 kinds 28:20 know 5:18 6:17 7:1,11 15:15 16:21 17:3,10 18:10 21:1 22:7 23:11 27:9 28:14 30:13,17 38:17
		j	
		january 213:22 java 22:5 job 76:8 johns 62:2,12 63:6 65:10 joining 56:13 57:6,8,9	

40:7 47:11 50:13 52:6 54:12,12 55:12 67:13 69:17,20 71:21 74:13 76:6 79:20 85:17 88:8 90:11 110:13 112:2,21 113:1 114:1,16,22 115:12,20 116:9 117:6 126:15 130:13 139:4 145:4 159:21 160:20 161:9 162:11 164:16 165:8 167:7 175:7,18 181:2 199:20 206:8 knowledge 13:5 133:7 179:12 kyle 2:6 4:12	185:20 186:6 186:14,20,21 187:7 lane 5:3 language 108:11 114:1 131:19 132:3 132:10,11 135:19 136:6 189:7,11 198:11,16,17 199:1 large 52:3,21 67:13 157:6 158:6,9 largely 21:20 latest 34:14,20 launching 208:16,20 209:17 law 1:17 lay 203:14 layout 111:7 lecturer 65:10 left 94:22 200:20 legal 1:20 level 17:16 119:2 light 38:22 likely 74:14 113:3 limit 90:3 140:16	limitation 174:10 limited 160:13 limiting 115:6 115:12,15,17 187:5 line 19:13 95:6 98:18,21 99:2 110:21 111:15 112:6 132:14 165:17 166:1 180:22 191:5,8 195:3 209:21 lines 83:18 91:19 99:14 104:10 147:16 180:9 181:4 183:4 189:21 190:4 191:1 197:16 linking 111:8 list 13:9 15:7,9 87:6,17 88:17 90:18 91:5,16 126:20 127:4 156:3 listed 24:17,20 listing 205:2,7 little 41:6 46:9 46:21 65:14 99:7 107:3 109:17 110:16 140:14 181:22 200:20	live 56:15 84:15 88:7,7 89:3,11,12,13 89:16,17,20 90:1,5 159:3 159:10 livestream 89:7 89:17 llc 1:7,17 3:3 4:7,14 8:5 llp 1:18 2:3,7 local 18:8,13,17 19:2,5,19 20:7 20:9 21:4 22:3 23:1,5,6 30:9 52:3,21 locally 21:6 22:5 located 28:1 69:16 70:7 locater 156:11 location 69:1 69:20 70:3 156:11 179:12 lock 111:12 112:22 113:11 113:13,19 115:22 116:5,7 locking 113:11 113:14 log 22:1 95:7 95:13,18,19 96:5,10 97:18 103:14 105:19
l			
lab 70:3 label 60:6 labeled 60:5 146:13 labs 63:20 64:1 64:19 65:1,3 lag 168:6 180:5 183:18 185:17			

106:2 124:5,7 logged 70:6 80:17 81:21,22 82:14 logo 210:10,14 logos 210:21,22 211:7 logs 99:15 long 9:10 166:16,20 look 16:8 51:9 79:5 95:5 101:12 142:4 143:7 155:18 155:20,22 156:1 166:14 166:17 211:1 looked 64:18 117:2 166:9,11 looking 36:21 87:21 104:11 111:16 115:3 135:17 137:4 149:13 178:21 189:7 191:4 looks 78:12 112:4 129:16 143:8 178:7 lost 181:2 lot 13:4 38:12 47:7,13 50:4 73:18 74:1 86:6 115:1 197:15	lots 157:17 lunch 117:20 m made 91:1 156:6 168:14 168:19 mail 94:1,2 mails 94:3,4 major 72:8 make 6:5 16:20 28:12 30:17 38:18 44:1 60:10,18 78:2 81:3 91:21 98:11 102:1 115:13 128:4 130:19 131:2 132:8 135:3 190:11 192:1 203:15 211:13 makes 28:13 34:14 40:18 76:8,9 91:22 194:18 making 39:17 132:18 182:11 malware 65:18 manage 92:16 93:2,12,18 122:20 123:7 124:13 152:2,4 management 207:16	managing 79:9 79:16,21 80:4 80:6 92:4,9,11 123:2,11 179:3 map 69:15 203:19 mark 10:5,5,10 marked 3:10 10:7,11,16 13:21 14:3 61:14 76:11 77:2 133:14 134:2,18 201:5 martin 1:15 3:6 3:11,12,18 4:3 4:9,20 5:3 8:18 10:7,11,15 11:15 59:11 94:20 117:18 149:3 165:22 201:2 211:17 212:3 maryland 5:4 master 80:13 81:7 82:18 95:8,14,18,20 96:5,8,8,10,12 96:13,15,16,20 97:1,7,9,14,15 97:16,19 98:3 99:15,17 100:1 100:2,4,5,7,8 100:13,20 101:2,3,6	102:21 103:2,3 103:7,12,14,20 104:3,12,18 105:1,2,5,11,19 106:2,4 107:2 107:7,11,16,17 108:1,5,19 109:3,10,11,16 109:18,21,21 110:10,19 111:18 112:4,6 112:9,11,13,20 116:3 122:21 123:3,8,12,12 125:1,5,8,19,20 127:12,13,17 168:15,20 169:1,6,8,11,13 169:16,17 170:16,18 171:4,8,9,12,13 171:17,19 172:1,2,4 190:13,16 191:15,17 193:22 194:2,2 194:10,10 195:7,8,11,12 195:14,17,18 195:21 196:3,4 196:6,9,14,17 196:18,19 197:6,9,18,21 198:3 203:20
---	--	--	--

master's 62:1,9 62:15,20,21 63:10 119:10 119:19 120:12 121:14 material 42:22 43:1,2 materials 9:3,6 13:4,6,8,9,11 13:12,17 15:7 15:8,13,14 16:4,8,10 mathematics 128:17,22 129:1 matter 54:14 54:16 87:12 mean 13:15 21:11 22:13 23:11 25:1,6 26:2,14 28:6 30:1 35:6 36:6 36:18 37:16 38:9 39:8,13 40:5 43:16,17 44:15 54:9 58:2 61:7 62:17 82:19 85:12 86:17 87:3 96:2 101:18 102:20 106:21 107:10 108:15 113:8 114:3 115:15	115:15,16,17 115:17,18,18 115:19 127:22 135:6,8 138:22 155:1 157:5 158:8,12 159:20 167:1,3 170:22 171:21 172:19,22 173:5,7 177:12 185:2,19 197:3 197:16 199:10 202:9 205:19 211:4 meaning 24:4 54:10,20 55:6 55:14,21 98:8 98:13 106:15 126:11,16 187:13 meanings 27:12 means 22:15 168:5 180:4 186:5,12 189:12,16 197:20 meant 169:22 170:5 media 202:3,6 203:5 204:13 208:11 210:7 210:12	medical 64:22 65:5 129:7,8 medications 5:11 meet 9:8 176:2 187:21 megabyte 159:5,6,6,7,8 memorized 117:10 167:9 memory 5:12 145:16 147:14 mention 29:4 mentioned 22:9 25:5 48:1,17 mentioning 25:21 merged 163:10 163:14 merging 163:19 met 4:11 9:11 9:15 metadata 142:11,14 method 207:10 methods 203:6 207:7 middle 57:15 migrate 124:13 migrating 79:9 79:16,22 80:4 80:7 179:3	mind 48:7 minimal 169:19 170:19 171:1 171:11 180:5 183:18 185:20 186:6,13,20,21 187:7 191:19 192:6,9,11,12 192:14,19 193:4,7,8 minimize 185:14,17 191:20 minimum 168:6 minute 176:10 minutes 73:15 211:11 mobile 24:7 29:8,16,22 31:9,9,17 32:2 70:13 model 38:13,14 38:17,19 modern 46:10 modified 112:5 modifying 112:3 121:13 121:16 module 145:15 145:18,20 146:2 176:13 176:19,21 177:1,4
--	--	---	---

moment 27:8 41:16 95:9 115:8 135:18 monitored 67:16 monitoring 66:21 72:20 morning 4:9,10 4:21 motivated 207:9 mouse 206:4 move 140:14 moves 28:10 multiple 56:6 79:11 80:1,9 80:16 82:13 92:5,12 96:19 97:12,21 99:20 100:10,22 103:9,17 104:20 105:14 106:5 110:1,5 123:2,10 124:7 126:2 161:14 161:16,18 163:20 168:11 172:20 173:1 173:20 174:14 175:20 179:5 180:8 182:4,14 182:22 183:20 184:3,18 186:9 186:17,19	187:9 188:14 188:19 193:20 194:8 195:1 196:12 198:1 203:9 n n 2:1 3:1,1 4:1 name 4:12 5:1 72:13 names 72:11,12 narrow 53:4,6 53:8 54:7 55:12,15 59:4 navigate 33:5 122:21 123:7 209:3,5 210:18 navigating 123:3,11 necessarily 32:6,18 33:1,5 33:20 34:8 40:5 43:16 44:20 58:9 85:8 87:8 88:19,20 93:21 102:11 115:15 117:2 necessary 24:8 24:16,21 need 6:18,22 7:12 14:4,10 23:2,4,8 25:2 26:4,13 27:9	47:10 52:2,20 61:20 94:16 101:8 103:8 108:20 110:4 122:14 159:14 164:16 189:1 197:3,10 206:12 needed 124:5 needing 22:22 24:7 needs 188:11 188:15,17 neither 213:9 network 19:21 24:4 25:3 52:2 52:20 57:14 66:1,7,10 67:12 73:19 74:1,3 119:9 149:19 150:9 152:15 156:11 networking 61:10 networks 24:10 24:22 26:15 56:3 74:4 never 50:6,12 new 35:20 86:1 87:17 90:12,13 91:6 165:17 newest 36:5 news 44:5	nodes 56:6 nods 6:8 non 88:20 norm 45:20 northwest 1:18 2:3,7 notary 1:20 213:1,19 notice 1:17 3:7 3:8 notices 10:20 notion 183:22 nuance 106:20 nuanced 110:13 number 8:11 8:16 11:5,8 67:13 114:5 115:19 180:22 numbers 191:3 191:5,8 o o 3:1 4:1 oath 5:6 object 7:5 23:17 28:17 34:1 35:14 39:15 53:1,14 56:20 79:18 85:10 88:22 92:20 99:6 100:16 101:7 103:1 104:21
---	--	--	--

105:7 120:16	offer 17:7,10	42:7 45:6	125:4,10,16
121:5 142:19	19:7	46:16 47:17,22	126:5,19
144:15 147:4	offered 121:20	49:13,18 50:1	127:10,12,17
174:19 188:8	121:22	51:7 54:21	128:8 129:15
189:14 192:16	office 1:1	57:8,21 58:22	130:9,11,14
193:15 198:13	officer 213:2	59:5,8 60:3,9	131:5,8,13
objection 18:14	offices 1:17	60:15,17,19,21	132:4,6,13,16
34:11 147:11	officially	60:21 61:2,5	132:19 133:8
objections 7:4	139:10	61:20 63:13,22	133:13,16
objects 7:7	offload 19:10	64:3,13,18	134:12,16,22
obvious 11:21	19:16	65:3 66:19	135:3,4,17
130:17 132:9	oh 15:10 31:1,8	68:4,13,14,20	137:3,11,18
207:6	52:14 61:9	68:21 71:1,11	140:7 142:8,16
obviousness	68:16 72:10	72:19 73:14	143:7,22
130:9,21 131:3	74:10,13 81:1	76:1,14,19	144:10,12
131:6 132:5,12	81:21 101:18	77:1,5,10,14,20	145:5,7 146:20
133:4	123:20 128:16	77:20 78:2,10	147:12 148:15
occur 110:7	132:2 137:10	78:21 79:5	150:1,8,12,15
160:20 164:14	147:10 150:1	81:3,6 82:2	151:6,17 152:5
168:6 180:5	158:21 164:7	83:19 91:18,20	152:6,8,22
186:6 188:16	166:2 170:2	93:16 94:13	153:13 154:18
188:17 194:5	178:21 184:19	95:10 96:7	155:14 156:1
occurring	185:11 195:3	97:15 98:11	157:8 158:22
164:22	199:16 202:11	99:3 104:17	160:5,9 163:8
occurs 34:16	okay 6:3,20 7:2	109:2,6,8	163:8 164:18
36:15 142:22	7:4,9,15 8:18	110:22 111:16	165:2 166:2
165:3 175:10	9:8,13,17,20	112:19,22	167:21 168:16
186:13 195:19	11:14 13:13	114:2 115:2	169:9 170:4,7
195:20	14:16 16:10,17	118:6,8,20	172:5,17
october 1:9	17:4,12,15	120:1,5,20	176:11,11,18
118:13,16	19:3,19 20:11	121:2,18 122:2	176:21 177:7
120:1,4,6,8,9	23:22 27:8	122:7,7,11,16	177:10 178:1,3
122:1	29:1 32:16	122:18 123:6	178:8,13
	34:2 41:5,17	124:2,3,17,22	179:20 181:5

186:7 187:8 190:4,21 200:7 200:15 201:16 201:18,19,22 202:3 205:5 206:22 207:4 207:19 208:8 209:15,20,22 210:2,5,20 211:8,9,18,20 old 35:22 36:1 36:4 72:2 90:15 omnibus 60:16 once 26:3,7 88:17 152:18 192:4 198:6 ones 47:13 open 83:6 operates 99:5,9 operating 19:21 24:11 25:21 26:5,10 39:9 65:21 66:7 operation 98:19 111:8 opined 139:3 139:11 opinion 119:1 129:19 130:15 172:18 207:5 opinions 13:2,3 15:1 16:2,11	17:1,8,11 19:7 128:11 129:15 129:19 131:9 133:12 opposite 107:17 oral 1:16 order 26:5 55:17 92:16 169:9 185:8 192:11 ordinary 51:14 54:10,19 55:6 55:14,20 98:8 98:12 106:15 119:2,17 120:6 120:9,11,20 126:11,16 168:8 182:1 184:16 204:15 204:19 organize 150:21 151:10 151:13 207:13 207:17 organized 171:19,22 191:12 organizes 96:22 100:2 169:16 170:17 172:1 organizing 96:17,18 97:8	97:11 191:16 193:19 194:22 196:11,16,21 197:6 original 43:4,9 43:13 44:14,15 44:17,22 45:4 183:6 originally 46:12 65:7 outcome 213:15 output 38:2 39:18 outside 18:22 30:13 54:11,17 55:11 189:10 overall 95:4 overlap 19:9 39:8 overlapping 39:10 overview 122:9 overwriting 35:19 overwritten 35:2 own 24:14 owner 1:8,16 2:6 3:3 8:8 p p 2:1,1 4:1	p.m. 212:2 packets 66:22 67:2,6,6,8,13 71:16 page 3:2,6,10 20:13 24:6 29:6 30:22 32:19 33:21 34:9 36:19 45:22 49:11,17 49:19 60:9,22 80:13,14 81:8 81:13 82:12,16 82:18,21 92:14 92:17,18 96:20 97:1,9,14,15,16 97:17 98:3 100:3,8,9,14,21 101:2,3 102:21 103:2,3,7,11,12 103:12,20 104:4,13,18 105:1,2,5,11 107:2,7,11,16 107:18 108:1,6 108:19,20 109:4,9 110:10 111:7 116:3,11 122:21 123:4,8 123:12,12 125:2,5,8,18,19 125:20,22 127:18 131:8 132:18 160:12
--	---	---	---

168:15,20 169:1,6,8,11,13 169:17 170:18 171:5,9,13,17 171:20 172:2,8 172:10,12 191:17 193:22 194:3,11 195:11,14,17 195:19,22 196:4,7,9,17,19 197:7,9,19,22 198:3,20 200:2 pages 44:9 97:20 103:15 105:13,13 108:21 160:14 paging 194:7 paid 75:1,4 paperwork 63:1 paragraph 14:15 16:14 18:5 19:19 20:4,11 24:1 29:4 30:7 42:6 46:2 48:15,15 75:17 99:1 114:6 118:19 118:22 119:4 121:4 122:3,4 122:6,15,15 125:10 126:4,9 126:19,22	128:9 130:15 131:21 135:13 136:1,5 137:2 137:4,9 140:16 142:5 144:3 145:8 146:1 149:13 150:12 151:15 152:5 156:1 160:12 167:19 168:3 169:14,22 170:1,13 172:13 176:9 176:12 177:9 178:6,10 180:14 181:18 181:20 184:14 185:6 190:21 203:13 204:4 204:14 208:4,9 210:4 paragraphs 118:6 122:12 123:14 162:16 162:19 205:1,6 205:10,13,17 206:11 207:4 parameters 67:11 paraphrasing 109:17 parental 113:16	parentheses 156:7 part 11:22 16:16 18:1 20:8,9,9,20 21:8,8,9,11,15 22:3,6,7,15 29:18,20,21 30:2,2 37:12 37:18,20 39:17 54:7 62:16,17 62:19 66:8 67:3 87:15 88:15 141:19 142:21,22 143:17,19 153:2,8 156:17 156:18 176:15 176:18,19 177:5 192:10 192:20,22 198:19 199:14 200:1 202:13 203:10 partes 11:2 partial 157:20 160:7 164:1,4 164:5,19 165:8 166:8,12 167:5 167:15 partially 157:7 158:6,9 particular 16:1 22:11,12 23:7	37:11,20 110:13 116:6 116:10 174:5,6 182:12 particularly 179:1 204:10 parties 1:22 213:10,13 parts 22:8 30:14 31:10,15 31:16 48:7,12 135:10 153:3 153:18 167:10 167:11 198:8 203:8,10 party 49:16,16 passage 167:16 passing 62:21 password 111:7 past 47:4,5 71:22 153:1,1 pasted 129:9 pasting 43:17 patent 1:1,2,5,7 1:8,16 2:6 3:3 3:13,14 8:8,10 8:11,14,15 11:6,9 52:9 76:18,18,21 77:9,11,16,22 78:13 79:6,15 79:19 81:7,11 82:5 85:13
--	---	--	--

95:6,13 96:7 96:14 98:18 100:7,13,20 101:11,12,13 101:16 102:4 102:13,18 103:19,22 104:1,2,7 106:21 107:1,6 109:16 113:2,7 115:3 124:7 128:12 129:16 129:20 131:10 133:10 144:17 170:14,22 174:5 177:18 177:21 178:1 182:17 183:2,4 184:15 188:1 191:2,4 197:5 197:8 199:7 patent's 123:9 patented 122:20 patents 11:18 12:13,14,14 13:10 15:4 60:10 78:11,18 78:20 79:3 95:1 98:9 118:12,17 122:9 123:6,16 125:12 126:11 132:11 168:4	169:14 193:2 path 143:10,11 143:17,20 144:11 patterns 114:15 paul 1:15 4:3 5:3 212:3 pause 186:7 pdas 141:5 pending 7:12 people 67:3 69:2 120:14 perform 26:9 38:21 performed 133:11 performing 39:2 94:7,9 periodically 145:21 146:3 177:2 perkins 1:18 2:3 4:17 person 119:5 119:17 120:5,9 120:10,20 168:8 182:1 184:16 204:15 204:19 personal 204:2 perspective 192:1	petitioner 1:5 2:2 4:17 8:2 ph.d. 1:15 4:3 62:2,16,18,19 63:3,8,11 121:20,22 212:3 phone 69:18 70:1 phones 141:6 phrase 112:10 113:11 115:12 physical 25:9 179:12 pick 23:8 68:17 piece 155:3,5,6 157:6 158:5 163:18,19 164:1,4,6,11,12 164:19 184:8 pieces 90:7,10 place 28:5,7 37:3 140:17 178:22 181:2 places 27:14 28:11 197:12 203:7 plain 54:10,19 55:6,14,20 98:8,12 106:15 126:11,16 plans 17:7 platform 208:15,19	playing 161:22 164:12 please 5:2 6:8 6:13,17 34:2 41:16,17 81:5 95:11 97:3 133:17 137:7 137:11 170:7 205:5 plural 25:16,17 plurality 95:22 point 37:2 39:16,19 40:20 51:2 62:22 65:8 71:6 80:21 83:22 95:21 102:10 102:15 113:18 117:9 133:5 136:12 138:10 139:11 152:12 154:3,9 167:8 179:6 190:10 192:17 193:2 196:22 197:10 pointed 117:8 points 133:7 160:20 208:16 208:20 209:17 poles 67:1 populate 207:1 populating 206:17
--	--	---	---

portable 160:15	pre 31:10,11	presented 49:18 109:3	prior 11:20 12:11,12 13:11
portal 210:15	preceding 196:6	131:11 136:21	13:14,16 15:5
210:17,18	precise 102:12	136:21 141:18	priority 118:12
portals 208:17	precisely 121:6	142:1,18 143:1	118:16
208:21 209:3,5	preferably 80:13	144:13 161:20	privacy 65:15
209:8,10,11,18	preferences 114:15	161:21 162:3	66:2 129:6
portion 76:8	prematurely 158:11	204:5 206:3	privileged 12:7
99:13 115:3	premise 19:22	presenting 109:1 129:16	probably 17:12
183:1 184:14	preparation 10:2	129:20 130:11	26:13 72:11,13
188:1	prepare 8:19	presents 149:10	72:17 74:21
portions 50:11	12:3	preserving 66:2	91:21 159:19
178:13	preparing 11:22 12:17,20	presumably 135:21	problem 55:8
posita 133:7	14:22 37:8,9	pretty 6:3 47:6	124:11,16
173:3,18	37:13,16 38:1	68:20,21 70:11	proceeding 61:16,17 76:13
174:12,22	preselect 207:13,17	78:8 167:1,7	76:20 77:4,16
175:1,18 176:4	preselected 195:6 196:13	prevent 113:4,8	77:21 133:15
177:11,15	205:3,8	preventing 113:12	134:3,17,19
180:6 182:19	preselecting 205:11,14,17	prevents 43:8	proceedings 6:1 8:2,8 11:3
183:18 184:1	205:22 206:19	164:22	11:12 213:9
186:15 187:8	present 1:22	previous 183:10	process 37:12
positas 207:9	9:18 70:1 92:2	previously 3:10	37:21,21 39:17
position 69:19	156:4 179:1	13:21 14:3	51:20 52:16
121:20	204:10	53:3 61:14	53:12 116:12
possibility 56:12 57:6,7		76:11 77:2	158:14 162:21
161:8		87:22 133:14	processing 19:11,17
possible 12:21		134:2 162:14	product 72:8
32:21 33:3,7		163:10 201:5	professional 15:20 16:15
104:22 113:17			program 96:11
198:3			106:4
potomac 5:4			
power 67:15			

programmed 33:9 71:5 73:5 73:7,9 100:4 programming 65:16,17 109:22 programs 18:7 20:5 25:8 26:8 30:8 project 69:5 70:11 71:19 72:4 prompt 190:14 promptly 169:18 170:19 171:10,14 191:18 propagated 129:13 properly 67:14 proposed 125:12 protocol 66:1 66:10 protocols 66:2 prov 107:22 provide 36:12 36:15 63:17 64:11,16 73:5 114:5 119:1 124:19 126:19 127:4 132:10 170:14 178:5,6 178:14 193:3	208:21 provided 44:11 112:15 125:2 169:8 171:4 190:8 provider 99:20 116:6 117:4 190:16 providers 79:12 80:2,10 80:17 81:15 82:14 96:1,4 96:20 97:13,22 99:18 103:18 105:15 106:6 110:2,6 126:3 193:21 194:9 195:2,6 196:13 provides 64:4 107:11 108:1 108:19 111:20 112:12 156:3 179:9 209:4 providing 109:5,6 122:8 124:12,17 128:10 168:3 public 1:20 74:22 213:1,19 published 69:6 90:13 163:10 publisher 90:13	pull 67:9 68:4 73:3,9,13,15 pulling 68:9 86:1 162:9 pulls 83:6 purchased 206:2 purportedly 123:1 purposes 174:9 pursuant 1:17 put 15:10 38:6 40:21 69:11 136:15 195:16 195:18 199:2 209:18 putting 35:20 171:8,13 puzzle 184:8	143:3 147:13 149:22 155:1 155:14 162:13 164:17 166:1 168:16 183:6 183:10 185:12 198:14 200:8,9 206:21 questioning 165:17 166:1 questions 50:18 67:19 95:4 122:12 150:14 154:8,13 155:12 162:17 163:7 166:12 180:11 208:7 211:16 queuing 56:11 57:5 quick 17:21 133:18 quickly 60:22 152:7 quietly 81:4 quite 167:2 quote 111:19 144:16 168:4 169:14 170:14 quoting 142:4
		q quality 114:14 question 6:13 6:18,20,22 7:5 7:7,12,13,14 9:1 12:8 18:11 23:21 34:3 35:7,16 36:8 36:22 41:1,17 43:15 51:11 83:3,16,17 88:12 95:11 101:13,16 102:3 140:19	
			r r 2:1,2 4:1

ran 48:10,12	49:14,19 50:5	92:13,17,18	47:9 53:5,16
rate 75:4,9,15	141:11,17	93:2,9,13,14,19	54:13 56:19
75:19	142:1 144:7,21	93:20 98:1	71:19,21 72:1
rather 18:8	176:19 177:4	100:11,14	72:2 86:7
20:6 21:6 30:9	readers 46:6,8	101:1 103:10	107:1 108:13
razdog 1:7,17	46:17,18 47:1	103:18 104:20	113:22 114:12
3:3 4:7,14 8:4	47:3,7	105:6,9,10,15	140:4 147:12
8:5,7	readily 190:13	106:1,8 125:19	152:7 167:12
reach 84:20	reading 12:13	126:3 159:21	181:13
87:5	80:20,22 137:1	168:11,14,19	realtime 81:15
reaches 58:3,4	163:8 170:9	168:22 172:19	194:13 197:9
reaching	194:16,18	173:15,18	198:20 199:3
182:17	210:3	174:3,13	200:1
read 7:2 45:9	reads 113:15	175:12,14	reanswer 200:7
52:14 78:20	real 17:21	177:12 178:15	reason 5:8
81:3,4,6 89:21	51:22 52:18	178:18 179:17	102:12 131:1
92:7 98:14,16	53:13 54:2	179:22 180:8	156:19 163:16
98:20,22 99:14	58:13 59:3	181:9 182:4,15	reasonable
103:19,22	66:21 67:11,16	182:22 183:8	83:9
122:13,17	72:20 79:12,17	183:20 184:1	reasons 69:13
123:18 124:1	80:2,5,10,17	184:18 185:22	205:2,7
125:14 146:13	81:9,22 82:7	186:17 187:1	recall 5:13
150:13 151:16	82:14,17,21	187:10,22	12:19 95:10
152:7 163:3,6	83:8,15 84:8	188:12,14	147:18,20
167:22 172:16	84:10,10,11,14	189:12,19	148:1
176:10 180:13	84:17 85:9,22	193:13,13,21	receive 62:21
180:20 197:1	86:3,4,6,10,13	194:5,10 195:2	63:8 66:22
198:11,15	86:14,14,15,17	195:7,9,13	150:20 151:10
208:6 210:1	86:19,20,22	196:8,15	151:12 153:18
readable 41:9	87:3,4,9,11,13	197:12,13,14	153:19
reader 45:6,10	87:20,22 88:2	198:2,4	received 144:5
45:15 46:5	88:3,5,14,18,20	really 23:6,9,11	144:19 153:14
47:18,20 48:1	89:4,20 90:2,9	28:18 30:4,16	154:22 155:2
48:3,5,16 49:8	90:19 92:6,10	41:10 45:17	155:17 157:7

158:7,10,15,17 158:18,20 159:17 161:2 188:3 receives 169:18 receiving 145:20 155:19 159:6 recency 114:14 114:19,19 recent 72:1,18 recently 5:20 65:16 71:19,20 71:21 156:4,4 recess 59:9 94:18 117:16 133:20 149:1 165:20 200:22 211:15 recognize 60:1 76:15 77:6 134:6 163:18 182:20 183:18 187:8 201:8 recognized 98:9 168:9 182:2 184:16 186:15 recognizing 180:7 recollection 132:15 202:2 record 4:11 5:2 7:14 97:2	178:12 213:8 redirect 211:19 redistributed 56:7 reduced 213:7 refer 7:20 8:4 8:10,14 30:1 45:7 77:15,20 79:2,3 108:16 115:6 136:4 176:12 180:21 201:13,19 203:12 209:20 reference 3:16 3:17 12:12 104:5 134:13 201:13 referenced 113:1 199:10 references 130:6 131:17 133:2,6,8 134:10 referencing 144:17 referred 47:14 96:13 134:13 192:5 referring 30:11 42:6 47:16 104:13 113:3,7 117:7 135:20 150:12 196:1,7 197:12 211:3	refers 7:21 8:5 8:11,15 51:19 52:15 53:11,22 59:1 60:9 106:13 135:15 136:14 183:3 190:5 202:9,11 202:13 refresh 36:13 refreshes 147:14 regardless 15:12 189:20 registered 69:15 relate 74:3,4 162:20 202:7 205:11,13 related 61:12 63:18 64:5,8,9 72:4 107:9 114:13 119:7 156:15,16 206:6 213:10 relates 11:12 76:20 77:11 79:16 81:7 82:6,9 92:9 128:11 129:20 131:10 179:2 202:3 relating 17:1 relation 5:22 11:1	relationship 74:5 78:11 relative 213:12 relatively 72:18 relevant 13:14 13:15 15:4 28:14 69:14 71:9 relied 15:19 16:1 133:9 remember 16:5 68:7 124:2 remote 18:7 20:6,10,18,21 21:2,7,10,12,16 21:21 22:6,14 22:16,17 23:15 24:17 25:8 26:12 27:1,22 28:2,3 30:9,21 32:7,10,18 33:19 34:6,13 48:5,11,12 49:1,3 51:21 52:17 53:12 59:2 68:11 70:18 80:17 81:9,17,22 82:7,15,17,21 97:18 103:13 108:17 123:4 123:13 125:21 148:6,12 169:4 178:19 179:7
--	---	--	--

179:18 180:1 181:12,14 194:1 195:15 195:18,20 196:3,17 203:21 204:1 remotely 25:2 97:17 103:13 144:6,19 190:7 render 38:13 38:17,19 40:12 rendered 11:20 108:2,4 rendering 37:5 37:8,20 39:4 39:12,17 40:5 40:15 renders 36:19 repeat 7:1 137:7,11 repeated 7:1 rephrase 6:19 18:15 23:21 100:17 102:19 106:22 112:10 154:20 161:16 replace 184:21 report 9:3,5 13:8,13 16:20 17:2,5,9,13 18:1,4 21:17 36:20 37:2 51:2 52:12 114:4,6 118:4	118:7 121:3,7 122:3 131:3 154:5 167:10 167:14 191:8 reporter 6:7 7:2 represent 204:21 208:11 representation 95:17 represented 37:22 38:5,10 representing 204:12 require 57:10 83:11 116:2,10 179:11 182:7 198:5 required 124:8 requirements 62:19,20 requires 56:19 171:1 175:5 185:3 193:17 research 13:7 16:7 65:20 69:5 119:8 researching 16:6 resource 156:2 respect 12:13 21:5 55:20 136:13	respective 1:22 99:21 146:12 193:22 195:11 195:13 196:9 196:15 respond 7:7,8 162:13 responding 6:14 67:14 response 77:17 rest 197:7 restart 166:4 restroom 148:20 result 39:3 retrievable 190:13 retrieval 190:14 197:13 retrieve 49:4 171:9 retrieves 138:5 170:18 171:14 177:1 retrieving 146:2 162:21 191:17 return 36:5 returned 34:21 reverse 65:22 review 11:2,17 16:9 78:19 137:8	reviewed 9:2,3 9:4 15:14 16:3 72:15 78:4 right 10:4 13:20 18:19 20:4,7,8,16 22:20 25:18 27:22 29:9,14 29:16 30:10 31:3,4,5 32:6,8 32:9,20 33:2 33:12,22 34:10 35:5,11,12 36:13,17 41:4 41:13 42:12 43:5,11,15,20 46:17,19 48:14 49:6,8,9,21 50:2,3,8,12 52:14 54:18 55:8 57:7,22 58:7 59:6 60:1 60:6 63:10 65:12 66:4,5 71:4 73:6 74:18 75:11 76:10 80:5,11 80:18 85:4 86:11 90:21,22 91:6 92:6,19 92:22 93:6,10 93:11,14,20 94:8 95:1,8 96:9,20,22
---	---	---	--

98:19 99:15	160:10 163:1	roles 150:17	100:1
100:11,15	163:11,14	151:2	s
101:6 105:6	164:2 165:16	roll 69:12	s 1:19 2:1 3:1
107:8 109:3,8	166:8 167:19	rolling 69:10	4:1 213:2,18
109:14 110:6	168:6 169:2,4	rolls 159:10	sake 78:21
110:11,16	170:13 171:17	room 28:13	saved 56:7
112:12 113:13	172:13,21	roughly 74:9	saw 197:12
116:6 118:9,13	174:18 176:13	routers 26:16	saying 25:15,16
118:14,19	176:16,22	rpr 1:19	39:21 54:18
119:20 120:15	177:14,18	rss 41:7,8,13,19	56:17,18 70:21
122:9,22	182:4 183:1,3	42:1,1,9,18,19	86:11,21 87:16
123:14,16,22	183:9,13	42:20 43:10,13	88:16 89:7,15
124:1,6,14	184:18 187:14	43:18 44:3,4,6	90:18 93:9
125:12,19	187:20,22	44:10,13 45:2	101:14 103:7
126:4 128:12	189:10,16,17	45:6,7,9,10,11	103:11 106:22
128:14 130:2,4	191:7 192:6,9	45:12,13,14,17	107:13,14
130:5,6,8	192:13 194:19	45:19 46:4,5,6	108:15,17
131:5,12 132:2	194:21 200:11	46:6,7,7,8,8,17	111:17 121:9
132:4,8 133:22	200:16 201:12	46:17,18,18	152:9 158:22
134:6,14 135:1	201:14 202:1,4	47:1,2,2,3,7,15	162:9 170:8
136:1,9 137:6	202:5,10,16	47:18,19,20,20	173:7,22
137:16 138:1	203:4,12,13,18	49:5,18 50:10	174:10,16,20
140:10 142:2	204:14,18	rules 6:4	174:21 175:6
143:16 144:22	205:10,12,16	run 18:7 20:6,9	175:15,17,22
145:10,14,15	205:18,22	20:18 21:10,12	179:20 181:6
145:19 146:5,6	206:19 207:2,8	21:20 22:19,22	181:10,13
146:14 147:2,9	207:12,14	23:15 25:8,9	182:18 183:1,2
148:7,11,17	208:12,17	26:5 30:8,14	183:9,11,11,21
149:5,21	209:12 210:7,8	48:5,8,10	184:14 185:8
151:15,19	210:10,21	96:11 100:4	187:6,14,18
152:11 153:3	211:2	203:8,9,10	188:4 189:18
153:14 154:1	role 149:6	running 30:20	196:20 199:18
154:17 158:16	151:2,9	runs 21:7,15	208:9
158:17 159:22		22:3,6,14 96:8	

says 64:19 79:8 80:4,6,10 92:2 92:22 95:6,16 96:1,7,10,20 99:14,17,19,22 100:7,12,13,20 101:2,4,10,11 102:7,7 106:2 106:17 109:11 109:16 112:6 115:4,9 130:15 135:18 136:18 137:17 142:5,8 144:4 145:19 146:21 156:2,7 160:11 165:3 165:14 166:6 178:16 184:20 186:3 190:5 191:10 196:2,8 196:11 197:18 198:17 199:20 210:8 scalable 152:15 scene 38:19,20 scenes 39:1 schematic 95:17 science 61:10 62:2,7,10 63:4 63:18 64:5,8,9 64:11 119:7,11 121:14 128:19	sciences 66:20 scientists 64:20 screen 38:2 39:7 70:2 85:22 script 22:5 scroll 44:6 80:14 81:9,12 82:6,12,16,20 85:1 86:9,19 86:20 87:4,17 91:15 125:18 125:22 193:8 193:13 206:4 scrolled 91:5 scrolling 83:4,7 83:8,13,14 84:2,8,9,10,12 84:16 85:7,18 85:21 86:3,8 86:12,13,13,17 86:21 87:3,11 88:2,3,13,14,20 89:2,4,20,22 90:2,8,17,19,19 193:9,14 194:6 scrolls 97:20 103:15 105:12 105:13 search 116:11 searching 12:10 seasoned 64:20	second 68:19 68:21 83:20 98:20 137:8 163:5 167:22 210:1 seconds 67:10 68:5 73:3,6,8 73:10,17 section 27:7 117:8 118:21 122:2,5,8,13 126:6 128:9 142:3 securing 64:21 security 61:10 64:21 65:15,21 65:21 66:6,8 66:10 69:9 73:19 74:1,3 129:6 see 13:18 15:8 15:10 17:20 19:6 21:16 23:13 27:8 30:21 31:2 32:7,18 33:11 33:20 34:8 35:11 37:1,3 40:8 48:15 50:1,6,9,12,15 51:10 58:8 70:4,5,9,10 79:13 91:4 101:13 105:20	109:2,2 111:1 111:15 113:10 125:10 129:12 132:2 135:17 164:7 167:13 172:11 188:9 193:7,12 194:20 196:20 199:20 202:11 206:12 seeing 94:4 seem 102:6 188:5 seems 83:9,16 165:5 198:6 seen 10:17 15:16 157:17 sees 31:7 selecting 93:3 selection 207:15 semester 65:19 send 67:2 116:21 sending 58:10 58:17 195:21 sense 30:17 54:6 91:22 100:8 101:3 157:22 194:18 197:21 sent 38:7 90:12 117:1,4 143:15 144:6,20 153:6
---	---	--	---

159:1,9 177:14	53:13,18 54:1	148:10,12,13	72:7 99:21
184:12 185:4	56:9 58:7,10	149:6,18 150:9	138:21 148:6
185:10 187:6	58:11,18,19,20	150:10,16,22	190:7,9 193:22
187:18 188:6	59:2 67:7,21	151:3,5,20	195:11,13
188:11 189:12	68:10,11 69:3	152:10,17	196:9,15
sentence 81:1,6	69:4,14 70:18	153:5,7 155:17	serves 149:11
81:20 92:1	70:18 71:3,8	155:20 158:15	208:14,18
101:9,10,10,15	90:12 93:11,15	162:2 169:4,5	service 21:19
101:19 102:2,5	93:17 94:11	169:16 170:16	22:1,12 75:14
102:10,14,17	95:8,8,14,14,18	171:4,7 172:7	79:12 80:2,10
104:10 112:3	95:18,19,20	172:9,11	80:16 81:15
112:18 121:10	96:5,5,8,10,11	176:15 177:14	82:14 95:22
132:1 182:12	96:19 97:19,19	184:3,13 185:4	96:3 97:13,22
182:19 184:22	99:15,17,19	185:10,14,16	103:17 105:15
separated	100:1,4 101:6	185:17,19	126:2 156:3
195:21	103:14,14	186:10,18,22	190:8,16
separately	105:19,19	187:1,6,11,19	193:21 194:9
101:12 124:6	106:2,3,3	188:6,12,19	195:1,5,5
served 74:6	108:7 109:10	189:12 190:13	196:13
76:1	109:12,17,18	190:17 191:14	services 63:17
server 20:22	109:21 116:12	191:15 192:2,8	64:4,7,12,16
21:2,7,10,12,16	116:20 117:5	192:10 194:2	92:5,12 93:1,2
21:21 22:6,14	127:12,13	194:10 195:7,8	93:3 178:18
22:17 23:15	137:5,13,18,19	195:12,19	179:11,14,16
24:17 26:4,9	137:22 138:1,3	196:3,14,18	179:22 181:9
26:12 27:1,22	138:4,5,7,9,10	197:13,14	serving 75:1
28:2,4 30:21	138:13,16,17	199:4 203:18	76:7
32:7,10,18	138:18,19,19	203:20,20	set 11:14 17:12
33:20 34:6,13	139:4 140:22	servers 18:8	70:9 73:12,14
44:7,12,14,15	141:8,17 142:6	19:21 20:6,19	98:16 111:5
44:16 45:2,3,3	142:8,20 144:5	22:16 24:10	163:10 202:10
45:5 48:6,11	144:19 145:9	25:5,8,10,17	202:12,15,17
48:12 49:1,3	145:12,14,16	26:7,8 30:9	202:21 203:3,8
51:21 52:17	146:5 147:2	54:6 70:17	203:11

setup 149:18 190:11 several 42:2 147:6 shaders 38:15 shape 38:17 shapes 38:15 she'll 89:18 shift 41:6 show 89:19 108:20,22 116:8 showing 161:16 172:7 198:8 211:7 shown 32:10 171:16 172:3 172:10 192:13 192:18 shows 95:17 170:15 191:13 210:10 211:2 sic 141:5 142:10 145:20 169:18 201:6 side 31:17 34:19 66:11,11 67:9 70:5,9,10 73:2 152:21 signature 61:3 213:17 significant 51:18 53:19 184:4 188:20	signify 186:8 189:16,18 signifying 184:2 similar 61:11 119:11 121:14 146:22 148:9 simple 41:10 simplicity 78:22 simply 197:6 simultaneous 174:3,12 187:22 189:13 195:7 simultaneously 172:18 173:13 173:14,18 175:12,14 177:12 178:15 183:8 185:22 194:9 195:9 196:14 single 76:5,6 80:12 82:11 92:5,13 95:21 106:7,13,16,17 106:19 107:6 107:15,18,22 108:1,15 109:13,19 110:3 124:12 124:18,19 125:1,7 136:12	179:5 sit 167:3 sitting 93:11,15 93:17 169:3 situation 158:13 174:11 sizable 76:8 skill 51:14 119:2,17 120:6 120:9,11,21 168:9 182:2 184:16 204:16 204:19 skip 195:3 skipped 194:15 196:21 skype 72:10,14 slide 80:14 81:8 81:11 84:3 97:20 103:15 105:12 slightly 191:3,5 slip 170:10 smaller 159:4 smart 66:21 67:12 72:21 smartphones 123:5 snippet 42:4,17 snippets 42:14 44:11 socket 83:6 software 18:7 20:5 21:19,22	22:12 25:8 26:6,7 30:8 32:14,21 33:3 96:12 100:6 179:10 191:11 193:19 194:21 sold 67:17 solutions 1:20 solve 123:16 124:15 solved 124:11 somebody 120:21 soon 172:20 173:2,16,21 174:15 175:21 190:17 192:2 sorry 14:17 15:6 23:20 38:9 41:16 46:20 64:10 80:19 83:20 91:21 95:10 97:3 98:11 103:12 107:3 109:15 118:21 121:21 127:2 131:18 138:22 145:9 146:14 147:5 148:19 149:22 160:10 169:21 170:2,5 171:2 176:9 178:10,21
---	---	--	---

180:22 sort 15:20 62:21 65:4 166:20 202:13 sorts 38:16 sound 74:18 75:11 200:3 sounds 6:3 200:21 source 42:5,21 43:1,2,19 44:9 72:14 124:6 156:5 169:15 170:16 171:3,7 177:13 184:12 191:14,15 207:22 208:1 sources 44:6 51:18 53:20 79:11 80:2,9 80:16 81:14 82:13 92:5,12 95:22 96:3,19 97:13,22 99:18 99:20 100:11 101:1 103:10 103:17 104:20 105:15 106:6 110:2,6 123:2 123:10 124:9 124:21 126:2 137:20 138:6 168:11 172:20 173:1,20	174:14 175:20 179:5 180:8 182:4,14,22 183:20 184:3,5 184:6,18 186:9 186:17,19 187:10 188:14 188:19 193:21 194:8 195:1,5 195:16 196:12 198:2 207:13 207:17,19 208:22 209:7 space 47:6 speaking 21:3 23:3 27:13 36:16 37:7,19 138:8,15 202:19 203:1 spec 189:11 198:8 specialization 65:4,8 73:22 specialize 64:21 specific 19:12 27:11 40:3 51:3,8 64:6 83:16 99:8 101:9 102:10 104:6 106:20 132:11 138:9 150:17 202:8 207:13,17	specifically 36:20 37:4,6 136:18 139:3 155:13 158:4 167:17 189:8 211:3 specification 78:15,17,19 96:14 113:18 117:10 177:18 177:21,22 178:4,14 198:12,16 199:1 specifies 156:9 speed 27:5 spend 75:20 spoken 10:1 stack 66:9 stale 34:22 standard 41:9 43:7 stands 41:9 start 17:16 95:3 133:22 164:11 starting 95:5 98:17,21 114:7 118:21 122:5 128:9 145:8 starts 110:21 122:3 state 5:1 194:20	statement 213:8,11 states 1:1 79:20 static 210:21 statistics 67:8 stats 88:8 stenotypy 213:7 step 196:10 steps 195:20 stick 72:18 stock 132:3,10 stop 210:2 stopped 210:5 storage 19:10 19:16 145:21 146:3 179:10 store 27:14 49:4 69:22 150:21 151:10 151:12,19,22 stored 141:22 142:17 143:9 143:12,14,20 144:1,5,13,19 163:10 190:6 stores 142:6,9 142:11,13,20 146:15 storing 146:10 146:17 162:21 stream 38:6 53:9 54:4,5 55:17,22 56:11
--	--	--	--

56:15 57:12 67:6 72:22 84:15 88:7 89:3 162:1,1 streamed 101:5 160:18 195:6 195:12 196:14 197:14 streaming 50:22 51:6,12 51:14,19,22 52:15,18 53:11 53:17,18 54:3 54:4,15 55:1,4 55:7,15 56:5 56:14,15,18 57:13,17 58:2 58:12 59:1 71:11,12,14,15 72:5,16 100:9 100:14,21 101:4 103:8 104:18 105:22 195:8 197:22 199:3 streamline 7:18 street 1:18 2:3 2:7 stretch 94:16 structure 149:16 150:3 152:14 structured 27:15 165:1	struggling 87:20 88:16 subfeatures 111:5 subjects 129:4 submitted 11:1 59:20 61:17 134:17 201:17 subscribe 44:5 44:9 45:8 50:17 136:20 subscribers 56:10 164:10 subscription 207:7,10 subsequent 162:22 subsets 111:13 111:22 115:4,9 115:13 116:1 substance 8:21 59:14 118:2 substituting 119:12,21 120:18 121:11 subsystem 203:17,19,21 suggest 190:15 suite 1:18 2:3,7 summarize 123:15 summarizing 119:20	summary 128:10 131:9 super 27:10 89:19 support 178:5 178:7,8,14 183:7 184:7 supporting 106:3 supports 96:11 109:12,18,21 152:15 183:22 190:22 supposed 197:1 sure 9:11,22 14:11 15:11 18:5 21:1 26:18,22 28:12 29:7 30:3,17 35:6 38:11 40:2,8,9 42:14 48:13 50:21 51:9 57:9,21 58:13 60:10 66:18 68:16 74:12 81:1,21 85:6 94:15 98:11 99:11,13 102:1 107:20 108:9 110:14 113:6 117:12 121:1 128:4 129:11 130:19 131:2 132:3,3	132:8,18 133:19 135:14 140:19 142:5 148:21 162:18 168:2 180:15 180:18 184:10 190:3 192:1 199:15 200:14 203:15 205:15 207:22 211:12 211:13 swath 13:6 swift 85:18 89:3,8,18 switches 26:16 sworn 4:4 213:5 syndication 41:10 system 21:22 22:2 26:5,10 29:2 30:2 39:9 64:20 65:21,21 66:7,20 69:5 70:17 71:7 72:20 79:8,21 82:6,9,10 91:14,15 92:3 95:4,7,13 98:19 99:5 113:5 122:20 125:11,17 135:5,16,20 136:3,5,8,10,14
--	---	---	--

136:19 137:5,6 137:12,13,18 137:19,22 140:4,11,12,20 140:21 141:1,1 141:3,4,8,10,10 141:13,17,20 141:21 142:6,8 142:20 147:1,2 147:15 148:9 148:10,12,13 149:6,9 150:17 151:8,9,12,18 152:10,17 154:16 155:15 157:10,15 159:20 160:6 160:22 161:3 163:17 164:20 172:19 173:1,4 173:15,19 174:1,2,7,8,13 175:1,5,9,10,16 175:18,19,19 176:1,6 179:13 180:3 186:5,12 193:3,5,11,17 193:18 207:1 207:16 209:1,2 209:6,8 210:19 system's 190:18 systems 19:22 24:11 25:22	28:8 66:13 67:13 72:15 79:16 119:10 124:5,9 129:3 137:6,15 138:11,20 139:1 140:1,6 147:6,9,19 150:17,20 152:19 157:14 179:2 202:4,7 202:20 203:2,6 t t 2:6 3:1,1 table 35:19 tablets 123:5 take 6:7 38:5 50:19 59:7 79:5 94:14 95:5 123:18 133:17 143:7 165:18 166:16 166:20 196:10 200:17 210:15 taken 59:9 94:18 104:7 117:16 133:20 149:1 165:20 200:22 211:15 213:3,6,11 talk 27:4 48:16 51:4 124:3 126:6 134:22	139:15 154:10 155:11 188:13 192:20,21 197:8 205:16 talked 124:22 126:20 127:12 140:10 147:3,5 167:4 181:22 197:15 199:3,5 talking 6:12 24:2 25:18 29:19 30:6,16 33:13 41:3,19 42:9 51:8 56:16 60:17 85:13 91:8,9 94:22 97:6 102:2,5 107:2 107:7 147:1,15 147:18,21 148:2,5 149:16 152:14 153:21 158:3 161:15 165:4 170:9 174:4 177:21 177:22 181:5 181:16,19 182:10,13,16 182:18 183:12 183:16 185:6 187:2 188:2 200:13 203:15 206:10,14,16 206:18	talks 110:18 144:3 152:17 155:19 163:9 163:13 167:14 tasks 139:4,6 taught 65:16 taylor 85:18 89:3,8,17 teach 65:13,15 65:17 team 12:20 64:20 technically 41:14 157:21 157:22 technologies 64:22 66:13 71:12 technology 51:22 52:18 65:5 72:5 telephone 67:1 telling 188:16 ten 71:22 72:1 73:10 term 17:21 19:1 21:2 27:12 30:5 37:4 40:12,12 40:17 51:10 54:11 57:3 104:3 106:16 135:9 140:9
--	---	---	--

terminology 45:22 46:10 47:10	thing 14:18 39:5 53:9 56:18 59:17 91:7,8 138:12 161:5 173:8,8 173:10,10 201:16 202:13 203:16	202:11 206:7 think 6:2,2 10:3 12:21 14:15 21:17 22:20 23:8 27:7 28:18 29:4 30:5 31:18 35:15 36:3,10 37:13 39:16 40:9,10 40:22 42:16,19 43:7,10 45:6 46:9,13,16 47:1,22 48:14 49:15 52:11 53:4,5,8,17,22 54:3 55:21 56:21,22 58:8 59:4 60:16 61:1 64:3,18 64:19 65:9,9 68:6,7 73:11 73:16 74:5,16 75:6,8,14 84:19 92:21 93:9 104:22 105:2,8,9,11,16 107:13,14,17 107:19 110:11 110:18,21 111:11,17 113:2 114:4 115:11,12 116:4 119:4	120:20 126:20 128:7 131:5,6 135:8 136:1,13 139:3 150:18 152:1,12 153:1 153:16 154:1 157:11 158:21 160:1,8 161:3 161:4,20 162:4 162:7 164:16 165:11 166:16 166:21 167:4 167:17 169:21 172:22 173:3 173:22 174:4,5 174:10,16 176:4 183:11 184:19 185:11 187:13 190:4 193:5,16,16 194:12,15 197:1,11,15 199:17 200:19 203:4 204:15 205:2,6 206:21 209:18 211:9
terms 18:20 23:10 39:20 40:14 45:22 46:10,12 98:10 126:10,14,17 126:20 127:4 174:13 175:15 176:4 177:12 186:8 187:12 189:18 198:19 200:1	things 6:8 12:10,10 15:22 16:7,8 23:12 24:19 26:14 32:9 33:17 37:22 38:16 39:1 42:2 47:5 47:8 55:22 60:18 67:14 71:9 86:6 104:5 106:18 111:12 113:4,8 113:16 114:13 114:17 115:1 115:19 116:8 135:9 136:10 137:21 138:20 138:22 149:10 149:12 150:7 150:10 151:4,8 151:11,14 152:21 153:7 153:18,19 165:9,10 184:7 188:10,22,22 192:17 198:4		
testified 4:6 testify 4:4 5:8 5:13			
testimony 59:15 76:3 118:2 164:18 213:4,6			
texels 38:16			
text 12:11 42:4 42:14 44:10			
thank 4:18,22 5:5 14:1,16 59:8 117:21,22 140:18 201:3,7 211:18,20,21 212:1			
thanks 4:20 148:22 165:19			
thereof 156:12			
			thinking 112:10 158:13 162:12 176:8 third 49:15,16 thought 40:7 148:19 162:14 three 9:15 14:10 130:7

131:17 133:2 throwing 166:13 tie 110:12 tied 37:10 40:19 time 16:21 17:3 28:11 34:3 44:4 45:19 47:11,17 51:22 52:18 53:13 54:2 58:13 59:3 66:21 67:11,16 72:20 75:19 76:5,6 78:6 79:12,17 80:2,5,10,17 81:9,22 82:7 82:14,17,21 83:8,15 84:8 84:10,10,11,14 84:17 85:9,22 86:3,4,6,10,13 86:14,14,15,17 86:19,20,22 87:3,4,9,11,13 87:20,22 88:2 88:3,5,14,18,20 89:4,20 90:2,9 90:19 92:6,10 92:13,17,18 93:2,9,13,14,16 93:19,20 98:1 100:11,14	101:1 103:10 103:18 104:20 105:6,9,10,15 106:1,8 117:13 125:7,19 126:3 129:18 130:13 149:11 166:20 168:11,14,19 168:22 172:19 173:15,18 174:3,13 175:12,14 177:12 178:15 178:18 179:17 179:22 180:8 181:9 182:4,15 182:22 183:8 183:20 184:1 184:18 185:22 186:17 187:1 187:10,22 188:12,14 189:12,19 193:13,13,21 194:5,10 195:2 195:7,9,13 196:8,15 197:12,13,14 198:2,4 201:16 202:22 205:5 211:22 timekeeping 21:22 22:2 29:1	times 5:17 9:12 38:12 74:9,16 163:20 title 156:9 203:4 today 4:20 5:9 5:13 6:5 7:19 10:22 11:12 60:18 167:3 211:22 today's 8:19 together 135:22 171:8 171:13 toggle 116:9 tongue 170:11 took 129:1 158:8 tool 80:14 81:8 81:11 84:3 97:20 103:15 105:12 110:19 111:3,4,5,11,18 111:20 112:4,5 112:7,11,13,16 tools 45:17 111:8 top 26:10 116:13 202:10 202:12,15,17 202:21 203:3,8 203:11 tough 40:10 166:18	track 146:14 tracker 145:15 145:18,20 146:2 176:13 176:21 177:1 tracking 69:1 trademark 1:1 traditional 124:4 traffic 66:22 72:21 transcoding 72:7 transcribe 199:19 transcribed 199:15 200:3 transcript 3:21 10:9,13 199:20 transferred 38:3 transfers 165:10 transformatio... 38:18 transformed 39:14 transmission 143:10,11,17 143:20 157:1 162:22 180:5 185:15 186:13 transmissions 168:6 186:6
--	---	---	--

transmitted 160:4,21 164:8 164:10 183:17 184:3 185:20 186:9 188:18 transmitting 51:16 travels 169:5 treat 159:20 trial 1:2 triangulate 69:19 trick 130:18 true 20:20 24:20 47:21 58:5 91:11 93:21 131:4 151:22 184:22 213:8 truth 4:5,5,6 truthfully 5:9 5:13 try 6:5,12 trying 43:21,22 44:1,2 45:21 46:20 55:16 78:2,21 108:10 108:18 128:4 130:18,19 131:19 139:5,8 140:16 155:11 156:20 157:3 164:17 185:2 190:10 196:22	turn 118:6 167:19 turning 208:4 twitch 1:4 3:13 3:14,16,17,18 4:17 7:20,21 8:1 10:1 11:2 61:14 76:12 77:3 133:14 134:2 201:5 two 9:13 10:15 14:18,19 19:8 28:10 32:5 39:12 54:5 60:13 66:16 72:18 78:11 107:9 119:7,18 150:10 160:19 188:9 194:12 195:20 199:19 type 38:6 39:4 113:4 174:7 types 23:14 160:18 202:6 typewriting 213:7 typically 24:4 35:17 140:2 141:14 178:20 179:18 180:2 181:12 typo 128:15,16	u u.s. 8:11,15 uh 14:22 35:10 37:14 41:20 42:12 46:1 51:13 67:20 68:12 70:22 73:4 84:22 87:7 149:15,20 154:14 163:4 164:3 181:21 185:5 ui 206:3,15,17 206:17 207:1 207:14,18 ultimate 58:20 ultimately 38:20 56:6 57:20 58:16,22 169:12 171:18 171:21 um 46:19 umbrella 114:18 115:21 unclear 157:19 under 5:6 16:14 213:7 undergrad 62:4 63:10 underlying 40:6 understand 5:6 6:10,15,18 7:6	7:20 8:1,4,7,11 8:15 10:19,22 11:5,11 35:7 44:1,2 46:20 87:21 98:12 103:20 117:11 128:5 130:20 134:20 139:21 143:3 158:21 168:17 173:3 173:19 174:12 175:2 177:16 180:6 184:2 185:11 understanding 12:14 35:16 51:6 61:18 74:2 76:21 77:12 78:10,14 95:15 102:22 104:2 108:13 114:2,11 154:15 155:21 173:10 understood 6:20 63:2 72:3 175:19 176:5 177:11 204:16 204:20 united 1:1 university 62:3 unselecting 93:3
---	---	--	--

update 35:18 35:19 67:13 83:12 88:18,19 91:1,4,11 updated 35:1,9 35:12 88:7 90:15 145:22 146:4 156:5 169:20 170:20 171:3,7 172:20 173:2,16,20 174:2,14,17 175:5,20 176:2 176:6 177:3 updates 33:20 34:9 36:12,15 67:9 68:5,9 73:3,6,7,10,15 85:3 91:9 168:5 169:15 170:16 180:4 186:5 190:15 191:13,14 updating 89:5 url 42:3 usable 39:18 use 27:16 30:4 40:11,12 44:4 72:12 93:8 153:16,22 189:22 used 18:21 23:15 57:3 127:8,15,20	138:18 155:10 175:15 189:7 198:22 199:1 user 22:10 29:13 30:21,22 31:2,7,10 32:6 32:10,18,20 33:1,5,10,20,21 34:8,9,17,17,18 35:9,11 36:12 36:15,18 49:7 49:10,19 50:1 50:12 55:18 56:1,13,15,17 56:19,22 57:6 57:8 58:16 70:14,15 71:2 73:14 80:12,14 81:8,12 82:6,9 82:11,11,20,22 92:6,13,14 93:6,7,7,12,13 93:18,19 94:7 94:9 99:15 106:4,7,13,16 106:17,19 107:6,12,15,18 107:22 108:1 108:15 109:11 109:12,13,18 109:19,22 110:3,4 115:7 116:16,21 117:1,2 124:12	124:18,19 125:1,2,3,4,6,7 125:9 136:19 140:22 141:7 141:11,16,17 142:1,1,18 143:1,11,15,20 143:21 144:1,7 144:14,21 146:11,18 148:4 149:10 168:13,15,18 168:20,21,22 169:2,6,7,10 171:5 172:4,5 172:10 176:22 177:5,6 179:6 179:11 182:8 188:3,7 192:11 192:14,14,18 192:18 193:3 195:6 196:13 199:6 202:21 203:2,5 204:3 204:5,9,11 205:4,8,17,22 206:1 207:12 207:16 210:14 210:17 user's 21:4 29:12,21 30:3 51:21 52:17 53:13 54:1,4 59:2 172:3	users 18:8 19:22 20:6,12 24:5 28:15 29:2,5 30:9,14 33:14,16 50:5 50:9,15,16 52:1,19 55:2,5 55:7 114:15 122:20 123:1,7 123:9 124:5,13 124:20 125:18 125:20 146:12 153:6 168:10 169:19 170:19 171:1,10 180:7 182:3,6,9,11,13 182:21 183:19 184:17,20,21 185:7,9,13,16 185:18 186:16 186:21 187:3,4 187:7,9,10 188:13,21 191:18,21 192:5 193:7,12 204:5,10 208:22 209:2 uses 136:6 194:12 using 23:6 30:12 40:16 44:5 57:3 69:18 72:11 84:3 139:9
--	---	--	--

152:3 153:10 189:8 usually 19:20 utilized 24:11	110:4 125:21 141:9 150:16 155:7 173:13 203:17 205:2,7 207:5	50:14 51:2 52:6 60:10 75:16 89:21 91:21 102:3,12 110:12 116:5 117:14 123:18 137:8 139:19 143:2 151:16 152:7 166:14 174:7 180:14 186:19,21 187:9 188:13 188:21,22 190:1 192:18 193:6,11 200:17 208:6 210:2	144:1 147:13 154:11,16 160:19 171:10 180:17 188:15 188:17 191:22 199:2 206:21 209:19 ways 152:20 161:5 162:4 182:11 we've 50:19 126:20 web 20:13 22:4 22:5,9 24:5 29:3,6,17 30:22 32:19 33:21 34:9 35:12 36:19 41:11,15,22 42:10,16,20,22 44:9 49:11,17 49:19 79:10,22 80:7,8,13 81:8 82:18 83:5 92:14,17,18 96:19,20 97:1 97:9,14,15,16 97:17 98:3 100:3,8,9,14,21 101:2,3 102:21 103:2,3,7,11,12 103:12,20 104:4,13,18 105:1,2,5,11
v	viewable 55:18 56:1 57:11 97:17 103:12 183:15 194:1 195:15,17 196:2,2,17 viewed 183:12 viewing 110:7 169:19 170:20 171:6,11 172:6 191:19,21 194:4 195:19 virtualized 26:3 vulnerability 65:22	wanted 73:12 102:1 132:8 139:21 198:18 199:6,13,22 warn 18:18 28:4 washington 1:10,19 2:4,8 watching 84:15 85:12,17,18 86:4 89:17,19 way 27:15 32:22 33:4,8 33:10 43:15 52:12 66:9 69:2 131:4 136:15 143:21	
v 1:6 122:2 valid 11:19 variety 161:4 various 124:21 133:7 152:20 190:19 204:12 verbal 6:6,8 77:17,18 veritext 1:20 versa 119:13,22 120:18 121:12 version 61:15 61:16 134:16 135:1 201:20 versus 89:11 vertices 38:14 vice 119:13,22 120:18 121:12 video 39:4 51:20 52:16 53:10 72:5,6,7 72:16 159:3,10 160:14,17 162:12 165:4 165:14 166:6 view 56:19 58:16 106:5 109:13,19,22	w wait 6:13 158:19 159:14 159:16 161:1 walk 61:21 69:16 want 4:15 16:20 19:12 26:19 28:12 30:15 36:7 37:10 38:13,17 38:18,19 46:14		

107:2,7,11,16 107:18 108:1,6 108:19,20,21 109:4 110:10 111:7 116:3,11 122:21 123:4,8 123:12,12 125:2,5,8,19,20 127:18 160:14 168:15,20 169:1,6,8,11,13 169:17 170:18 171:5,9,13,17 171:20 172:2,8 172:10,12 179:3 191:17 193:22 194:3 194:11 195:11 195:14,17,19 195:22 196:4,7 196:9,17,19 197:7,9,19,22 198:3 webex 72:13 website 64:19 websites 191:12 welcome 201:2 went 98:10 153:4 wholesale 43:8 wife 85:20 windows 39:7,8 39:9,10	witness 8:21 9:2 11:16 12:6 12:9 14:9 28:18 34:2,12 35:15 39:16 53:2,15 56:21 59:8 74:6 79:19 85:11 89:1 92:21 94:14,16 97:3 99:7 100:18 101:8 103:2 104:22 105:8 117:15 120:17 121:6 133:17 142:20 144:16 147:5,12 148:22 165:17 165:19 170:4,7 174:20 188:9 189:15 192:17 193:16 198:15 200:18 211:18 211:20 212:1 213:4,6 word 116:8 139:5,9,13 155:9 184:20 184:21 words 81:19 106:8 153:22 193:10 194:15 196:21 200:4	work 19:11,17 22:2 35:17 44:3 63:14 75:3,18 157:2 157:22 159:22 161:4 162:10 worked 69:2 71:19 72:4,8 72:10,10 working 65:5 works 91:8,15 117:15 world 18:19 worries 129:14 worth 200:5 wrapped 48:21 211:10 writing 12:11 written 17:8 121:3,7 131:4 187:13 wrong 107:14 wrote 13:18 186:4 x x 1:3,9 xml 41:14 42:3 y yeah 14:8 16:18 19:7 21:14 23:13 25:18,20 28:8 29:7 30:11	37:18 40:18 41:1,3,14,19 43:12 44:4 45:12 46:3,6 47:16 48:12,19 49:6 50:3 54:22 58:1 60:11 61:9 64:14 66:3 68:1,6,16 70:15,20 73:13 74:1,15,20 75:7,21 76:9 79:1 81:15 82:1 83:13 84:1,4,6,18 85:2,16 87:4 88:15 89:9 90:20 91:3 93:7 95:16 97:6 99:11 100:18 101:20 107:5 108:12 109:7,16 113:22 117:12 117:21 122:5 130:5 132:4,9 136:12 139:20 140:15 147:16 149:12 150:7 152:21 154:9 160:21 161:9 162:5 165:1,16 167:6 171:20
--	---	---	---

180:12,18 184:10 187:2 197:3,21 200:18 203:19 206:12 209:1 211:5 year 47:5 62:14 63:8 89:18 years 44:5 47:4 71:22 72:1 119:8,18 yesterday 78:7 youtube 85:19 85:20 yup 20:17 87:18 149:22 151:13
z
zoom 72:9

Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted

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