

# LIBRARY OF CONGRESS

---

IN THE MATTER OF: )  
 )  
UNITED STATES COPYRIGHT OFFICE )  
SECTION 1201 PUBLIC HEARINGS )

Pages: 429 through 581  
Place: Washington, D.C.  
Date: April 8, 2021

---

## HERITAGE REPORTING CORPORATION

*Official Reporters*  
1220 L Street, N.W., Suite 206  
Washington, D.C. 20005-4018  
(202) 628-4888  
[contracts@hrccourtreporters.com](mailto:contracts@hrccourtreporters.com)



## Panelists: (Cont'd)

MORGAN REED, ACT | The App Association

BLAKE REID, Samuelson-Glushko Technology Law  
& Policy Clinic at Colorado Law

WILSON SCARBEARY, Samuelson-Glushko Technology  
Law & Policy Clinic at Colorado Law

DAVID J. TAYLOR, AACSLA & DVD CCA

CHRISTIAN TRONCOSA, BSA | The Software Alliance

J. MATTHEW WILLIAMS, Joint Creators and Copyright  
Owners

AARON WILLIAMSON, Software Freedom Conservancy

KEON ZEMOUDEH, University of Southern California,  
Gould School of Law, Intellectual Property &  
Technology Law Clinic

P R O C E E D I N G S

(10:33 a.m.)

1  
2  
3 MS. SMITH: Great, I think we are all here.  
4 My name is Regan Smith. I'm General Counsel of the  
5 Copyright Office. We are on day four of our hearings  
6 for the § 1201 rulemaking, and this session is  
7 Proposed Exemption Class 13 regarding adjustments to  
8 the current regulatory exemption for security  
9 research.

10 So I think I most, but not all, people may  
11 have watched previous sessions, but just to go through  
12 a bit of how it will work, the Government participants  
13 will be asking questions, and if you wish to speak, we  
14 have found it works a little bit best if you can you  
15 use the Zoom "Raise Hand" feature. But, if that's not  
16 working for you for one reason or the other, you can  
17 raise your hand in the physical world and we'll see  
18 you, or indicate in the chat.

19 We do have a lot of issues to cover and so  
20 we'll try to provide a brief roadmap and make clear  
21 what the questions are. But, if you can please try to  
22 stick to a short answer to the question posed, I think  
23 that will help us clarify and refine the record that  
24 we have. We have read all of your comments. We  
25 appreciate those comments, and we're looking forward

1 to building on that through today's oral discussion.

2 And we have three sessions today, so if you  
3 are watching, it is the same link available. You can  
4 stay on it. The last session is what is called the  
5 audience participation session, so if anyone who  
6 wishes to speak on a particular class if they're not a  
7 panelist, you can sign up using the SurveyMonkey link  
8 which is being provided in the chat now. I think our  
9 sign-up cutoff for today is at 12:30, although we will  
10 have another audience participation session April 21,  
11 which is the last day of our hearings. So we're  
12 asking that comments for those sessions be limited to  
13 around three minutes on any of the topics at issue in  
14 the rulemaking.

15 For those who are panelists right now, keep  
16 in mind that this session is being live-streamed, and  
17 it will be recorded for posting on copyright.gov as  
18 well as transcribed by a court reporter, so please try  
19 to speak clearly and mute your audio when you are not  
20 speaking.

21 So now I think, from the Government side, we  
22 will introduce ourselves. If we could have Mr. Amer,  
23 Mr. Greenberg, and Ms. Kern.

24 MR. AMER: Good morning. Kevin Amer, Deputy  
25 General Counsel.

1 MR. GREENBERG: Good morning. Brad  
2 Greenberg, Assistant General Counsel.

3 MS. KERN: Melinda Kern, Ringer Fellow.

4 MS. SMITH: Thank you. And Mr. Zambrano  
5 Ramos.

6 MR. ZAMBRANO RAMOS: Hi, everyone. This is  
7 Luis Zambrano Ramos. I'm a policy analyst in NTIA's  
8 Office of Policy Analysis and Development.

9 MS. SMITH: Thank you. And now we will  
10 introduce those panelists who are in support of an  
11 expanded exemption. So, Mr. Adams.

12 MR. ADAMS: Stan Adams, Center for Democracy  
13 and Technology.

14 MS. SMITH: Thank you. Professor Halderman,  
15 could you please introduce yourself?

16 MR. HALDERMAN: I'm Alex Halderman. I'm  
17 Professor of Computer Security at the University of  
18 Michigan, and I'm a computer scientist.

19 MS. SMITH: Thank you. Professor Reid and  
20 Mr. Scarbeary.

21 MR. REID: Hey, good morning. Blake Reid,  
22 Director of the Samuelson-Glushko Technology Law &  
23 Policy Clinic at Colorado Law. We're counsel to  
24 Professor Halderman. And I'm here with my student  
25 attorney, Wilson Scarbeary. Wilson?

1 MR. SCARBEARY: Hi, I'm Wilson Scarbeary.  
2 I'm a 3L and a student attorney at the  
3 Samuelson-Glushko Technology Law & Policy Clinic here  
4 at Colorado Law. Thank you.

5 MS. SMITH: Thank you. Mr. Williamson.

6 MR. WILLIAMSON: Hi. Aaron Williamson. I'm  
7 here representing the Software Freedom Conservancy.

8 MS. SMITH: Thank you.

9 Now those who have filed comments in  
10 opposition to aspects of the proposed adjustment, if  
11 we could go Mr. Ayers, Mr. Mohr, Mr. Reed, Mr.  
12 Troncoso, then Mr. Williams, so that is alphabetical.  
13 Please go ahead.

14 MR. TAYLOR: Ms. Smith, this is David  
15 Taylor. Mr. Ayers will not be here today.

16 MS. SMITH: Oh, thank you.

17 MR. TAYLOR: So David Taylor for both DVD  
18 Copy Control Association and the Advanced Access  
19 Content System Licensing Administrator.

20 MS. SMITH: Thank you for reminding me, Mr.  
21 Taylor, and apologies for not catching that.

22 Mr. Mohr.

23 MR. MOHR: Chris Mohr, Vice President and  
24 General Counsel, SIA.

25 MR. REED: Morgan Reed, President of The App

1 Association and the Executive Director of the  
2 Connected Health Initiative.

3 MR. TRONCOSO: Christian Troncoso, Senior  
4 Director for Policy at BSA, the Software Alliance.

5 MR. WILLIAMS: Good morning. Matthew  
6 Williams from Mitchell, Silberberg & Knupp. I  
7 represent the Joint Creators and Copyright Owners.

8 MS. SMITH: Okay. So thank you all for  
9 being here today. I guess the first question I have  
10 is this is the sort of third time we have looked at  
11 the need for a broader regulatory exemption for  
12 security research which has been in place since 2015  
13 compared to the statutory exemption. And, you know,  
14 just keeping it to a minute or so because we will walk  
15 through some of the issues, I'm wondering, what are  
16 the main concerns with how the current exemption is  
17 operating or main concerns with broadening it in the  
18 ways requested through some of the submissions? And  
19 so, if you would like to speak to that, just indicate  
20 with the raised hand button.

21 MR. WILLIAMSON: So I don't see the raised  
22 hand button. I apologize. I'm usually quite savvy.

23 MS. SMITH: Oh. Okay, well, if you just  
24 wave, go ahead. But, if you would like to speak, Mr.  
25 Williamson, go ahead.

1                   MR. WILLIAMSON: Okay. So the Software  
2 Freedom Conservancy is here primarily to comment on  
3 the lack of clarity around the scope of the existing  
4 temporary exemption as it applies to privacy research  
5 activities. You know, our comment was that it was not  
6 clear that privacy research that is not specifically  
7 about a security flaw or vulnerability is covered by  
8 the existing exemption. There have been some comments  
9 back and forth on whether those activities fall into  
10 security research. And so we seek clarity around that  
11 question primarily.

12                   MS. SMITH: Thank you. And are you aware of  
13 projects that have not been taken up due to this  
14 alleged lack of clarity, and if so, could you describe  
15 any?

16                   MR. WILLIAMSON: I cannot name a specific  
17 project that has not been undertaken because of this  
18 lack of clarity.

19                   MS. SMITH: Thank you. Any others who  
20 wanted to speak to any overview issues? And,  
21 otherwise, I will turn the questioning to my  
22 colleague, Mr. Greenberg.

23                   MR. REID: Ms. Smith, I had my hand up and I  
24 believe Mr. Adams did before me.

25                   MS. SMITH: Okay. Well, I'm wondering if

1 maybe there is something going wrong on my end. But  
2 how about Professor Reid, then Mr. Adams?

3 MR. REID: Thanks very much. Appreciate  
4 that, and sorry for whatever the malfunction with the  
5 hand-raising tool. We'll try waving. I would just  
6 underscore I think that one of the main concerns that  
7 we hope to address today is the continuing inclusion  
8 of the other laws limitation, which, as the Department  
9 of Justice pointed out, really transforms the legal  
10 risk that security researchers who are trying to  
11 structure projects face.

12 And we hope we'll have an opportunity to  
13 discuss the Department of Justice's changed  
14 perspective on the other laws exemption and talk about  
15 whether we could better serve the needs of  
16 cybersecurity policy and better serve the needs of  
17 security researchers by removing the explicit tie  
18 between § 1201 and every other law, which includes not  
19 only laws like the Computer Fraud and Abuse Act but  
20 laws ranging from local ordinances, state statutes,  
21 all the way up to potentially foreign laws. And,  
22 again, that's something that significantly complicates  
23 the risk calculus for security researchers. Thanks.

24 MR. ADAMS: I'll just jump in to say that  
25 Professor Reid covered most of my points already, but

1 I wanted to say we see the inclusion of the  
2 conditional ties to the CFAA as the biggest adder of  
3 risk in the current exemption. Thank you.

4 MS. SMITH: Okay, thanks. And, in part,  
5 because I'm not seeing the raised hand button I asked  
6 everyone to use, I'm going to turn this to Mr.  
7 Greenberg, but I know that the other laws exemption is  
8 something where we're eager to get into that in  
9 particular because we also received a letter from our  
10 colleagues at the Department of Justice that we want  
11 to make sure we can aerate. Okay, so Mr. Greenberg.

12 MR. GREENBERG: Thanks, Ms. Smith. I'll  
13 just say I am seeing your raised hands, so rest  
14 assured that does work if you hit the button on my end  
15 at least. I also want to say that the DOJ letter and  
16 the other laws condition is one that we have a lot of  
17 questions on. But, before we get to that, we'd like  
18 to start with some other questions, and if we could  
19 sort of set aside the DOJ letter until we get to the  
20 other laws portion, it would probably be helpful for  
21 filling in the record on the other limitations that  
22 have been requested to be removed.

23 I also do want to caution this is a pretty  
24 large panel, so I just ask that everyone try to keep  
25 their responses specific but tight. So, just starting

1 with a high-level question, I wanted to raise that in  
2 the reply comments, proponents argued that opponents  
3 have provided no evidence beyond baseless speculation,  
4 nor is there any reason to expect that these concerns,  
5 the concerns related to infringing uses, if the  
6 exemption was expanded, are likely to materialize. At  
7 the same time, the opponents said something similar  
8 with regard to adverse effects and the fact that the  
9 chilling effects specifically that the proponents  
10 speak of they found to be also largely speculative and  
11 not based on clear evidence.

12 So I just wanted to ask, before we get into  
13 what is the additional evidence we have in the record  
14 for 2021 vis-a-vis 2018 and 2015, I want to ask the  
15 panelists, what is the appropriate degree of weight  
16 that you think the office should give to speculative  
17 concerns rather than concrete or proven or  
18 demonstrated harms? Mr. Reid, Mr. Blake Reid, or  
19 Professor Reid.

20 MR. REID: Thanks, and Morgan and I will try  
21 and disambiguate each other throughout the hearing.  
22 Thanks for your patience with that.

23 I think, you know, we've been doing hearings  
24 on security research for a long time. I think  
25 Professor Halderman and I were first here back in

1 2008, and I recall concerns about the security  
2 research on video games leading to a flood of piracy  
3 that never materialized. I think those concerns came  
4 up with the audio CD security research exemption back  
5 in 2005 and have been variously raised about  
6 everything from applications on smartphones to  
7 enterprise software to everything else.

8           And so what I would encourage the office to  
9 consider is that the speculation isn't just  
10 speculation, but it's repeated speculation that has  
11 never borne fruit, has never materialized, has never,  
12 to the best of my knowledge, resulted in any sort of  
13 litigation where anyone was able to raise even the  
14 presence of the exemption as an excuse for  
15 infringement.

16           And I think, on the flip side, you've seen  
17 over the years as the office has broadened this  
18 exemption, gradually and incrementally removed some of  
19 the limitations on this exemption, researchers like  
20 Professor Halderman have actually been able to do a  
21 lot more, and as cybersecurity of our nation's most  
22 vulnerable systems, such as election systems, has  
23 become more and more paramount, researchers have  
24 really been able to do more because of the increased  
25 certainty that simplifying this exemption provides.

1           So I'd encourage you as you're thinking  
2    about speculation, I don't think the speculation cuts  
3    evenly both ways. I think the lowered risk has  
4    improved our nation's cybersecurity, and the concerns  
5    about infringement and violation of other laws have  
6    never materialized despite more than a decade of  
7    claims that they would. Thanks.

8           MR. GREENBERG: Okay. Thank you, Professor  
9    Reid. I'm going to go just across the top of my  
10   window. So, Mr. Mohr?

11           (No response.)

12           MR. GREENBERG: Can everybody hear me okay?  
13    I'm having some bandwidth issues too. Yeah, okay. So  
14    I think we may have lost Mr. Mohr. So, Professor  
15    Halderman?

16           MR. MOHR: Can you hear me now?

17           MR. GREENBERG: I can. Yes, thank you.

18           MR. MOHR: Okay. Mr. Halderman, go ahead.

19           MR. HALDERMAN: All right. Thank you. So  
20    security researchers really do face legal uncertainty  
21    that is holding back our work on the basis of these  
22    problems with 1201. And let me give you just one  
23    example of that. Just two weeks ago, at my  
24    department's faculty meeting, I have a colleague who's  
25    an assistant professor, is a star security researcher,

1 who started talking about work that he's trying to do  
2 exploring a very important new class of  
3 vulnerabilities in computing systems, and as soon as  
4 he got through about two sentences of description,  
5 five different senior faculty members said, whoa,  
6 whoa, wait a minute, this sounds like it might touch  
7 on the DMCA, you've got to find a lawyer and not just  
8 university counsel, you need to find the kind of  
9 lawyer who understands the full breadth of the DMCA.

10           So what is my junior colleague having to do?  
11 It's not enough to just simply go through normal  
12 university process, make a quick phone call to the  
13 OGC. He's going to have to go and find an expert on  
14 this area of law, perhaps on other areas of law that  
15 touch on the broader contexts we're talking about with  
16 the other laws provision, and he's going to have to do  
17 that rather than spending his time actually advancing  
18 the science of computer security and trying to help  
19 keep everyone safe.

20           And this is what it looks like from the  
21 perspective of faculty, who are some of the most  
22 privileged and well-resourced security researchers.  
23 When it comes to the broader community of people who  
24 are just students getting started, people who are  
25 amateurs who are making real contributions to the

1 field in their free time or as part of a hobby, these  
2 people don't have the kinds of resources that we do  
3 and probably will never get to the level of confidence  
4 that a professional or an academic researcher would be  
5 able to have.

6 So all of this is unnecessary. There is no  
7 actual infringement that is resulting from the kind of  
8 research that I and my colleagues are talking about.  
9 But we're facing significant uncertainty, spending far  
10 too much of our lives talking to lawyers. No offense  
11 to the lawyers in the room, but it's time that we  
12 should be spending advancing security and keeping  
13 everyone safe.

14 MR. GREENBERG: Go ahead, Ms. Smith.

15 MS. SMITH: I guess, could you speak a  
16 second to the delta, right? Because there already is  
17 an exemption. So we can't change the DMCA, and we  
18 adopted an exemption trying to meet the needs of  
19 good-faith security researchers before. So part of  
20 this is trying to figure out what the Copyright Office  
21 can do here.

22 MR. HALDERMAN: Well, so a large part of the  
23 problem, as we've explained, comes from the various  
24 complicating factors in the existing exemption,  
25 including the other laws provision, which makes it

1 just so much harder to have a brief overview of  
2 someone's project and be able to determine whether  
3 it's safe to proceed. So, in my experience and the  
4 experience watching colleagues who have gone through  
5 this, the problem is not that there's no exemption.  
6 The problem is that the exemption has so many caveats.

7 MR. GREENBERG: Mr. Mohr?

8 MR. MOHR: All right. I think I unmuted  
9 myself, so hopefully I am not monologuing. So a  
10 couple of points. I mean, I think the fact that,  
11 look, a lot of these ecosystems, whether we're talking  
12 about the kinds that surround content or whether we're  
13 talking about cloud ecosystems, require tremendous  
14 investment and they are expensive and they are, as our  
15 friend just pointed out, being explored by people who  
16 are well-trained and highly ethical and those who hope  
17 to become well-trained and hopefully highly ethical,  
18 but they are also open to exploration by those who are  
19 not. And so that's something's that, I think,  
20 Congress recognized when it set up these exemptions in  
21 the first place, that this was likely to be the case.

22 And so, in terms of the way that the  
23 Copyright Office is supposed to give evidence or, you  
24 know, the lack of it, I mean, I would point out a few  
25 things. I mean, one is that if there are statements

1 in the record that I can't think of anything that's  
2 been actively thwarted or chilled, that to me would be  
3 fairly probative of a failure to meet the burden on  
4 the petition.

5 The other thing, you know, that's helpful to  
6 know, I think, are the kinds of activities, is the  
7 affirmative case on the other side, which we rarely  
8 here about, about the sorts of things that the text of  
9 the petition has actually enabled. And there is a  
10 difference between saying, well, we need specialized  
11 advice to get through this, you know, to understand  
12 what the ramifications of a particular course of study  
13 or inquiry are, and the statute actually chilling it.

14 The presence of a legal issue is not  
15 chilling, and we don't think that that should be  
16 viewed as chilling. What the statute requires is that  
17 it impeded its mere existence or the fact that you  
18 have to comply with it and figure out how to do that,  
19 whether or not you can do that. That's not chilling.  
20 What's chilling is theoretically at least, hey, I've  
21 got this clear fair use that I can't do because of the  
22 following factors. And that type, I mean, I think  
23 you've been through, like you said, we're in a bit of  
24 a Groundhog Day here, but this is an exercise that the  
25 office has been through before. And I'll have other

1 comments on the other law provisions and so forth.  
2 But, on that, that's the question I think. I wasn't  
3 sure.

4 MR. GREENBERG: Great. Mr. Taylor?

5 MR. TAYLOR: Thank you, Mr. Greenberg. I  
6 think that's a very difficult question to answer  
7 because it's asking us to prove a negative. And what  
8 we have seen so far is, is what we have in place  
9 legally seems to work. We spend a lot of time chasing  
10 after people who would put products in the market  
11 based on this research, that could put products in the  
12 market based on this research that they do, and, so  
13 far, we don't see a link to that. And that's probably  
14 because the exemption that the Copyright Office has  
15 repeatedly made has worked effectively. So it's kind  
16 of, again, hard to prove a negative.

17 And I would just quickly respond to this  
18 need to hire an outside lawyer specialist. I think  
19 that the recommendations of the register are very  
20 clear on the proposed opportunities or uses that the  
21 proponents want to make, and I don't see where there  
22 could be any uncertainty that someone with a advanced  
23 degree could not simply read for themselves what is  
24 allowed and what is not allowed. So thank you.

25 MR. GREENBERG: Mr. Scarbeary?

1           MR. SCARBEARY: Yes, to just briefly respond  
2 to a couple of things that Mr. Taylor and Mr. Mohr  
3 said. We've also identified the use limitations, the  
4 multiple references to "solely" and "primarily" that  
5 significantly cabin security research. These create  
6 problems as far as ancillary activities related to  
7 security research, such as scholarship and criticism,  
8 that we think is problematic. I'd also like to note  
9 that in Mr. Taylor's example, he claimed that security  
10 researchers might try and then use the products of  
11 their research to openly compete.

12           Now, if that was a clear case of  
13 infringement, contract holders would have alternative  
14 remedies to obviously go after those folks. But, in  
15 the recent case of Corellium v. Apple, the court found  
16 that Corellium's use in that case was a fair use. So,  
17 even in that instance, it seems highly speculative  
18 that security researchers are going to be going out  
19 and trying to turn the results of their research into  
20 competing products.

21           MR. GREENBERG: Great. I'm actually going  
22 to go to our colleague at NTIA. Luis, is there  
23 anything you wanted to add?

24           MR. ZAMBRANO RAMOS: Oh, thank you so much.  
25 I guess this question is to Professor Halderman.

1 Professor, could you talk about the role that  
2 transparency plays in the security research community?  
3 Things like writing research results, sharing  
4 investigational techniques, just how important is that  
5 to the development of the research community? Thank  
6 you.

7 MR. HALDERMAN: Sure, I'd be happy to.  
8 Transparency is often at the center of our work. We  
9 seek in general to improve security for the public at  
10 large, and there are two main ways that we do that.  
11 One, many researchers discover vulnerabilities in  
12 specific products or specific tools and protocols, and  
13 we work behind the scenes to get them fixed.

14 But then usually after the problems are  
15 fixed, but not always, usually after they're fixed,  
16 researchers go public with the results of their  
17 findings, and that's not only to disseminate knowledge  
18 to the broader research community about how similar  
19 problems could be found, but it's also to alert the  
20 public about the problems that have existed so people  
21 can make better choices in the future about what  
22 products or services they want to buy or rely on.

23 So we have most of the -- in the vast  
24 majority of projects I've worked on, they've resulted  
25 ultimately in some kind of publication that described

1 the findings and what we did. That's just core to the  
2 academic mission of a university.

3 MR. GREENBERG: Professor Halderman?

4 MR. HALDERMAN: Yes?

5 MR. GREENBERG: If I could interrupt -- if I  
6 can just interrupt you. And I apologize to the hands  
7 that are up, I know they are still -- but this will  
8 actually -- I want to jump ahead since you're sort of  
9 getting into the use limitation and purpose. I have a  
10 question I was already going to ask related to the  
11 register's past recommendations. In both 2018 and  
12 2015, the register clarified that the access  
13 limitation does not prohibit teaching, academic  
14 dialogue, or scholarship involving the information  
15 derived from good-faith research.

16 The question I have is, what evidence is  
17 there of security researchers not actually sharing  
18 what they've learned via teaching or academic dialogue  
19 or scholarship because they're afraid that that will  
20 exceed the bounds of the exemption simply because it's  
21 not part of the C.F.R. even though it's part of the  
22 register's recommendation?

23 MR. HALDERMAN: You'll have to give me a  
24 minute to process your question, I think. Maybe  
25 someone else from our side wants to jump in while I

1 do.

2 MR. GREENBERG: Professor Reid, do you have  
3 thoughts on that?

4 MR. REID: I had thoughts on something else,  
5 but I saw Mr. Adams wanted to jump in.

6 MR. GREENBERG: Okay. Mr. Adams?

7 MR. ADAMS: Thank you. Yeah, I was just  
8 going to say, you know, a former colleague of mine,  
9 Joe Hall, also a computer security researcher, and I  
10 did a report that we submitted for the record last  
11 year indicating that many security researchers do fear  
12 coming forward with their research. They fear coming  
13 to the vendors out of sort of retaliation risk and  
14 they fear making it public for the same reason.

15 And so, you know, we, I believe, included  
16 this as an attachment or a footnote in our comments  
17 this year, but we also had it in the record last year  
18 that this is a documented fear here, that sort of  
19 publicizing results draws attention and often of the  
20 wrong kind, right? Not the great, thanks for helping  
21 solve this problem, but now we're going to seek legal  
22 action against you for making this public.

23 MR. GREENBERG: Go ahead, Ms. Smith.

24 MS. SMITH: Yeah, I hope, Mr. Greenberg, we  
25 can sort of keep teeing this up and probe in on it

1 because what we did in response to those comments last  
2 time was clarify in administrative guidance which was  
3 intended to be used that a researcher who at the time  
4 of circumvention intends to publish the results, a  
5 good-faith researcher used in teaching would not  
6 ordinarily exceed the bounds of the access  
7 limitations. So the office is not authorized to grant  
8 an exception to the service bar if we're getting over  
9 to that end. So that's, I think, why we're trying to  
10 figure out what particularly is not operative in light  
11 of that existing additional guidance we provided in  
12 2018. So I guess maybe we could hear from Mr.  
13 Troncoso and then keep probing this issue.

14 MR. TRONCOSO: Thanks for letting me jump  
15 in. I fear that what I'm about to say is a little bit  
16 repetitive at this point, but just to make the point  
17 that for BSA and our member companies, they want to  
18 engage with the independent security research  
19 community and they often do, so they have a real  
20 vested interest in there being a very clear exemption  
21 to facilitate this type of activity.

22 As we look at the 2018 exemption, it seems  
23 sufficiently clear to us that there are not limits on  
24 post-circumvention activity that would in any way  
25 inhibit the type of scholarship that Professor Reid

1 and Professor Halderman are interested in pursuing.  
2 So, in the absence of some sort of demonstrated, you  
3 know, evident case that this language is unclear, it  
4 seems to us misguided to try to change it at this  
5 point. To the extent there is clearer language, we  
6 would be open to, you know, discussing that. But, you  
7 know, we think the exemption right now is fairly clear  
8 on that point.

9 I think the other, you know, difficulty in  
10 this space is that, you know, it sort straddles the  
11 line between prohibitions on acts of circumvention and  
12 the trafficking prohibitions, which this rulemaking,  
13 for better or worse, is not sort of equipped to  
14 address. So, to the extent, like, the concerns lay  
15 there, you know, I'm not sure that we're going to be  
16 able to resolve them through this rulemaking process.

17 MR. GREENBERG: Mr. Troncoso, are you  
18 referring to the concerns that if you have dialogue, I  
19 think it's what was Ms. Smith was saying a minute ago,  
20 but just for the record, if you have dialogue based on  
21 good-faith security research, that would then enable  
22 somebody else to --

23 MR. TRONCOSO: I'm not suggesting that's my  
24 interpretation of the DMCA.

25 MR. GREENBERG: Right.

1           MR. TRONCOSO: But it seems to me that, you  
2 know, we're sort of skirting around that issue in  
3 terms of whether some of this research activity may  
4 create issues there, right? To the extent that's  
5 where the uncertainty is, like, unfortunately, the  
6 Copyright Office probably isn't able to resolve that  
7 issue.

8           MR. GREENBERG: Right. Can you tell us what  
9 the value is that BSA sees in the solely limitation,  
10 what work that does?

11           MR. TRONCOSO: You know, if the limitation  
12 is not limited to activity that's undertaken solely  
13 for the purpose of security research, what is the  
14 exemption -- what does it then cover would be our sort  
15 of question. We don't see this as sort of an overly  
16 restrictive limitation. You know, the proponents want  
17 an exemption for security research. The exemption is  
18 specifically for security research. If the activity  
19 they seek an exemption for is broader than security  
20 research, I think we need to have a sort of more  
21 candid discussion about what those activities are.

22           MR. GREENBERG: So I didn't see, to the  
23 proponents, I didn't see in submissions any reference  
24 to some other kind of limiting principle, like  
25 primarily or something like that. But I did notice in

1 GitHub's reply comments, they talked -- they were  
2 looking for something that definitely was beyond  
3 solely, referencing the fact that there's ancillary  
4 benefits to good-faith security research and  
5 good-faith security research is often about many -- or  
6 computer research is often about many things and then  
7 quote, you know, that the exemption should not be  
8 limited to only one purpose but should provide enough  
9 flexibility that ancillary and beneficial activities  
10 consistent with but not limited to good-faith security  
11 research continue to fall within in it.

12 To the other proponents, I just want to  
13 know, you know, (a) do you have a different limiting  
14 principle besides "solely" that I just missed or  
15 forgot, and (b) to what extent, you know, do you share  
16 GitHub's feelings here that the exemption should cover  
17 more as long as it sort of shares similar principles  
18 or values to good-faith security research?

19 I actually can't tell at this point who  
20 wants to talk because hands have just been up for a  
21 while. Professor Reid? There we go.

22 MR. REID: Yeah, I'll be happy to take that  
23 one. And, Mr. Greenberg, I just observed that I  
24 didn't hear an answer to your question in Mr.  
25 Troncoso's response there. To the point that GitHub

1 raised, I think what you're hearing there is that this  
2 is not just a concern for academic researchers, but  
3 this is a concern out in industry that when folks are  
4 doing work like securing a supply chain that's  
5 integrated with other aspects of a business, these  
6 same sorts of concerns that we're talking about here  
7 are prevalent there as well.

8 But I think the important point to center on  
9 here, and I want to respond to Ms. Smith's question  
10 about the guidance. That guidance is extremely  
11 helpful if you have access to a lawyer who can go read  
12 a several-hundred-page administrative record and  
13 figure out how it applies in your case.

14 I would also make the observation that if  
15 you have a lawyer like that, you are probably doing  
16 research that is going to implicate the interests of  
17 some fairly large companies who may be fairly  
18 litigious. One example of a company like that is  
19 Apple. And if you look at the Corellium case that  
20 Apple just brought, what you see -- and this is the  
21 context of the trafficking ban, so I want to be  
22 careful to cabin the analogy -- they're talking about  
23 the use of the word "solely" in the context of the  
24 trafficking ban. But what you see is Apple picking  
25 apart the word "solely" in exactly the way that we're

1 talking about here. They're saying --

2 MR. GREENBERG: Yeah, but we have no --  
3 we've given no guidance on "solely for the purposes of  
4 trafficking" because this rulemaking is not on the --  
5 does not cover trafficking.

6 MR. REID: Of course. What I'm saying is  
7 the fact that even though Apple has basically gotten  
8 thrown off of the part of its case that is actually  
9 focused on copyright infringement, it's continuing to  
10 pursue extremely aggressive action based on stretched  
11 interpretations of the word "solely."

12 So I guess the message I'm trying to tell  
13 you, if you're talking to a sophisticated -- you know,  
14 if you don't have counsel, you're not going to get  
15 this guidance in the first place. If you're talking  
16 to counsel, they're going to say, gee, are you going  
17 to make a company like Apple mad? Because it seems  
18 like a company like Apple might not really care about  
19 what the guidance is because they are going to take  
20 you to court and they're going to bully you and  
21 they're going to try to shut down your work.

22 And that's why we think taking the language  
23 out of the exemption is really important. It provides  
24 clarity to folks who don't have lawyers, and it  
25 provides certainty to folks who do have access to

1 lawyers that these caveats are not going to get  
2 abused.

3 MS. SMITH: Sorry, you would just remove the  
4 word "solely" or you would use a different word? Can  
5 you answer Mr. Greenberg's question whether you have a  
6 different standard or not? And then I think --

7 MR. REID: Yeah, we think removing the word  
8 "solely" is the right way to go. And I think the way  
9 we framed the limitation was you have an exemption and  
10 I think some of the opponents have phrased it this  
11 way, you have an exemption for security research and  
12 if you can say that what we are doing is good-faith  
13 security research and meets all of the qualifications  
14 for that, then you qualify for the exemption.

15 And by doing that, we avoid basically  
16 creating a foothold for these sort of abusive  
17 arguments that say, well, you might be doing something  
18 else, we don't know about the publication of this  
19 paper, we don't know -- it seems like this is related  
20 to a business, you're getting paid for this. We cut  
21 off all of these arguments that may well not succeed  
22 by the time you actually get to a judgment on the  
23 merits in a litigation but are going to give the  
24 ability for a large company, like an Apple, to come in  
25 and basically bring an abusive litigation that's going

1 to shut somebody's research down before it gets out of  
2 the gates.

3 MR. GREENBERG: Okay. Mr. Reed and then  
4 Mr. -- I believe it's Williamson, not Williams, and  
5 then Mr. Williams, because I don't think any of you  
6 have spoken yet. Sorry about that.

7 MR. REED: Yeah, thank you. Christian  
8 covered several things, but both Professor Halderman  
9 and my fellow Reid have harped on the idea that boy,  
10 it's just so hard to have counsel. It's ironic  
11 because I run a trade association with more than 5,000  
12 companies involved, and we literally have one of the  
13 leading experts on the DMCA as an on-staff attorney,  
14 and we regularly get questions from our members about  
15 the DMCA which we provide at no cost to our members  
16 and if you're a small business.

17 So, when Halderman says, oh, gosh, I just  
18 can't find an attorney, my junior associate -- well,  
19 I'm pretty sure that if he picks up the phone and  
20 makes a phone call to any of the trade associations  
21 that work in this space, there is a plethora of  
22 supportive help from attorneys.

23 And to Blake Reid's point about, well, you  
24 don't want to anger Apple, we've actually had our  
25 counsel engage directly and quietly with some of the

1 biggest players on some of the questions around this  
2 and engage directly. So I think this, gosh, we just  
3 need help because we can't find an attorney, is a  
4 little hard to swallow.

5 I found it interesting when Stan pointed out  
6 that Joe Hall, you know, Joe, also known well, he  
7 literally pre-COVID sat two floors below me in almost  
8 the same -- in the same office building. So the  
9 community of people who are experts on this issue is  
10 one in which it's not hard to find an expert able to  
11 provide some insights.

12 In addition, the Copyright Office has done a  
13 pretty good job of providing plain English  
14 understanding. So I want to kind of cabin that and  
15 say let's not pretend there aren't enough attorneys to  
16 find who have understanding of the DMCA.

17 But, additionally, I think the one problem,  
18 and I'm very sympathetic to the idea of security  
19 research, but the problem with the removal of the word  
20 "solely" is it basically removes any value for the  
21 words "good faith" because, if it's not solely for  
22 good faith, then it might also be for bad faith, and  
23 that's when we enter into this cascade of opportunity.

24 Halderman said that he was concerned about  
25 there was a sense -- oh, I'm sorry, Mr. Scarbeary said

1 that we were suggesting somehow that researchers are  
2 unlikely to turn their discovery into a competing  
3 product. He's probably right. Most academics are  
4 not. But the value of the research that they're  
5 doing, if you remove the good-faith exemption, is a  
6 hundred percent going to end up in products that are  
7 on the Dark Web and are available from people who do  
8 not have a good-faith intent. So I think that's the  
9 problem. If you remove "solely," you essentially  
10 create an entire ecosystem around bad faith.

11 MR. GREENBERG: Yeah.

12 MR. REED: And so I also stipulate to much  
13 of what Christian said. Thank you.

14 MR. GREENBERG: Okay. Thank you. Before I  
15 go to you, Mr. Williamson, I just want to point out  
16 that if you remove the word "solely," you know, part  
17 of what I hear proponents arguing for is they need  
18 more certainty so researchers know what they can and  
19 can't do. But if you remove the word "solely," you  
20 can also argue you end up with less certainty because  
21 there's not a clear limitation. I mean, we have to  
22 acknowledge there's a value to plain language, which  
23 the office has provided over the past two rulemakings  
24 with both the rule and then the administrative  
25 guidance to help interpret the rule. So I do think

1 that's a place we have to start from, the idea that if  
2 we're trying to provide certainty, removing words that  
3 have meaning doesn't necessarily give more certainty.  
4 Mr. Williamson?

5 MR. WILLIAMSON: Thank you. I'd like to  
6 first address the point that Mr. Reed made regarding  
7 there being plenty of attorneys. I've been the  
8 attorney for a software trade association, and I've  
9 been the attorney for a nonprofit that gave legal  
10 counsel to free and open-source software projects who  
11 couldn't afford it, et cetera, et cetera. There are  
12 two issues here. The one is that an attorney for a  
13 trade association that you're a member of is not your  
14 attorney, so you can't get privileged advice from that  
15 attorney, and so relying on, you know, their sense of  
16 what the law is with all of the caveats of I'm not  
17 your attorney is not of any comfort to somebody who is  
18 potentially risking litigation.

19 And, you know, as our colleagues have  
20 pointed out in their comments, nonprofit organizations  
21 like the Electronic Frontier Foundation that provide  
22 counsel to individual developers sometimes when they  
23 think the case is important enough, et cetera, are  
24 absolutely overwhelmed with requests for assistance.  
25 And so, you know, they can't really be relied on if

1 you have an urgent issue because they may well just  
2 not have the capacity for your case.

3 In my practice, I represent -- I advise  
4 clients on the DMCA in all its aspects. I advise  
5 clients on the CFAA. I defend criminal defendants in  
6 CFAA cases. You know, I advise clients on ECPA. And  
7 the most common counsel that I give to individuals who  
8 are doing something that might run afoul of the CFAA  
9 or the DMCA is, if you end up in litigation, you're  
10 done. They simply can't afford to even proceed to a  
11 verdict in district court against an Apple, et cetera.  
12 And so --

13 MR. GREENBERG: Real quick, I think we're  
14 spending a lot of time talking about how hard it is to  
15 hire attorneys, and I agree with that wholeheartedly,  
16 but we could talk about this with regard to almost any  
17 civil law, and we don't have a ton of time today, so I  
18 don't want to go too far down this rabbit hole. Any  
19 exemption that the office ends up recommending is  
20 still going to require an attorney to review it at  
21 some point where the researcher gets close to the  
22 line. So we can talk about this, but there's a whole  
23 lot more value in talking about removing specific  
24 limitations and why. So I just want to caution that  
25 if there's more you want to say on the "solely" and

1 the purpose and use exemption -- limitations, I would  
2 go to that.

3 And then I want to go to Mr. Williams and  
4 then, with apologies to Mr. Scarbeary and Mr. Morris,  
5 who still have their hands up, I want to move to the  
6 primary evidence that was submitted with regard to  
7 these limitations because I think that we're going to  
8 start running pretty behind here pretty quick because  
9 we still have lawfully acquired and other laws to get  
10 to.

11 MR. WILLIAMSON: So I would like to briefly  
12 address "solely." If you remove "solely," you're left  
13 with "for the purpose of good-faith security  
14 research," right? And so, you know, it's a lot easier  
15 to tell whether you're doing research in good faith  
16 than it is to tell whether you're doing research  
17 solely for -- or doing work solely for good-faith  
18 security research because, as Mr. Reid pointed out,  
19 Professor Reid pointed out, those who work in security  
20 research are often in a sort of dual-purpose role. A  
21 lot of them work in companies that are attempting to  
22 secure their own systems, and so they're not doing  
23 solely research, they're also doing remediation in  
24 their own networks. And every criticism I've heard of  
25 the word "solely" from the opposition would suggest

1 that they're looking at bad-faith potential uses. And  
2 so, when you remove "solely," I think "good faith"  
3 does all the work that they need "solely" to do.

4 MR. GREENBERG: I just want to ask this  
5 really quickly, but I do want to keep moving forward,  
6 do you think the word "primarily" would be any better,  
7 or would that be just as -- create in your mind just  
8 as much uncertainty and it would probably, I'm sure,  
9 be less palatable to the opponents, but would it be  
10 any more -- would it be any better of an exemption  
11 from the user standpoint?

12 MR. WILLIAMSON: I think that, you know, it  
13 is a small step but contains nearly all the  
14 uncertainty of "solely."

15 MR. GREENBERG: Okay, Mr. Williams, unless,  
16 Mr. Williamson, did you have anything else you wanted  
17 to add? I'm sorry, you did wait a long time. Okay,  
18 Mr. Williams.

19 MR. WILLIAMSON: Thank you.

20 MR. WILLIAMS: Thank you. I'm going to try  
21 to go back to kind of the beginning here just to  
22 address some of the questions. So, you know, I  
23 thought the first question was really an opportunity  
24 for the proponents, and I think this came from Ms.  
25 Smith, to provide some specific examples of chilled

1 projects, and I think we got none. We did get  
2 something useful from Professor Halderman, but it had  
3 no specifics. There was nothing about why the current  
4 exemption would not cover it. I don't know whether  
5 his colleagues are overly cautious or being  
6 appropriately cautious, but there was nothing that I  
7 can assess because there were no details there.

8           So, looking at the record, I think that says  
9 a lot. There's not evidence that research is being  
10 chilled beyond just abstract statements of the kind,  
11 Mr. Greenberg, that you referred to about, well, can I  
12 get a lawyer or not, which I agree with the point you  
13 made on that issue, so I won't dwell on it.

14           Like BSA, my clients think security research  
15 is important. We did not oppose renewal here. But,  
16 with no substantive examples of chilling effects from  
17 the current language, we don't understand why it needs  
18 to be changed.

19           On Apple v. Corellium, that's a project that  
20 moved ahead. It's a commercial project that moved  
21 ahead. And my understanding is that they'll go to  
22 trial and that will be tested, the limits of this  
23 exemption perhaps and also of the statutory  
24 exceptions. And we hear in this proceeding repeatedly  
25 that there's no test cases, there's no lawsuits,

1 there's not enough lawsuits for us to prove our case  
2 of chilling effects or that the statute needs to be  
3 changed. But then, if someone does file a lawsuit,  
4 and I'm not representing Apple here, but if someone  
5 does, they're accused of being a bully and of, you  
6 know, being excessive with their use of the law. And  
7 so there's no way to win in that scenario where, on  
8 the one hand, people beg for lawsuits and, on the  
9 other hand, they criticize them.

10           You know, on the issue of speculation, I  
11 think it was your question if I recall, Mr. Greenberg,  
12 what should be the standard here? I think speculation  
13 from the proponents is demonstrably not sufficient for  
14 them to meet their burden. The burden is initially on  
15 them. You can consider our concerns about the scope  
16 of exemptions to be speculation, and Professor Reid  
17 said, oh, there's no evidence of piracy, and he went  
18 back to things that happened, you know, 15 years ago,  
19 12 years ago, in terms of proposals.

20           But, as Mr. Taylor, I think, said, proving a  
21 negative is very difficult, and us knowing where the  
22 piracy comes from is very hard. And so I think, when  
23 you're talking about speculation, yes, ideally, on the  
24 opposition side, you'd have specific evidence of harm.  
25 But I think it's common sense that if databases and

1 things of that nature are breached, there's a  
2 potential for harm, whereas there's no specifics on  
3 the proponents' side, and that's where the burden lies  
4 in this. And, as I said, we support the renewal of  
5 the existing exemption. We're fine with it being  
6 renewed. They already have a very broad exemption,  
7 and so we don't see the harm coming from it.

8 I will just mention very quickly two points.  
9 One, even the discussion draft that came out of the  
10 Judiciary Committee process recently incorporates all  
11 of the items, I believe, from the existing exemption  
12 that the proponents are criticizing. And I testified  
13 on the same panel that Professor Reid did. I know  
14 that members of Congress took that seriously, and the  
15 discussion draft seemed to endorse the office's  
16 approach to this exemption. And so I would just say  
17 that in that separate forum, there was also apparently  
18 not enough evidence to justify changing this proposal.

19 And, finally, I do just want to mention that  
20 there's some discussion of the Green v. DOJ case in  
21 the comments, and if we have time, I would love to get  
22 a chance to speak on that later on.

23 MR. GREENBERG: Yes. So that's actually  
24 where I'm going to go next. I do first want to  
25 clarify two things. One is that the Digital Copyright

1 Act discussion draft that came out of that process  
2 would have granted exemptions for trafficking also, so  
3 it does overlap a little bit here with the concerns of  
4 the proponents. I do also want to note Mr. Adams'  
5 point about the report that he had previously  
6 submitted regarding fear, you know, which is again  
7 more anecdotal evidence, but fear amongst some  
8 researchers about what they share.

9 Mr. Adams, for your clarification, I just  
10 checked all three of the submissions that CDT was on  
11 and I don't see it appended to any of that from this  
12 process at least.

13 So I do want to ask next, and I will start  
14 with -- well, why don't I actually ask the question  
15 first. So the primary alleged example of an adverse  
16 effect from proponents is different from what was  
17 present in the 2018 record, is the 2019 -- June 2019  
18 ruling in Green v. DOJ, and I'm wondering both for  
19 proponents and opponents how much stock you think the  
20 office should put in that decision. I do want to note  
21 that on page 8 of the proponents' reply comments, they  
22 refer to the Green decision as a summary judgment  
23 motion. It was, in fact, a motion to dismiss, which  
24 is a different burden for the plaintiff.

25 So I'd like to hear from proponents and

1 opponents as to what the office should do in terms of  
2 interpreting the June 2019 decision in Green v. DOJ as  
3 evidence of a chilling effect from the circumvention  
4 prohibition. I'll start with Professor Reid and then  
5 Mr. Taylor.

6 MR. REID: Thanks, Mr. Greenberg. If I  
7 could before I move on to Green, just wanted to make  
8 one quick response on the "solely" and "primarily"  
9 language, which is I think that the one core concern  
10 that we hear that is cognizable under § 1201 as one  
11 that is within the ambit of the office's jurisdiction  
12 here is think about copyright infringement, and I'd  
13 note that there's a limitation in the existing  
14 exemption that restricts use of the information that's  
15 derived from the security research in a manner that  
16 facilitates copyright infringement.

17 Now we have concerns about the formulation  
18 of that particular limitation because it puts  
19 responsibility on basically for downstream third-party  
20 behavior, not of the researcher. We don't think that  
21 formulation is right. But, to the extent that the  
22 office wants to focus on extraneous concerns or bad  
23 faith, as Mr. Reed put forth, thinking about making  
24 sure that those concerns are actually narrowed to  
25 concerns of copyright infringement, I think, is

1 important. And I think it is really important,  
2 contrary to Mr. Williams' point, to focus on the fact  
3 that there's absolutely no evidence in the record of  
4 copyright infringement being a problem in the more  
5 than a decade that this exemption has basically been  
6 in the works.

7 To the point about Green, and I think this  
8 actually ties to the discussion earlier about why  
9 can't you just hire a lawyer, why can't you get the  
10 guidance that you need, you need to go jump through a  
11 bunch of threshold hoops to go about doing your  
12 research here, I think the sort of criticism, you  
13 know, of Professor Halderman and his colleagues and so  
14 forth, I think what Green v. DOJ underscores and it  
15 should serve as a strong reminder to everyone here is  
16 that what's being chilled here and what's at stake  
17 here is First Amendment protected speech, right?

18 So, in other words, we can look at a lot of  
19 the different activities that are being discussed  
20 during this triennial review, but there are very few  
21 that are so poignantly and directly directed at  
22 criticism of -- critical speech that's aimed at  
23 products that, frankly, have often a direct role in  
24 the administration of our elections, of our democracy  
25 that take on salience of a deeply political nature in

1 some cases.

2           And so we think the salience of Green v. DOJ  
3 is incredibly important for the office to remember  
4 that any overreach of this exemption, any way in which  
5 this exemption chills research, is stepping on the  
6 First Amendment toes of folks who are engaged in core  
7 First Amendment speech. And that's what the court is  
8 getting at there. I think the office should heed what  
9 the court had to say there as a warning to say, if you  
10 want to salvage § 1201, if you want to make sure that  
11 § 1201 as a whole doesn't come under constitutional  
12 scrutiny, it's incumbent on you to make sure that the  
13 exemption is drawn in such a way that it minimizes any  
14 ancillary effects on First Amendment protected speech.

15           And so we think that's a really important  
16 recognition of some of the same adverse effects, and,  
17 by the way, I'd point out that we brought many of  
18 these up in 2015 and 2018 and that the office chose to  
19 dismiss them in those triennial reviews. I would  
20 treat this as the court sending a message to the  
21 office that it is important to retract the exemption  
22 to make sure that the First Amendment isn't  
23 implicated. Thanks.

24           MS. SMITH: So thank you, Professor Reid,  
25 and I'm not here to comment on your statement because,

1 as we have all noted, it is an active litigation, but  
2 I do want, because of that, to sort of make sure we're  
3 clear on what has been said today, which is not that  
4 the Copyright Office has said why not just hire a  
5 lawyer, but we have pointed out that we have provided  
6 administrative guidance that professors are able to  
7 publish the results of their good-faith research or  
8 use them in the course of teaching. And that's just a  
9 quote from 2018. So I just want to be careful on that  
10 in terms of what the current exemption already  
11 permits, as the Agency has clarified.

12 Okay. Mr. Taylor?

13 MR. TAYLOR: Thank you. Before I turn to  
14 the question on Green, I just want to clarify a point  
15 that was maybe misunderstood. We certainly have no  
16 problem with responsible computer security  
17 researchers. I think Mr. Morgan clarified that it  
18 really is who can take advantage of that research and  
19 making sure that it's responsibly handled.

20 The second thing, on the "solely," I think  
21 "solely" really is there because this rulemaking has  
22 to follow the record and while I too read the reply  
23 comments and thought, well, perhaps some of these  
24 additional activities still could fall under  
25 good-faith computer research.

1           Now, turning to Green, I would just simply  
2 say that, you know, it's a motion to dismiss, and we  
3 have long recognized that the DMCA poses First  
4 Amendment issues. I mean, to say that you can raise a  
5 cognizable claim is very clear since Corley. And the  
6 facts have to be developed on the record and there has  
7 to be a final ruling. But even if the court does  
8 decide for whatever reason there is a First Amendment  
9 issue here, there are far more cases out there that  
10 suggest that the DMCA does not raise First Amendment  
11 concerns.

12           So, at that point, if the court were to  
13 decide, it would still be an outlier for the  
14 jurisprudence in this area. So I think it's a very  
15 far stretch for Mr. Reed to suggest that the Copyright  
16 Office should take the ruling on the motion to dismiss  
17 as a signal as to what is the correct way to interpret  
18 the exemptions and the exemption process in context of  
19 the First Amendment.

20           MR. GREENBERG: Okay, thank you. Mr.  
21 Williams?

22           MR. WILLIAMS: Yeah, thank you very much.  
23 On the Green case, as a couple of you have touched on,  
24 I mean, the procedural posture is quite different from  
25 how the case is characterized in the proponents'

1        comments. The comments, I think, say that Judge  
2        Sullivan said there was a compelling case of a First  
3        Amendment violation, for example. But none of that is  
4        in the case. It was a motion to dismiss. He  
5        repeatedly stressed that the government, on that  
6        posture, had the burden.

7                They are now on a preliminary injunction  
8        motion that's been pending for quite some time. The  
9        burden is going to shift. I find it quite interesting  
10       that when Judge Sullivan asked for the parties to come  
11       to some agreement on how to move forward with  
12       discovery, the plaintiffs didn't seem to want  
13       discovery. They wanted to jump right to this  
14       preliminary injunction motion without any discovery.

15               And I don't think they have enough evidence,  
16       but, of course, that will be up to Judge Sullivan.  
17       But he certainly did not hold in any shape or form  
18       that the DMCA generally or the specific security  
19       research exception in this proceeding violates the  
20       First Amendment. And so I believe under First  
21       Amendment scrutiny, under the Intermediate Scrutiny  
22       Standard, that this exemption, as well as the statute  
23       generally, should survive. But the comments vastly  
24       overstate the impact of that motion to dismiss  
25       decision.

1                   MR. GREENBERG: Okay, thank you. Mr.  
2 Williams, I want to turn now to "lawfully acquired"  
3 before we move on to other laws. And, again, to the  
4 proponents, I'm wondering if you have any examples of  
5 researchers being discouraged from conducting  
6 good-faith security research because of contract terms  
7 that limit the ability for a security researcher to  
8 acquire the software device. As you are aware, in the  
9 2018 recommendations of the Acting Register, there was  
10 clarifying language here and support from DOJ on our  
11 reading of the exemption so that it would not impose a  
12 problem for good-faith security researchers.

13                   So I'm wondering if, in the three years  
14 since, you have come across examples of researchers  
15 who are being discouraged or prevented from engaging  
16 in good-faith security research because of the  
17 lawfully acquired limitation. Professor Reid, I see  
18 your hand.

19                   MR. REID: Thanks, Mr. Greenberg. And I'll  
20 defer to Professor Halderman if he's got any  
21 particular examples. I just wanted to, in the  
22 interest of hopefully shortcutting too long of a  
23 discussion on "lawfully acquired," point out that  
24 basically our concerns with "lawfully acquired" are a  
25 subset of the concerns with other laws. In other

1 words, the set of legal issues, the set of risks, the  
2 set of uncertainty, the complexity of dealing with it,  
3 is just -- we kind of see "lawfully acquired" as an  
4 example of the kinds of problems that occur with other  
5 law but obviously a narrower subset, a narrower set of  
6 laws that are potentially implicated, a slightly  
7 simpler question. So just wanted to sort of say our  
8 concerns are basically the same as what we've been  
9 discussing for the last hour or so, albeit in a little  
10 bit of miniature, if that makes any sense.

11 MR. GREENBERG: Well, can I then just ask as  
12 a follow-up, what do you make of the fact that DOJ --  
13 and, again, we're going to talk more about other laws  
14 in a minute, so no need to spend time on that yet --  
15 but what do you make of the fact that DOJ does think  
16 that the "lawfully acquired" limitation still serves  
17 an important purpose and coupled with the register's  
18 administrative language is not creating significant  
19 adverse effects, whereas they do support removing the  
20 other laws limitation? What do you make of that  
21 distinction?

22 MR. REID: Well, I think we obviously  
23 diverge from DOJ on the salience of the "lawfully  
24 acquired" limitation. I think we come to a different  
25 place. Obviously, we're in big agreement that the

1 broader swath of laws that are implicated by the other  
2 laws limitation impose a more significant chilling  
3 effect. And so I think we are directionally in the  
4 same place as the Department of Justice, albeit we  
5 come to a different place on the "lawfully acquired"  
6 exemption. My colleague, Mr. Scarbeary, may have  
7 something to add there.

8 MR. GREENBERG: Yeah, Mr. Scarbeary, do you  
9 want to add anything? And after Mr. Scarbeary, does  
10 anyone from the opponents have anything they want to  
11 add to why, I know from the reading of the comments,  
12 you think that sort of the concern with "lawfully  
13 acquired" is sort of an overly narrow and implausible  
14 reading? Is there anything you want to add to what's  
15 already in the record there? Mr. Scarbeary?

16 MR. SCARBEARY: Yes, on the "lawfully  
17 acquired" limitation, our concern here is simply that  
18 that clause allows software developers to essentially  
19 weaponize the DMCA in a way to totally preclude  
20 security research simply by including a contractual  
21 clause that devices cannot be resold to security  
22 researchers. And we pointed out in our comments one  
23 area where this is particularly common, is in the  
24 context of election machine security research, where  
25 these companies frequently try and dissuade security

1 researchers from analyzing their systems by including  
2 these kind of contractual restraints.

3 MR. GREENBERG: I did take note of that, so  
4 thank you for bringing that up, but I did see that in  
5 the comments. Mr. Troncoso?

6 MR. TRONCOSO: You know, again, I think that  
7 what we just heard runs counter to the clear guidance  
8 that the Copyright Office tried to give in issuing the  
9 2018 exemption where they made clear that the  
10 "lawfully acquired" limitation applies only to the  
11 acquisition and whether or not it itself is in  
12 violation of law. To the extent there are contractual  
13 issues, I don't think that those are implicated at the  
14 point of acquisition.

15 So, again, I understand that there is a  
16 legal overlay to a lot of the activity that is in play  
17 with security research, but that legal overlay is not  
18 going to go away merely by removing the limitations in  
19 this exemption. That legal overlay is the natural  
20 byproduct of there being a statutory prohibition that  
21 can cover this activity and other statutes, the CFAA  
22 and others that I'm sure we'll discuss in a moment.

23 MR. AMER: Can I ask a --

24 MR. GREENBERG: Well, and I'm sure you have  
25 something to say on the election --

1 MR. AMER: Can I -- sorry, Mr. Greenberg.

2 MR. GREENBERG: Yes?

3 MR. AMER: Could I just ask a follow-up  
4 question? This is a more general question to  
5 proponents and Professor Halderman is here, you can  
6 maybe incorporate this into your answer if you'd like.  
7 But, I mean, it strikes me that, you know, sometimes  
8 we get criticized in the office for having exemptions  
9 that are too detailed, right, you know, and this goes  
10 to your concern about needing lawyers to help with  
11 understanding them.

12 And so your approach is to just remove all  
13 of this language. But, I mean, I think we've heard,  
14 you know, a countervailing concern from the opponents  
15 that by doing that, that could at least suggest that  
16 we're, in fact, broadening the exemptions, right, and  
17 that there is a change. And we can say all we want in  
18 our recommendation that it's not intended to do that.  
19 But, from what we've heard today, that doesn't seem to  
20 carry very much weight in some people's eyes.

21 So, you know, I wonder how much -- you know,  
22 so I think we would be reluctant to just sort of take  
23 out a lot of language, and so, you know, our approach  
24 was to provide clarification in the recommendation.  
25 If we were to take the approach of sort of adding

1 language to the regulatory text, saying things like,  
2 you know, this includes good-faith, you know,  
3 publication of research results, teaching, et cetera,  
4 and it doesn't encompass situations where there are  
5 restrictive contractual terms, et cetera, it seems to  
6 me that that's sort of -- I don't know that that helps  
7 you very much from the proponents' standpoint because  
8 it's making the exemption more complicated and  
9 potentially open to different interpretations. I  
10 wonder if any of you could speak to that.

11 MR. HALDERMAN: Well, let me just say that  
12 clarification is --

13 MR. GREENBERG: Real quick. I'm sorry,  
14 Professor Halderman, real quick just for the court  
15 reporter, Professor Halderman, I can see you have  
16 something that you want to say.

17 MR. HALDERMAN: Yes, thank you.  
18 Clarification is, of course, appreciated, although, as  
19 we pointed out, the overriding complexity of the  
20 existing exemption and the kinds of complicated legal  
21 queries that it raises, especially in things like the  
22 other laws provision, wouldn't be helped so much by  
23 the kind of clarification that you mentioned, Mr.  
24 Amer.

25 I wanted to just also mention on the

1 question of "lawfully acquired" just one example that  
2 has come up in my area of election security research  
3 in the last few years has been about the Defcon Voting  
4 Machine Village, which is a public event every year at  
5 the security community's largest annual conference in  
6 which the public is invited to come for a weekend and  
7 engage in hands-on research on the security of  
8 election equipment.

9           The organizers of that event bring voting  
10 machines and other equipment that they've acquired on  
11 eBay, some that's been donated to them, some that  
12 participants have brought with them, and although they  
13 believe it to be lawfully acquired, they have no way  
14 of verifying whether equipment that's been, for  
15 instance, purchased on eBay was, in fact, resold after  
16 some breach of a contract. It's quite common that the  
17 sales contracts on voting machines will prohibit  
18 reverse engineering them, will prohibit further  
19 resale, and this has caused real uncertainty and risk  
20 and serious risk for the organizers of that event, so  
21 that's just one example.

22           And looking ahead, this same kind of, say,  
23 contractual limitation on resale of voting machines is  
24 something that I worry will prevent further research  
25 that I would like to do trying to understand and

1 improve the security of voting machines that are being  
2 marketed today, which are virtually impossible so far  
3 to acquire secondhand because those contracts prohibit  
4 their resale. But, if one were to be sent to me  
5 tomorrow from an anonymous source, I would love to be  
6 able to study it, but I'm not sure what my lawyers  
7 would say in terms of whether I was able to do that  
8 with the current scope of the exemption.

9 MS. SMITH: Can I ask you a follow-up  
10 question about the Voting Village? Because that is  
11 something the office has looked at. We cited it  
12 favorably as an example of making use of the exemption  
13 in the proposed rule in 2018, so that was referring  
14 back to two exemptions ago, right? So my question is  
15 whether are you seeing any instances that the Voting  
16 Village was unable to make use of good-faith security  
17 research because of § 1201 since 2015? Because just  
18 in terms of what's in the record to the office so far,  
19 it seems we're not aware of anything that needed to be  
20 held back.

21 MR. HALDERMAN: I am not myself an organizer  
22 of the Village, although I'm a close colleague of the  
23 people who are the organizers, so I can't speak to  
24 what they might not have done that they otherwise  
25 would have. But I can tell you that they agonize over

1 whether they would be able to hold the Village under  
2 the current exemption. And --

3 MS. SMITH: But I guess, when the Agency  
4 says this is an example of using the exemption, I'm  
5 wondering why they're agonizing. Do you have any  
6 insights?

7 MR. HALDERMAN: Well, it's the Agency saying  
8 that this is a good example but then saying that  
9 equipment has to have been lawfully acquired. When  
10 they don't know the ultimate origins of the equipment,  
11 it leaves them -- it creates an apparent  
12 contradiction.

13 MR. GREENBERG: Okay. Thank you. Mr.  
14 Zambrano Ramos, do you have any question you wanted to  
15 ask? I see your hand up. And then, Mr. Williams, so  
16 I did see your hand up. And then Mr. Troncoso and I  
17 think I see Professor Reid. My screen keeps moving  
18 around, so I'm having a hard time keeping track of  
19 people. But does sound right to everyone? Yes?  
20 Okay. Mr. Zambrano Ramos?

21 MR. ZAMBRANO RAMOS: Thank you so much, Mr.  
22 Greenberg. This question would be for Professor Reid,  
23 and it's kind of an issue that's been interwoven in  
24 these discussions, and that's the idea of the  
25 administrative guidance language versus the exemption

1 language. I'm just curious, in your experience with  
2 the security research community, there is a lot of  
3 different kinds of security researchers, how easy is  
4 it for the community to kind of use that language  
5 that's in the administrative guidance for their  
6 specific uses? And can you specifically talk about  
7 use cases where you may have security researchers in a  
8 university or one institution versus more independent  
9 security researchers? Thank you.

10 MR. REID: Thanks, Mr. Ramos. And I may  
11 defer to Professor Halderman and Mr. Adams to speak  
12 further on this question. But just to tie back to  
13 themes from earlier in the week, this dynamic of can  
14 we seek clarity in the exemption language itself  
15 versus in the Agency record or the recommendation from  
16 the register that comes out or the final rule from the  
17 librarian has been a theme, and I think it's important  
18 to underscore that there are different communities  
19 served by each of these exemptions, some of them quite  
20 small and quite tightknit and then some of them quite  
21 large and quite diffuse and quite diverse.

22 And I think this exemption presents an  
23 example of a quite large and quite diverse and quite  
24 diffuse community for whom having the sort of guidance  
25 that for other exemptions might be filtered into the

1 community quite readily is going to be more difficult  
2 here because there are different groups of folks who  
3 do research in the context of academic institutions.  
4 As Professor Halderman mentioned earlier, there are  
5 numerous independent security researchers, there are  
6 researchers that work in house at companies of various  
7 sizes and various levels of sophistication. So I  
8 think it's important to underscore that this exemption  
9 is aimed at and important to a broader set of actors  
10 than perhaps some of the other exemptions.

11 And, Mr. Amer, to your point, I know the  
12 office is navigating some difficult tensions here in  
13 terms of trying to figure out how can we clarify this.  
14 In the recommendations we ultimately put out, how can  
15 we deal with the specificity of the exemption? And we  
16 appreciate your efforts to get this calibrated, but I  
17 think this is one where you're contending with a  
18 complicated user community for this exemption. And so  
19 simplicity really reigns supreme here. Simplicity is  
20 really important for the long tail of researchers who  
21 take this exemption.

22 And to the point Mr. Adams raised earlier,  
23 there's a lot of fear, and fear counts as an adverse  
24 effect under the statute, and sometimes that fear  
25 comes from folks who are just not well steeped in

1 administrative law or how to read a recommendation or  
2 even how to read the C.F.R. and are relying on  
3 guidance, are relying on community norms, are relying  
4 on folk wisdom that sort of makes it around.

5           And so I think it's really important in this  
6 exemption, to the extent that you can draw it in a  
7 very narrow way that says, hey, security researchers,  
8 are you doing good-faith security research by a  
9 standard that I think everybody understands applies  
10 here. If so, don't worry about all these little  
11 caveats. In fact, we'd like to really dispel that  
12 fear, right? And you should tell your colleagues that  
13 do this work that this exemption is safe to use. And  
14 I think where Professor Halderman left us here is  
15 having guidance buried somewhere in the recommendation  
16 doesn't penetrate all the way out into the communities  
17 that are affected here.

18           MR. GREENBERG: Okay. If there's any more  
19 to add to that, it was Mr. Troncoso and Mr. Scarbeary  
20 next. However, I do want to note that we are already  
21 at 11:50 and we still haven't gotten to sort of  
22 probably the more significant portion to discuss in  
23 terms of what is new in the record since that DOJ  
24 letter came in with the reply comments, and we do  
25 still need to get to the privacy portion of this

1 panel. So, if there's no real objection here, I'd  
2 like to move on to other laws.

3 MR. TRONCOSO: Can I just jump in for  
4 literally less than a minute? I think I do want to  
5 respond to something that Professor Reid just said. I  
6 think part of the concern that we have about this  
7 exemption is that we do think it is sufficiently  
8 clear, but there seems to be an effort to  
9 intentionally misinterpret the 2018 exemption, making  
10 arguments that, you know, "primarily" might be read as  
11 "solely," for instance.

12 And I think, you know, proffering those  
13 types of arguments can lead to concerns in the  
14 security research community that the 2018 exemption is  
15 much narrower than it, in fact, is. And so I think we  
16 need to take a really realistic look at the 2018  
17 exemption and not sort of allow for really wild  
18 interpretations of how it might be read to dictate  
19 sort of what --

20 MR. GREENBERG: Yeah, Mr. Troncoso, I can  
21 stop you there. I mean, the record is really clear on  
22 the fact that the proponents and the opponents just  
23 disagree with the meaning of the 2018 recommendation.  
24 So that's pretty well-developed in the record. I'd  
25 appreciate everyone bearing with us on moving on to

1 other laws.

2 So let's just start with the proponents.  
3 Before we get to the DOJ letter, we're looking for any  
4 examples of litigation or legal threats made against  
5 security researchers that allege a 1201 violation in  
6 conjunction with a meritless violation of another law,  
7 such as but not limited to the CFAA, where the conduct  
8 at issue would otherwise be permitted under the  
9 existing temporary exemption. So I didn't see  
10 anything in the comments submitted. That doesn't mean  
11 I didn't miss it. There was a lot of reviewing going  
12 on. But I do wonder if there's anything you want to  
13 verbally add to supplement the record.

14 MR. REID: Mr. Greenberg, if I could  
15 respond?

16 MR. GREENBERG: Yeah, Mr. Reid, go ahead --  
17 or Professor Reid, go ahead.

18 MR. REID: And defer to my colleagues on  
19 concrete examples as well. But I take a little bit of  
20 issue with the framing of the question as being around  
21 lawsuits. Again, there's not a lot of --

22 MR. GREENBERG: I said or legal threats,  
23 which does not necessarily mean, you know, that a  
24 lawsuit is being filed but that it was, you know,  
25 threatened. But we don't need to hash that out.

1           MR. REID: Well, I mean, I think it's  
2 important to respond to even if your framing is legal  
3 threats here. And I think this has been a thread  
4 throughout the day today. It's important to consider  
5 that the users of this exemption are often in the  
6 case, as Professor Halderman often is, not simply of  
7 avoiding litigation but of demonstrating that their  
8 conduct is affirmatively in compliance with the law,  
9 right? And I think a lot of our concerns here are  
10 rooted in a need for certainty that the users of the  
11 exemption are indeed complying with the law and not  
12 merely that they're avoiding getting sued.

13           So I would urge the office to be thinking  
14 about adverse effects in that respect. The presence  
15 of litigation as a general matter of the type that we  
16 referenced earlier with Apple v. Corellium around the  
17 trafficking exemption, that creates an incredible  
18 chilling effect for anybody that's doing research that  
19 is in that space. And so folks who are working with,  
20 whether it's university counsel or counsel to  
21 nonprofit organizations, like Mr. Williamson, have got  
22 to go further. They've got to be able to say we know  
23 that this is going to be safe and that we're not going  
24 to get dragged into court by somebody like Apple,  
25 who's going to put our organization out of business or

1 is going to --

2 MR. GREENBERG: Sure, but just to interrupt,  
3 I apologize for interrupting you, but first off, we've  
4 been over Apple v. Corellium, and I do want to just  
5 warn folks we have a limited amount of time. So the  
6 record, we have a court reporter, we don't need to go  
7 over things we've already gone over. I'm looking for  
8 anything additional to that and really examples,  
9 concrete examples or affirmative proof here of folks  
10 who are being chilled because of the other laws  
11 limitation.

12 MR. REID: I'd point you to the example that  
13 Professor Halderman raised earlier, and I think the  
14 other laws limitation is precisely part of that  
15 example and that's a conversation that happens all the  
16 time. And I think you've got a plenty sufficient  
17 record coupled with the Department of Justice letter  
18 to advance the removal of the others law exemption.

19 MR. GREENBERG: Was there any further  
20 proponents' side, does anyone else want to add  
21 anything before we move to the DOJ letter?

22 (No response.)

23 MR. GREENBERG: I'm not hearing anyone. So  
24 I'm going to assume everyone is familiar with the DOJ  
25 letter, but, just in summary, what they said was that

1 they now support removing the other laws limitation  
2 for a number of reasons, which we can get to a little  
3 later. But just I wanted to start with what both  
4 proponents and opponents make of this switch or this  
5 reversal on DOJ's position. Let's start with Mr.  
6 Mohr. Mr. Mohr, you're muted.

7 MR. MOHR: Apologies. The biggest problem I  
8 have with the DOJ submission is it ignores basic rules  
9 of statutory construction and it doesn't reference  
10 them, account for them, or explain why those rules  
11 don't apply. Specifically, there is a presumption  
12 about extraterritorial -- against extraterritorial  
13 construction. And so, when the United States statute  
14 and regulation says --

15 MR. GREENBERG: Just to be clear on this  
16 point, you're referring to where DOJ talks about the  
17 fact that the other laws might sweep in foreign laws  
18 where there's researchers working --

19 MR. MOHR: That's correct.

20 MR. GREENBERG: -- them across different --  
21 in different countries here and somewhere else and  
22 where those laws might be inconsistent with U.S. law  
23 or even against U.S. policy is that right? -- or  
24 obscure.

25 MR. MOHR: Or obscure or just -- I mean,

1 that is not how, as a general rule -- I mean, there  
2 are, of course, exceptions, there are exceptions in  
3 the antitrust area, I believe. But, as a general  
4 rule, you do not read them, and the copyright laws  
5 certainly have not been interpreted to have  
6 extraterritorial reach. So those kinds of things, I  
7 mean, that kind of thing suggests a bit of an  
8 overbroad -- a well-intentioned but overbroad concern  
9 and the type of concern that could easily be  
10 addressed, you know, through clarification rather than  
11 amendment.

12 MR. GREENBERG: Mr. Adams?

13 MR. ADAMS: Thank you, Mr. Greenberg. So my  
14 take on the DOJ's -- you know, I'd like to think it  
15 was a clarification of what they meant to say in 2018.  
16 But, you know, I think the way I read it is the DOJ is  
17 saying we don't need this tie to DMCA 1201. You know,  
18 we're confident in our abilities to sort of take on  
19 the CFAA cases as we see fit and that it is not  
20 necessary to tie compliance with that to a copyright  
21 law because, you know, we can handle it. We don't  
22 need that extra support either from DMCA 1201 and we  
23 don't think, as proponents, that DMCA 1201 needs that  
24 extra support or confusion from CFAA.

25 MR. GREENBERG: Can I ask you a follow-up to

1 Mr. Mohr's point about extraterritoriality? Because,  
2 I mean, I did notice that as one of the sweeping  
3 concerns of DOJ, was that, you know, it was basically  
4 that and the point you just made that it may not be  
5 really necessary. So is there any point you'd like to  
6 make contrary to what Mr. Mohr said regarding the fact  
7 that courts are not likely to see, you know, foreign  
8 laws as applicable in this area?

9 MR. ADAMS: You know, even if they don't,  
10 there are still plenty of laws here domestically that  
11 could complicate this issue, right? And so we  
12 appreciate the DOJ recognizing that, you know,  
13 research may occur across national borders and that  
14 that is yet another area of complication. But even  
15 domestically, we see this as a problem.

16 MR. GREENBERG: Sure. Mr. Williams?

17 MR. WILLIAMS: Yes, thank you very much. I  
18 mean, we, of course, respect DOJ's opinion, but I  
19 agree that if the main problem there is foreign laws,  
20 I mean, I've never thought of foreign laws as being  
21 part of that limitation on the exemption. So, if you  
22 need to clarify that, you know, I don't think my  
23 clients would have a problem with that, and we would  
24 support otherwise retaining the limitation.

25 I will say one important thing to note about

1 DOJ's involvement here is that we often hear that  
2 there's this ominous threat of criminal prosecution  
3 against good-faith actors. And I think DOJ's  
4 participation in this proceeding over time has  
5 demonstrated that that's just not realistic. DOJ is  
6 not out there looking to prosecute people who have  
7 done nothing wrong, who have accidentally violated this  
8 exemption. That's just not reality. And DOJ's  
9 participation, even though I may not entirely agree  
10 with their ultimate recommendation, shows me that  
11 they're taking their responsibility seriously.  
12 They're not looking to file unnecessary cases, and the  
13 speculation and fear that's out there is stoked not by  
14 DOJ filing cases but by something else entirely.

15 MR. AMER: Can I ask a follow-up --

16 MR. GREENBERG: I'm sorry, go ahead, Mr.  
17 Amer.

18 MR. AMER: Sorry. So, I mean, you know, I  
19 take your point on that score, but I think a question  
20 still is, what work is the other laws provision really  
21 doing from a copyright owner's perspective? I mean,  
22 if the other laws still apply and, you know, people  
23 are on the hook to know what their obligations are  
24 regardless, is there a need to tie that compliance to  
25 liability under § 1201?

1           MR. WILLIAMS: Sure, thank you for that  
2 question. I think, if I recall correctly, DOJ  
3 discussed this a bit, and their recommendation in the  
4 filing was, you know, remove it from the regulatory  
5 language but insert it into the recommendation to make  
6 it clear to people that this exemption doesn't allow  
7 them to violate any other law. And so my view on that  
8 was why change the exemption language that we've had  
9 for some time that clearly states in the body of the  
10 C.F.R. that you can't violate other laws and move it  
11 into what has been criticized today as an overly  
12 lengthy recommendation. It's in the regulatory  
13 language that other laws need to be complied with.

14           I would also say that Congress included that  
15 language in the statute in a number of places, and DOJ  
16 acknowledged that. I think I have a different opinion  
17 than what they reached in that they said, well, over  
18 time, you know, maybe Congress shouldn't have done  
19 that. I think Congress was wise to do that. So  
20 that's a difference of opinion, but that's where we  
21 come out on that point.

22           MR. GREENBERG: Sorry, go ahead, Mr. Amer.

23           MR. AMER: No, I'm sorry. I mean, I think,  
24 you know, the response to that seems to be, well, the  
25 current regulation does more than put people on notice

1 that other laws still apply. It ties coverage of the  
2 exemption to compliance with other laws, and so it  
3 raises the stakes in terms of to one liability for  
4 violations of other laws. So, you know, do you have  
5 a -- do you see that as a legitimate concern and could  
6 we, you know, take DOJ's suggestion of just  
7 incorporating instead language in the exemption that  
8 says this doesn't obviously, you know, free you from  
9 the obligation to comply with other laws?

10 MR. WILLIAMS: A legitimate concern, yes.  
11 Justification for changing the regulation, no. I  
12 mean, I do assume and believe in the good faith of the  
13 folks who are putting forth these concerns. But, as I  
14 said, Congress saw fit to incorporate this into the  
15 statute itself, and that indicates a preference that  
16 when you're dealing with exceptions to the statutory  
17 regime, you don't beg for other laws to be violated,  
18 and I don't think that it's wise policymaking to  
19 separate the two.

20 MR. GREENBERG: I want to get back in a  
21 minute to the issue of how it appears in the permanent  
22 exemption in 1201(j). But, first, I do want to  
23 clarify and put a finer point on what Mr. Amer just  
24 said, which is that DOJ is not recommending, you know,  
25 a carte blanche or a get-out-of-jail-free card with

1 other laws. It's not saying that the 1201 exemption  
2 is a safe harbor from other laws but saying that 1201  
3 is not conditioned on compliance with other laws, but  
4 liability under those laws may still be a concern.

5 And I don't think they were actually saying,  
6 unless I misread, to move the current other laws  
7 language into the recommendation language. They  
8 actually provided separate language they thought  
9 struck a slightly different balance. So I do want to  
10 hear from other folks, other hands up, starting with  
11 Mr. Scarbeary and then Mr. Mohr, what they think about  
12 that approach to the balance. And then I want to get  
13 to this issue of statutory construction and 1201(j).  
14 And then we really do need to turn to the privacy  
15 portion of this panel. So, Mr. Scarbeary?

16 MR. SCARBEARY: Yes, just to briefly address  
17 something there. As far for the rules of statutory  
18 construction here, 1201 is somewhat of an oddity in  
19 that it includes this reference to all other laws.  
20 Obviously, § 106 doesn't include similar language, so  
21 it's somewhat odd that this language is included  
22 there, and we think DOJ's modification fixes some of  
23 the conditional problems we've identified, but we  
24 still maintain that there's no way the exemption could  
25 really be read to also be an exemption to the CFAA.

1           Also, to briefly address something, I can't  
2 remember who said it, I believe it was Mr. Williams,  
3 that we should confine this here to the language in  
4 the permanent exemptions in the statute. The purpose  
5 of this rulemaking is because Congress recognized that  
6 those exemptions would probably and most likely be  
7 insufficient going forward, and so simply sort of  
8 anchoring the language to how it exists in the statute  
9 makes no sense in that context. But I'd be happy to  
10 let Professor Reid and Mr. Adams expand on that point.

11           MR. GREENBERG: Well, I recognize your point  
12 that this is supplemental to what's in the permanent  
13 exemptions. I do want to get back to that question in  
14 a second. But, first, I want to sort of wrap this up  
15 on DOJ's proposal. Mr. Mohr? Mr. Mohr, you're muted.

16           MR. MOHR: Yeah, this is not my day for  
17 muting. My point will be extremely brief, which is,  
18 you know, the more we start talking, our friends have  
19 been discussing the problems with all these other  
20 laws, and, to me, that seems to pose quite a hurdle in  
21 causation. In other words, if all of these other laws  
22 are problematic in stopping this kind of research and  
23 they are somehow in the way, then the statute is not  
24 in the way. I believe the Copyright Office raised  
25 these concerns in 2018 at a minimum.

1           And so, you know, to the extent that that's  
2 a factor here, I mean, that is not -- I don't think  
3 it's wise to broaden the exemption based on that.  
4 That's it.

5           MR. GREENBERG: Okay. So I actually had  
6 that question lined up because it is in our 2018  
7 report that this a consideration for causation. So I  
8 see Mr. Adams' and Professor Reid's hands up, so if I  
9 can start with Mr. Adams and then Professor Reid, just  
10 your thoughts on this issue that if causation -- if  
11 these other laws play into causation that 1201 is not,  
12 in fact, the cause of the adverse effect, it's that  
13 this act of circumvention would violate some other  
14 law. Do you have a response to that, Mr. Adams?

15           MR. ADAMS: Yes, and so my response is  
16 pretty simple, is that because they are tied  
17 conditionally to 1201, all these other laws become  
18 part of 1201 and are part of the problem here, right,  
19 and so severing that conditional link doesn't make  
20 them not a problem for researchers, right?

21           Here's my other way I think about this  
22 conditional link, is that, you know, tying all other  
23 laws to a temporary exemption is like sedating a wolf  
24 in the wild for scientific research except the  
25 sedative stops working if you disturb any other

1 animal, right? Disturbing other animals, including  
2 bears like the CFAA, always comes with its own risks,  
3 but it shouldn't cause the wolf to wake up and eat  
4 you, right?

5 MR. GREENBERG: I'm definitely not sure I  
6 follow the analogy, but I think I understand, I think  
7 the point you're trying to make, is that, you know,  
8 you should be able to tinker with one without being --  
9 without worrying about that other one being what bites  
10 you effectively?

11 MR. ADAMS: Exactly. You know, the legal  
12 landscape around security research is complex and  
13 tangled, but severing this conditional tie here helps  
14 to simplify the sort of legal analysis that  
15 researchers have to go through.

16 If I could, I wanted to quickly respond to  
17 Mr. Amer's question about what work this conditional  
18 relationship does is that it provides a world of other  
19 legal triggers for litigants who might like to use the  
20 DMCA, but there's actually no copyright infringement  
21 going on, right? And so it's, oh, you can find any  
22 other violation of law and then proceed under DMCA  
23 rather than whatever that other law might be.

24 MR. GREENBERG: Why would someone do that?

25 MR. REID: Well, Mr. Greenberg, if I could

1 put a finer point on it, I think that the --

2 MR. GREENBERG: Yeah, Professor Reid, go  
3 ahead.

4 MR. REID: I think the trigger here is §  
5 1203, which says any person injured by a violation of  
6 § 1201 or 1202 can bring a civil action, right? So  
7 this takes the violation of any law and, indeed, now  
8 that the Department of Justice has sort of suggested  
9 that extraterritorial laws might apply, that's a new  
10 concern to grapple with. But also, thinking about the  
11 array of mundane and local laws that we might never  
12 think of, I think Professor Halderman brought up in  
13 one of the previous hearings the example of the  
14 electoral code.

15 If I'm considering legal risk for violating  
16 the electoral code, I'm not worried about a company  
17 like Apple coming and suing me for violating the  
18 electoral code, but I might worry about a company  
19 being able to use a violation of something like the  
20 electoral code to drag me into federal court to seek  
21 statutory damages --

22 MR. GREENBERG: Does that raise a concern  
23 that the penalty can be disproportionate to what it  
24 would be under the other law? Is that what you're  
25 saying?

1           MR. REID: Correct. I mean, we could be  
2 talking about minor civil violations with small or no  
3 fines. There could be code enforcement. And I think  
4 also I would tie it to the level of risk, right, where  
5 you'd say that the likelihood of a local code  
6 inspector ever even knowing about something like that  
7 is low. But, if you've got a very motivated opponent  
8 who is looking for things and you say, you want to  
9 shut down this security research, go find any law that  
10 they have violated at the local, state, federal, or  
11 international level during the course of their  
12 research, that's a much --

13           MS. SMITH: Can I --

14           MR. REID: -- tougher risk calculus to deal  
15 with. I'm sorry, Ms. Smith.

16           MS. SMITH: Can I just probe the 1203 point  
17 for a second since this is, like, marrying the  
18 statutory language and regulatory exemption. Are you  
19 aware of any threatened or actual litigation brought  
20 by -- I don't know how you would describe this  
21 universe, but let's say a universe like the electoral  
22 code purveyors who kind of get into 1201 land because  
23 of this limitation that has been brought. Is this a  
24 real concern?

25           MR. REID: It's a real concern for people

1 who are doing -- and perhaps somebody like Mr.  
2 Williamson can speak to this. This is a real concern  
3 for people who are providing legal advice because the  
4 range of questions that they've got to answer is not  
5 simply, are you doing good-faith security research  
6 within the metes and bounds of § 1201, but is  
7 everything that you are doing consistent with every  
8 other law at every other level of abstraction, and  
9 that's the issue we're --

10 MS. SMITH: Sure, but I think my question is  
11 in the 23 years of the DMCA, have we seen § 1201 being  
12 brought on, you know, added to a state law claim or a  
13 foreign law claim or something else where otherwise  
14 you wouldn't normally think it would be implicated  
15 because of this provision?

16 MR. REID: I mean, again, to the point  
17 that's raised earlier, we've seen relatively little  
18 1201 litigation, and, again, we're operating here  
19 around the need to affirmatively demonstrate. And I  
20 see my colleague, Mr. Reed, raising his hands here. I  
21 would say --

22 MS. SMITH: He's gesticulating.

23 MR. REID: -- no one wants more lawsuits  
24 here, by the way, to the point earlier. But we're  
25 dealing with people who need to affirmatively

1 demonstrate that their behavior is sufficiently not  
2 risky, for example, to get the go-ahead from their  
3 university or their company to move ahead. And when  
4 somebody like Mr. Williams --

5 MS. SMITH: Okay.

6 MR. REID: -- is giving them advice, he  
7 might well say, hey, look, if I've got to justify that  
8 you are complying with every single other law, I  
9 cannot bless you doing this given that you're likely  
10 to run into --

11 MR. GREENBERG: But, again, the question is,  
12 are researchers being told that by university counsel?  
13 Are they being told not, well I can't say you can do  
14 this, but I actually am telling you as, you know, the  
15 legal counsel for your employer that if you do this,  
16 you will not be covered by the university or protected  
17 by the university?

18 MR. REID: I might defer to my colleague,  
19 Professor Halderman, or Mr. Williamson on that one.

20 MR. GREENBERG: Professor Halderman, do you  
21 want to have a response or, if not, Mr. Williamson?

22 MR. HALDERMAN: This is Professor Halderman.  
23 There's only so much that I can say about the content  
24 of conversations with university counsel.

25 MR. GREENBERG: Sure.

1           MR. HALDERMAN: But I will say that this has  
2 been a dimension of conversations that I've had, just  
3 speaking personally.

4           MR. GREENSBERG: Okay. I probably can't --  
5 I hear you just saying you can't really say more than  
6 that. Mr. Williamson?

7           MR. WILLIAMSON: I'll speak to a comparable  
8 limitation, which is, in the reverse engineering  
9 exemption, the "lawfully obtained" language, which I  
10 think in a similar way sweeps in other laws because  
11 you have to ask the question of, you know, what law  
12 might you have broken in obtaining this thing. And so  
13 I have certainly advised developers who were reverse-  
14 engineering software in a way that would otherwise  
15 have been exempt under the exemption, but there was a  
16 concern as to whether they might have violated terms  
17 of service or simply breached contract and, you know,  
18 what other laws might count and how minor a violation  
19 might then give rise to CFAA liability is a real  
20 concern and has been a point of advice.

21           MR. GREENBERG: Okay. Before we move on to  
22 the last thing I wanted to ask about with regard to  
23 the statute itself, but I do want to just ask again  
24 what Ms. Smith mentioned and particularly to you,  
25 Professor Reid, since I know you're really well-versed

1 in this and have been working in this area for many  
2 years, as have many of you, I know. But the fact that  
3 after 23 years, we've seen so few cases regarding a  
4 security research exemption generally, what does that  
5 tell you about how well the exemption is working? It  
6 would seem -- I mean, we hear in this context often  
7 that if something isn't resulting in litigation, it  
8 must be because parties have figured out a way to make  
9 it work.

10 MR. REID: So I think the way to read that  
11 is twofold, and I'll go back to my remarks at the  
12 beginning just very briefly to say, one, the office  
13 has significantly broadened the scope of the exemption  
14 since 2005 and, in tandem, the degree of security  
15 research and the degree of cybersecurity as a national  
16 both threat and policy priority has increased pretty  
17 commensurately. So I think what we're doing each time  
18 we come to this exemption is bringing to you the  
19 increased seriousness, and I think we're in a very  
20 different place than we were 15 years ago in terms of  
21 the type of research that's being done.

22 And so I think, you know, one thing to read  
23 that is the office's continued broadening of the  
24 exemption has been helpful. I think the other way I  
25 would read this, and I would broaden this to § 1201

1 generally, is, as you're considering the balance of  
2 the equities here, consider that § 1201 is basically  
3 never used by the opponents of the exemption in  
4 litigation against, as far as I can tell, just about  
5 anyone for just about anything so that the equities on  
6 the other side are fairly marginal here, particularly  
7 because copyright infringement is always available as  
8 a remedy, as are the other laws that we're talking  
9 about here if they're indeed violated, though, because  
10 of the way that 1203 operates, they may not be  
11 available to the same people, and so that may raise a  
12 different set of questions.

13 MR. GREENBERG: Do the opponents have  
14 anything they want to say in regard to that since that  
15 did sort of sweep in their equities? If not -- yeah,  
16 Mr. Mohr?

17 MR. MOHR: Just that some of this discussion  
18 has been a bit confusing to me in terms of basic  
19 concepts of Article III standing and how -- one,  
20 standing, two, you know, concepts of fair notice that  
21 are routinely imported into the construction of  
22 statutes. Again, you know, there are aspects of this  
23 discussion, I think, where Mr. Troncoso's earlier  
24 comments about the wide range of hypotheticals that  
25 come subject to this proceeding are particularly apt.

1 That's all.

2 MR. GREENBERG: Okay. All right. I --

3 MR. AMER: Can I just follow up quickly  
4 before we move on?

5 MR. GREENBERG: Yeah.

6 MR. AMER: I'm not trying to belabor this,  
7 but, I mean, can you or any of the other opponents  
8 give an example of what sort of work this provision is  
9 doing that is relevant to copyright? I mean, if we're  
10 being told by the agency that enforces these statutes  
11 criminally that this link is not necessary to protect  
12 criminal enforcement of the CFAA or any other relevant  
13 law outside the copyright context, what's the best  
14 argument for retaining it? Yeah, Mr. Williams?

15 MR. WILLIAMS: Thank you. I mean, I think  
16 it's hard to come up with every potential  
17 hypothetical, but there are related statutes that are  
18 of great import to content creators and distributors.  
19 One would be cable and satellite piracy, for example.  
20 And the DMCA was passed after the statute that covers  
21 cable and satellite piracy, and there's a lot of cases  
22 if you go looking out there. There may be more cases  
23 actually under the DMCA related to this than any other  
24 issue about cable and satellite piracy. And so that's  
25 one example of another law that does have a

1 content-based focus that is complementary to the DMCA  
2 and that I don't see a harm in requiring compliance  
3 with both in order to get the benefit of this  
4 exemption. There's probably more examples out there,  
5 but I don't think it's fair to say that all of the  
6 other laws that could be violated have no relationship  
7 to content protection, including the CFAA as well.

8 MR. GREENBERG: Thank you, Mr. Williams. I  
9 am going to move us on to one last question on this  
10 and then the privacy issue, and this is because we  
11 already touched on this and I said we were going to  
12 come back to it. But, to the proponents, I wanted to  
13 ask, because several of the opponents noted the  
14 similar language in 1201(j) regarding other laws, and  
15 the office in 2018 said that it believes it's  
16 generally appropriate for the exemptions to track the  
17 relevant statutory language where possible.

18 Obviously, at the same time, as was noted,  
19 this proceeding is supplemental to the permanent  
20 exemptions and is designed to fill gaps where a need  
21 may have arisen that Congress didn't foresee. So the  
22 question the office has is, why shouldn't that  
23 principle continue to apply, that principle of  
24 tracking the relevant permanent exemption language  
25 where appropriate? And do you find a problem with the

1 register recommending temporary exemptions that use  
2 broader language on this limitation than the permanent  
3 exemption? Mr. Reid?

4 MR. REID: This is Blake Reid. Mr.  
5 Greenberg, could I ask you to clarify what you mean by  
6 "broader" in the last question?

7 MR. GREENBERG: Yeah, broader in terms of it  
8 maybe would remove some of the limitations that would  
9 be in the permanent exemption.

10 MR. REID: Absolutely. So I'd first note,  
11 you know, I think it was 12 or 13 years ago when we  
12 first -- when I was first asked about 1201(j), and  
13 we've established many times over the years the  
14 infirmities and shortcomings of § 1201(j), and I would  
15 note that those are baked into the office's renewal of  
16 the existing exemption. The scope of the current  
17 exemption importantly goes beyond 1201(j) in a whole  
18 range of respects.

19 And so I would suggest that as a general  
20 matter, that's a settled question that hasn't been  
21 properly noticed in the current context that we're in,  
22 whether it's appropriate as a general matter. I think  
23 it's well-settled, and I think proponents and  
24 opponents alike have stipulated to that.

25 As to the specifics of the exemption, I

1 think Mr. Scarbeary pointed out earlier exactly the  
2 point here, which is Congress didn't know in 1998 what  
3 sort of world we would be living in. I think, if you  
4 said to the drafters of the DMCA that we would be  
5 dealing with, you know, foreign actors conducting  
6 cyber attacks on electronic voting machines and that  
7 copyright law was somehow going to be in the mix, I  
8 think they would have been quite horrified and I think  
9 they might have drafted the DMCA in a different way.

10           The one wise thing that the drafters of the  
11 DMCA did, or one of the wise things that the drafters  
12 did, was they put in this triennial review process and  
13 quite explicitly in the legislative history at several  
14 points that the purpose of this is to exercise some  
15 humility here and understand that the world that we  
16 were living in in 1998 may not be the world that we  
17 live in for the duration of this exemption.

18           And so I think the sort of calls to import  
19 pieces of the permanent exemption, whether that's  
20 1201(j) or 1201(i) or (g) or (f), are appropriate only  
21 insofar as the current world that we live in bears any  
22 resemblance to the world that we lived in in 1998.  
23 And I think I could pretty unequivocally say, and I'm  
24 sure Professor Halderman can speak to it in greater  
25 depth, that with respect to security and with respect

1 to the kinds of security threats that we deal with and  
2 the important role of independent security research,  
3 that the world we live in today looks almost nothing  
4 like 1998, and so continuing to call back to the  
5 statutory exemptions, I think they are effectively,  
6 you know, relative to the temporary exemption, we've  
7 so far moved past them in the last dozen years of this  
8 rulemaking that I'd urge us not to go back to them. I  
9 don't think they have much relevance here.

10 MR. GREENBERG: Okay. Thank you.

11 Professor Halderman, can I just ask you to  
12 briefly, and I really mean briefly, respond to what  
13 Professor Reid just said about how much the world has  
14 changed? Then I want to go to Mr. Taylor and Mr.  
15 Williams, if your hand is still meaning to be up --  
16 it's not. So Mr. Taylor and then I want to move on.  
17 So, Professor Halderman, is there anything you want to  
18 quickly add to what Professor Reid just said?

19 MR. HALDERMAN: Well, just Professor Reid is  
20 exactly right. The world looks completely different  
21 today in terms of cybersecurity threats and in terms  
22 of the shape of the defensive community of how much we  
23 are relying on a broad community of academics and  
24 individuals and companies to keep all parts of our  
25 infrastructure and society safe. So --

1           MR. GREENBERG: I just want -- really  
2 quickly, I'm sorry, I didn't want to ask this, but I  
3 do now. Causation, though, remains an issue, right?  
4 So you're saying that circumvention is needed to do  
5 the research that you and others want to be doing. It  
6 is needed in the 21st century. It can't be done  
7 through other means that don't involve circumvention?

8           MR. HALDERMAN: Often that's the case, yes.

9           MR. GREENBERG: Okay. Mr. Taylor?

10          MR. TAYLOR: Yes, real quick. I would just  
11 point out that when you ask about whether or not the  
12 statutory language should be imported into the  
13 exemption, I would just go back to the purpose of this  
14 rulemaking. The prohibition is a broad prohibition.  
15 The permanent exemptions are fairly narrow, and the  
16 exemptions that you're supposed to create in this  
17 rulemaking are supposed to be on evidentiary record.  
18 So, if there is no compelling reason to remove the  
19 statutory language, then that's because the proponents  
20 haven't proffered enough evidence.

21          MR. GREENBERG: Okay. Thank you. So I want  
22 to move on now to privacy. I do want to make sure  
23 everyone saw in Software Freedom Conservancy -- did I  
24 get that right? I believe I did. In their reply  
25 comments, that they originally had made a proposal for

1 a temporary exemption. The substance of the exemption  
2 didn't really change. But, in their reply comments,  
3 they did take the position which had been suggested by  
4 some of the opponents that it really belongs in a  
5 different request for a different temporary exemption.  
6 So just want to make sure everyone's aware of that.  
7 And then I just want to ask a few questions regarding  
8 the substance of the exemption itself.

9           So several of the commenters said they  
10 opposed the privacy exemption for security research  
11 because the current exemption already covers privacy  
12 research. DOJ and Rapid-7 both basically said, if I  
13 understood correctly, the current good-faith security  
14 research exemption covers the type of privacy research  
15 that Software Freedom Conservancy was asking for an  
16 exemption for. And Consumer Reports said that they  
17 were in support of the office simply clarifying that  
18 the current exemption already covers this, so maybe  
19 they didn't think the language was clear enough in the  
20 register's recommendations but that the regulatory  
21 language itself should and did.

22           So to what extent does the current security  
23 research exemption cover these uses? And to be clear,  
24 Software Freedom Conservancy asked for support to  
25 cover not just privacy research but permitting the

1       disabling of functionalities that enable a product to  
2       obtain access to personal information. So if we could  
3       start with, Mr. Williamson, I'm curious of your  
4       thoughts on to what extent the current exemption  
5       covers that, and then some hands.

6               MR. WILLIAMSON: Sure. So, you know, what  
7       we pointed out in our initial proposal is that the  
8       security research exemption, you know, requires this  
9       nexus to a security flaw or vulnerability, and we gave  
10      examples of a couple of specific, you know, sort of  
11      privacy research publications where, you know, the  
12      researchers were effectively researching whether  
13      personal information was being disclosed in a way that  
14      was not necessarily insecure but was otherwise  
15      violative of privacy. For example, it was contrary to  
16      the product producers' disclosed privacy practices.  
17      And so our contention there was it was not clear that  
18      these issues could be called security flaws or  
19      vulnerabilities.

20             Now I also want to exercise some humility  
21      here. Software Freedom Conservancy represents the  
22      interests of users of products and software. We do  
23      not necessarily represent the security research  
24      community directly, and I recognize that there is  
25      expertise on this panel that we don't necessarily

1 have, and so I certainly, you know, would like to give  
2 proper deference to the opinions of those who are in  
3 the weeds doing this work.

4 MR. GREENBERG: So I do want to hear from  
5 others, but I do want to ask you one quick follow-up  
6 question, which is the request asking for the  
7 exemption to cover disabling of functionalities, et  
8 cetera. That has some historic comparison in the  
9 phone unlocking situation. But the justification for  
10 allowing circumvention for this purpose was not  
11 clearly spelled out in the petition or the subsequent  
12 comments that were filed. So can you just clarify the  
13 rationale for why that would be justified under the  
14 triennial rulemaking process and under this exemption?

15 MR. WILLIAMSON: So, you know, I think that  
16 we distinguished in our initial comment that, you  
17 know, we recognize that that consideration was really  
18 more relevant to the permanent statutory exemption at  
19 § 1201(i) and that this process probably wasn't the  
20 appropriate place to discuss sort of individual  
21 remediations of privacy issues. And so, you know,  
22 that was sort of our position, was that we were  
23 focusing on the exemption for researchers and we made  
24 a sort of general recommendation to the office to  
25 consider some expansions to 1201(i) as a sort of

1 recommendation to Congress, but we recognize that  
2 that's not something we can really address here.

3 MR. GREENBERG: I'm actually kind of  
4 wondering if we can resolve this pretty easily. I  
5 just wonder if -- it sounds to me, and I did see that  
6 in your comments, but like you would support removing  
7 that portion of the requested temporary exemption and  
8 just we could clarify the language so that it would  
9 cover the type of privacy research that DOJ and Rapid-  
10 7 and others are saying already is covered by the  
11 current good-faith security research exemption. Would  
12 that be an accurate framing of your position on this?

13 MR. WILLIAMSON: Yeah, if the office was  
14 willing to clarify that these activities that we've  
15 outlined are covered by the existing exemption, then I  
16 think that that would cover our concerns.

17 MR. GREENBERG: Okay. Thank you.

18 Mr. Troncoso, do you have thoughts on that?  
19 I know actually BSA was cited specifically in the  
20 comments as being supportive potentially of this as a  
21 separate exemption.

22 MR. TRONCOSO: So I think that it is  
23 certainly deserving of consideration, and I think we  
24 would need to look at a fulsome record to really put a  
25 finger on sort of the scope of what that sort of

1 exemption would cover. I do want to flag some  
2 concerns with the Software Freedom Conservancy's reply  
3 filing and the sort of language that they highlighted  
4 as a potential path for creating a new exemption. If  
5 you look at the language that they've suggested, it  
6 would allow for circumvention to remove functionality  
7 in any software program that collects or disseminates  
8 personally identifiable information regardless of  
9 whether that is functionality that the user of that  
10 program is made well aware of.

11 So this is not necessarily like a flaw in  
12 the program or a vulnerability in the program. So,  
13 you know, I take the Software Freedom Conservancy's  
14 point that there are certainly instances where there  
15 are flaws in programs that are making people's  
16 personally identifiable information available in ways  
17 that neither they nor any reasonable user would  
18 expect, and we want people researching that sort of  
19 thing. But the language that they've proffered here  
20 would be a far broader exemption than that.

21 MR. GREENBERG: Yeah, I do want to follow up  
22 on that, Mr. Williamson. To what extent is the  
23 problem here caused by anti-circumvention  
24 prohibitions? And to what extent is it about market  
25 decisions and is there a market solution, right? You

1 walk with your feet. You know, as a consumer, you  
2 just don't use the cell phone company that's selling  
3 all of your data and all of your geotracking location  
4 information. You go to a cell phone company that's  
5 offering you more privacy.

6 MR. WILLIAMSON: Sure. Well, I'd first like  
7 to point out that, you know, I think the language  
8 being referred to is in our initial comments and not  
9 in our reply. Our reply was basically on the security  
10 research exemption. You know, we addressed this  
11 general point that, you know, privacy concerns in the  
12 U.S. are sort of generally addressed by this. You  
13 know, you've got notice and choice to, you know,  
14 choose the products that you think will preserve your  
15 privacy.

16 I think what history has borne out is that  
17 consumers are not well-equipped to make these  
18 judgments sort of a priori. It tends to be after  
19 security researchers, privacy researchers, have gotten  
20 in there and demonstrated issues. So I think of, for  
21 example, the Samsung television that responds to voice  
22 commands, and, you know, a lot of people bought it and  
23 then were surprised to find out what responding to  
24 voice commands means is that there's this constant  
25 stream of voice communication being recorded, you

1 know, all the time and being sent back to Samsung's  
2 computers somewhere, right?

3 And so even where the feature itself is sort  
4 of well-disclosed and you could say, you know, they  
5 had notice of it, it's not clear to most consumers  
6 what that actually means in terms of privacy concerns.  
7 And so I think that it's not sufficient to protect  
8 consumers.

9 MR. GREENBERG: Okay, Mr. Reed? And then  
10 Professor Reid. Mr. Reed, you're muted.

11 MR. REED: I think I'd love to see what Mr.  
12 Williamson's text is. But he does point to something  
13 that we're all working on and considering, which is  
14 the differentiation between what's disclosed in a  
15 notice-and-consent regime where, in fact, people are  
16 consenting to something they're not aware of. So,  
17 like Christian, this is something that our industry is  
18 obviously very attentive to. And it's worth recalling  
19 that the FTC has oversight over this under Unfair and  
20 Deceptive Trade Practice, but to Mr. Williamson's  
21 point that I'm sure he would make is, but if we don't  
22 know that that's happening, then we can't go to the  
23 FTC.

24 So I want to make sure whatever exemption  
25 that they're requesting is limited to the ability of

1 security researchers to help find that and to work  
2 with industry to discover those problems as opposed to  
3 the original proposal, which also included the ability  
4 to make tools that would essentially disable  
5 functionality. That creates its own separate  
6 problems.

7 So we're probably in a place where we may be  
8 able to agree. I'm caveating that. But I think Mr.  
9 Williamson raises points that I think all of us on the  
10 software industry side are very well aware of and are  
11 participating in this kind of industry shift away from  
12 a consent regime that doesn't reflect what people are  
13 accurately consenting to. So I'd love to see the  
14 final language on that so that we may be able to  
15 support.

16 MR. GREENBERG: Can I just ask, do any of  
17 the opponents disagree that the current good-faith  
18 security research exemption covers good-faith security  
19 research for the purpose of detecting privacy flaws  
20 and things like that?

21 MR. REED: No, we do not disagree.

22 MR. GREENBERG: Okay. Mr. Troncoso, I saw  
23 you nodding your head. BSA does not disagree with  
24 that either?

25 MR. TRONCOSO: I don't disagree.

1           MR. GREENBERG: I think, on this, we may  
2 have a point of agreement that we could clarify or  
3 solidify through a post-hearing letter, so we may  
4 follow up on this. I need to talk with my colleagues.  
5 This is my first time doing this, so, hopefully, I'm  
6 not speaking out of turn. But it is nice to hear the  
7 proponents and the opponents sharing some agreement on  
8 this point. Unless there's anything -- yes, Professor  
9 Reid, I see your hand is still up. If it's brief,  
10 I'll note we're almost 10 minutes over. But, if it's  
11 brief -- just anything you wanted to add?

12           MR. REID: I'll note that Mr. Scarbeary and  
13 I are late for my class, so I'll be very quick and say  
14 that I think we're largely in agreement as well with  
15 the position that Rapid 7 has struck out that the  
16 security exemption largely covers the kinds of privacy  
17 researching activities that have been discussed. We  
18 would urge if the office were to take a different  
19 result to recall that the scope of the term "security"  
20 has been recommended for renewal in the existing  
21 exemption. So that should take great care not to  
22 suggest any narrowing of that term that hasn't been  
23 properly noticed or comments solicited on it, which  
24 would potentially give some rise to some APA problems.  
25 Thanks.

1           MR. GREENBERG: Okay. Thank you. So, with  
2 that, I'm going to dismiss us all for lunch. I know a  
3 handful of us are getting back on this in about 30  
4 minutes probably. So thank you all for being a part  
5 of this session. I hope it was as much fun for you as  
6 it was for me. And it was definitely very informative  
7 to have you all helping us fill out this record. So  
8 thank you.

9           (Whereupon, at 12:39 p.m., the hearing in  
10 the above entitled matter recessed, to reconvene at  
11 1:30 p.m. this same day, Thursday, April 8, 2021.)

12 //

13 //

14 //

15 //

16 //

17 //

18 //

19 //

20 //

21 //

22 //

23 //

24 //

25 //



1 MS. SMITH: Mr. Zambrano Ramos?

2 MR. ZAMBRANO RAMOS: Hi. Good afternoon,  
3 everyone. Luis Zambrano Ramos, Policy Analyst at  
4 NTIA's Office of Policy Analysis and Development.

5 MS. SMITH: Thank you. And, Mr. Pearlman,  
6 could you please introduce yourself and have your  
7 students introduce themselves as well?

8 MR. PEARLMAN: Jef Pearlman from USC on  
9 behalf of the Coalition of Medical Device Patients and  
10 Researchers, along with my two students, who will  
11 introduce themselves. Keon, let's have you go first.

12 MR. ZEMOUDEH: Hi. Keon Zemoudeh, Clinical  
13 Intern at the USC Intellectual Property & Technology  
14 Clinic, on behalf of the Coalition as well.

15 MS. MCCLELLAN: And Kate McClellan, Clinical  
16 Intern with the USC Intellectual Property & Technology  
17 Law Clinic, also representing the Coalition.

18 MS. SMITH: Great. And, Mr. Reed, could you  
19 introduce yourself for the record?

20 MR. REED: Yes. My name is Morgan Reed. I  
21 am the President of The App Association, but, for  
22 today, I am here in my role as the Executive Director  
23 of The Connected Health Initiative. I am also a  
24 member of Health & Human Services' Federal Advisory  
25 Committee for Education and Outreach and am an

1 intervener with the FDA's work on quality metrics.

2 MS. SMITH: Great. Well, we're looking  
3 forward to this afternoon's discussion.

4 Mr. Amer, would you like to kick it off?

5 MR. AMER: Sure, thank you. So I think we  
6 wanted to start off with just sort of a general  
7 question for the proponents. You know, we see that  
8 you are seeking to remove certain language from the  
9 current exemption. If you could just kind of briefly  
10 summarize what the need is for the expansion,  
11 including any particular examples you can provide of,  
12 you know, an interest in or a need to circumvent  
13 additional categories of devices beyond what's  
14 currently covered.

15 MS. MCCLELLAN: Yeah. So we're currently  
16 seeking an expansion to include non-implanted medical  
17 devices. The current exemption includes just  
18 implanted or partially implanted medical devices. So  
19 some examples of those would be CPAP machines, hearing  
20 aids that contain data-logging mechanisms and, you  
21 know, maybe wearable cardioverter defibrillators.  
22 But, essentially, we're seeking the expansion because  
23 patients should be able to access the data from  
24 medical devices regardless of whether or not they're  
25 implanted or non-implanted. And there's been growth

1 in this area with non-implanted medical devices. It's  
2 continuing. It will be, you know, an area where  
3 there's going to be continued growth in new medical  
4 devices that aren't implanted. And so we're seeking  
5 to expand the exemption to, you know, allow that in  
6 the next three years.

7 MR. AMER: Thank you. Mr. Reed, I'd like to  
8 turn to you. I just want to make sure I am clear on  
9 the basis for your objection. So I know you're not  
10 here specifically on behalf of The App Association,  
11 but your comments do talk about an impact on app  
12 developers. You say it would, the expansion would  
13 impact the ability of app developers to successfully  
14 compete in the mobile health marketplace. Could you  
15 expand on sort of the specific basis for your concern  
16 or your concerns?

17 MR. REED: Right. I think the easiest thing  
18 is that we agree with Ms. McClellan that patient  
19 access to data is something that's really important.  
20 In fact, in our filings with the Office of National  
21 Coordinator under the anti-blocking rules, our work  
22 with Food and Drug Administration on, jeeze, dating  
23 back to the September 2013 mobile medical applications  
24 guidance and the cybersecurity guidance as well, a  
25 through line on this has been ensuring patient access

1 to data.

2 The problem with the petitioners' request is  
3 it essentially ignores the work that's being done by  
4 quite literally every other regulatory body in this  
5 space to make patient information more available in a  
6 safe and secure manner because, on its face, the  
7 petitioners' request is more about a right to hack  
8 than it is for a patient to access information.

9 So we think that right now the existence of  
10 the Food and Drug Administration's recommendation, the  
11 Center for Excellence, and the 2015 guidance that now  
12 Center for Excellence head Bakul Patel put forth is  
13 still vital and valid, and that is that the  
14 methodology by which patients should have access to  
15 their records is something that is viable under other  
16 laws, and a copyright change is something that raises  
17 significant security risks that we think is not  
18 warranted, and so long as we have these other avenues,  
19 we think that's the better process to pursue.

20 MR. AMER: Okay. Thank you. Let me just  
21 mention one sort of logistical item, and that is, if  
22 you would like to speak, we found it helpful if folks  
23 could use the "Raise Hand" function that hopefully you  
24 can see on your screens. It's also fine to just sort  
25 of wave your hand. We have a small enough group here

1 that I think we should be able to see everybody pretty  
2 easily. So, Mr. Reed, if I can just follow up, so  
3 just to sort of make sure I understand the specific  
4 basis, so is this objection one that is tied  
5 specifically to a change that is being proposed here?  
6 I mean there --

7 MR. REED: Correct.

8 MR. AMER: I mean, so how is that concern or  
9 to what extent is your concern applicable in the  
10 context of this new expansion but maybe less relevant  
11 under the current exemption?

12 MR. REED: Right. I think the real problem  
13 is that the -- we're facing an obvious push and pull.  
14 The Food and Drug Administration, the FDA's device  
15 center is essentially saying to us we must increase  
16 our use of TPMs, we must increase our use of  
17 encryption and, as the Petitioner notes, that this  
18 change is happening at the FDA, their request is  
19 fairly straightforward and that is, well, if the FDA  
20 is going to require all of these TPMs to be put into  
21 place, we should have an exemption that allows us to  
22 circumvent said TPMs in order to have access to the  
23 patient data.

24 And since the FDA already offers  
25 methodologies for patients to request data and to

1 petition the FDA if the devices aren't providing it  
2 appropriately, it puts us in a real conundrum: how do  
3 you meet the requirements of your 510K and the  
4 upcoming suggested whole effort that we're doing  
5 around a pre-certification program if there exist in  
6 copyright law in a 1201 exemption that we have to  
7 allow for our devices to be hacked or that we have no  
8 legal recourse if our device is hacked?

9           So it puts a lot of question as to how we  
10 could move forward. Specifically, if you look at the  
11 Petitioners' request, as noted, they want to move  
12 beyond the embedded devices. But it also goes so far  
13 as to say it's not just merely to pull the data out  
14 passively. It's to engage with that data to then do  
15 other activities with it and the device itself. So it  
16 really is a more intrusive hack than merely monitoring  
17 the stream of data that comes off.

18           So, with regards to the request, I think we  
19 all agree patient access to data is the outcome that  
20 should be, that's worth seeking. But having the  
21 access only done through violating a TPM or to break a  
22 TPM is essentially putting patients at risk, and we  
23 see that as the biggest part of the problem with the  
24 request as it stands.

25           MR. AMER: Okay. So you mentioned a couple

1 of items there. So you mentioned the piece about  
2 removing the passive monitoring language, and we're  
3 going to get to that. But the first thing you said  
4 seemed to have to do with circumvention more  
5 generally, and I know that there was no opposition  
6 filed to renewal of the current medical device  
7 exemption. So I'm just trying to understand, you  
8 know, if circumstances have changed such that there  
9 are different, you know, FDA obligations that we  
10 should be aware of?

11 MR. REED: Oh, yeah. So that's a good  
12 question, Mr. Amer. The part to think about is so our  
13 industry -- and I know this gets into an area that  
14 isn't normally covered, Software as a Medical Device,  
15 sometimes called SaMD or SaMD. We're really moving to  
16 a world where the FDA is very engaged on questions  
17 around not a device that's just implanted but that  
18 software itself can be considered a medical device.

19 And as part of that, the FDA is moving  
20 forward on something called a pre-certification  
21 program because, frankly, again, when you develop a  
22 medical device, whether it's software or something  
23 physical, you build it, you complete the product, then  
24 you go through what's called a 510K process, whereby  
25 they review the product as it stands.

1           Now, within that context, you are allowed to  
2 provide certain security updates or modifications for  
3 cybersecurity risks, but they're very limited and very  
4 narrow because, if any of the changes you make after  
5 you receive your 510K approval make substantive  
6 changes or changes the labeling of your medical  
7 product, you have to repeat your 510K process  
8 altogether. So the FDA is now moving forward and  
9 saying wait a minute, this slows the process by which  
10 medical devices can get into the hands of consumers,  
11 into hands of patients.

12           So they've undertaken a move forward on a  
13 pilot project called a pre-certification program,  
14 which essentially says, as a company, I can go to the  
15 FDA and I can show them my development methodology, my  
16 -- the way that I do privacy and security internally,  
17 the way I do privacy by design and security by design,  
18 and I essentially can shorten the period of time that  
19 it takes to get my device from the entry door at the  
20 FDA into the hands of patients. And the FDA has said  
21 at multiple sessions that both privacy and security,  
22 security in particular, cybersecurity in particular is  
23 of paramount importance for being approved as part of  
24 a pre-certification process.

25           If the 1201 process now says, yeah, but

1 really, you know, there's going to be people hacking  
2 your device and they want to be able to modify it and  
3 make changes to it --

4 MR. AMER: Yeah. Could I just interrupt you  
5 for --

6 MR. REED: -- the FDA is going to -- so the  
7 major change that's going on right now is an  
8 industrywide change to figure out how do we get  
9 products in the hands of consumers faster yet still  
10 meet the FDA's cybersecurity requirements.

11 MR. AMER: Right. But the question was,  
12 wasn't that also true previously under -- or now under  
13 the current exemption?

14 MR. REED: No, no, there has been a change  
15 in the philosophy at the FDA. The FDA has starting --  
16 you can see it start with their 2013 guidance around  
17 mobile medical applications and the addition of what's  
18 called a risk triangle, through to more recent  
19 guidance that's come out under Gottlieb and now moving  
20 forward under the new administration, is this idea of  
21 how do we get products through the pipeline quicker,  
22 so it is a change philosophically in what the FDA is  
23 asking us to do.

24 Now, notably, sorry to go on, but notably,  
25 the thing to note is that the Office of National

1 Coordinator over at HHS is doing the very thing that  
2 Ms. McClellan asked for, which is to demand from EHR  
3 vendors and everyone else that patients have access to  
4 their health records. So FDA is saying make it  
5 secure. HHS is saying make sure there's patient  
6 access. Right now, the industry can meet those goals,  
7 well, hopefully, will meet those goals and will do it  
8 successfully. The injection of this idea of, oh, yes,  
9 and there's also this 1201 exemption for hacking and  
10 essentially right to hack or right to change the  
11 device really puts a lot of that in question.

12 MR. AMER: Okay. And I'm going to just ask  
13 one more follow-up and then I'm going to ask the  
14 proponents to step in. But it's not really an  
15 injection of anything new from our standpoint, is it?  
16 I mean, I guess I'm kind of --

17 MR. REED: Yeah, I'm sorry. If their  
18 exemption were granted, yes, it wouldn't change.

19 MR. AMER: But can you explain then why you  
20 did not oppose the renewal of the existing exemption?

21 MR. REED: The current exemption is passive  
22 for data or wholly implanted devices. And so, again,  
23 passive data collecting isn't the same as actually  
24 changing the underlying software or directly engaging  
25 with the underlying software of the device. I think

1 as an industry we can find ways to ensure that the  
2 underpinning code base is secure, and I want to be  
3 very careful. I think that we have a -- we can be in  
4 a good position where the passive gathering of data --  
5 and remember it's patient records, their data. I  
6 think that's something that can be done in a way that  
7 facilitates patient access but doesn't put the  
8 underlying secure code at risk. This expansion is a  
9 change in that.

10 MS. SMITH: Can I ask, is it two aspects of  
11 the expansion that we're talking about, or is it the  
12 same aspect?

13 MR. REED: Two.

14 MS. SMITH: Because there's passive  
15 collection of data, okay.

16 MR. REED: You're on it.

17 MS. SMITH: So there's passive collection of  
18 data that seems okay. And the difference is whether  
19 the medical device is implanted or not implanted, is  
20 that not a distinction really worth worrying about to  
21 you?

22 MR. REED: Yeah, I think that's a  
23 distinction.

24 MS. SMITH: Okay.

25 MR. REED: I think we agree with the

1 petitioner in the sense that the continued growth of  
2 medical devices that are, in fact, wholly contained in  
3 software is something that is going to continue to  
4 expand. The question is, how do we properly secure  
5 patient safety in that environment? And so the  
6 passive collection of data is something that can --  
7 there are ways to do it. But hacking the device is  
8 something that puts patient safety at risk and really  
9 puts us at odds with what our regulators are asking us  
10 to do in these other environments.

11 MS. SMITH: Okay. So implanted versus not  
12 implanted is not the question. Okay. Thank you.

13 MR. REED: I think it ends up being a  
14 distinction without a difference because, you know,  
15 where it sits on your skin, how we engage with it, I  
16 think it's one of those where, again, a lot of this is  
17 in constant motion. We're hopefully developing  
18 amazing wearables that are more able to do things than  
19 you can do with an implanted today. But that's where  
20 the industry is hoping to go. So I think that the  
21 passive gathering of data is something that, whether  
22 it's implanted or not, is not the primary area of  
23 concern that we have.

24 MR. AMER: Okay. Mr. Zambrano Ramos, I  
25 think you have a question?

1                   MR. ZAMBRANO RAMOS: Yes. Thank you, Mr.  
2 Amer. This question is for Mr. Reed. I was hoping  
3 you could elaborate a little bit more on this notion  
4 that the 1201 process kind of would inhibit you from  
5 following other directives from other federal  
6 agencies, that you have to build a strong network.  
7 I'm not sure that the 1201 process requires you to not  
8 do that or do the opposite. So I'm just curious if  
9 you could elaborate a little bit more what you're  
10 saying about that.

11                   MR. REED: Right. No, that's a great  
12 question. So the problem is, again, back to the  
13 direction that the FDA and other regulatory bodies  
14 have headed with us, which is we want you to show us  
15 how you are securing your device, how are you limiting  
16 access to your device, right? So they want us to  
17 demonstrate, as petitioner noted, all of the ways in  
18 which we are building stronger and more capable TPMs.

19                   So within that framework, if there exists  
20 the idea that there is no legal recourse under 1201 or  
21 under any legal recourse -- because, remember, there  
22 was a little confusion in the petitioners' request.  
23 The FDA doesn't regulate patients, it regulates  
24 medical devices. And so Petitioners said, well, the  
25 existing FDA laws still apply, and so, if a patient

1 does something, nothing happens to a patient. The FDA  
2 doesn't regulate patient activity, it regulates us,  
3 medical devices.

4 So the problem that we run into is, in order  
5 to allow what's being requested by petitioners, we  
6 will find ourselves in a position where we need to  
7 demonstrate to the FDA all of the TPMs that we're  
8 putting into place. And if there is a legitimate 1201  
9 exempted use that's undergoing at the same time,  
10 especially one that could end up leading to harm, the  
11 FDA is going to say, well, what are you doing to  
12 prevent this use?

13 And it's very reminiscent of what happened  
14 recently to Medtronic and the Minimed 503. There was  
15 not actually a hack, nobody died, and there was no  
16 harm to patients, but what was discovered is that  
17 Medtronic had not secured their network stack  
18 carefully enough and they had to do a recall on an  
19 insulin pump. So even though petitioners are  
20 requesting the ability to do a little more intrusive  
21 hacking and listening, we have our regulators saying,  
22 if you don't light it down -- lock it down tighter,  
23 we're going to make you pull your product off the  
24 market until you then make that modification. So  
25 that's some of the concern.

1           MR. AMER: Okay. But you can make the TPMs  
2 as strong as you want, right? I mean, this doesn't  
3 place in any respect --

4           MR. REED: Well, that's -- yeah, that's  
5 the -- and then we have the escalated --

6           MR. AMER: -- a genuine exemption -- a  
7 genuine exemption --

8           MR. REED: Right. That's --

9           MR. AMER: -- doesn't place any obligation  
10 on you to alter your practices with respect to  
11 implementing code of law.

12           MR. REED: So now we're in the arms race  
13 game, right? Now we get into the arms race game. And  
14 what makes this a little different than the  
15 traditional consumer products as far as arms race is  
16 remember we are very limited on the changes that we  
17 can make that don't trigger an additional 510K  
18 process. So, unlike the arms race that could happen  
19 on say Netflix, where somebody hacks it, they modify  
20 the code, it gets hacked, they modify it, we have to  
21 be very careful that modifications that we make to a  
22 medical software doesn't trigger an additional 510K  
23 review. So what you described, Kevin, is right, we  
24 can build better TPMs and we will. But understand, if  
25 there are legitimate legal attacks that are coming,

1 we're going to be facing additional escalation.

2 MS. SMITH: Well, I guess I have a question.  
3 Are you suggesting that if this adjustment is made  
4 that the TPMs that are employed will be so, you know,  
5 deprecated that you'll be able to no longer use them?  
6 In which case I wonder, is that something we could  
7 address by the contours of the proposed adjustment?  
8 Because we do have exemptions in other instances,  
9 right --

10 MR. REED: Right.

11 MS. SMITH: -- for Blu-ray discs or DVDs,  
12 and those are still in the market because they are --

13 MR. REED: Right. They're in the --

14 MS. SMITH: -- we do not prohibit going  
15 after people who violate, you know, who go outside the  
16 bounds of something that is likely to be  
17 non-infringing.

18 MR. REED: So I think part of the problem  
19 with this is I would make a venue argument. The  
20 proposed construct of the ONC rules guarantees sharing  
21 of patient information with reasonable safeguards,  
22 including ones that protect security. So we're bound  
23 by those Office of National Coordinator rules to do  
24 this. So that's part of the problem that we have from  
25 the get-go. Your question is, well, could we find

1 contours? I'd argue the goal of the petitioner is  
2 already being met in other venues, and this opens the  
3 door to abuses or potential abuses that I don't think  
4 are necessary to achieve the goal.

5 MS. SMITH: Well, I guess there's two  
6 issues, right? Under the statute, if there's not an  
7 adverse effect, and it's already achievable, that's  
8 another issue we can look at, we should probe those  
9 questions. But, if you are saying on this question  
10 that this exemption will cause some harm to the  
11 industry, I think we want to understand a little bit  
12 more where that concern is coming from and I want to,  
13 like, have a little history.

14 MR. REED: Oh. Yeah, I think -- I'm sorry.

15 MS. SMITH: But let me just say one thing  
16 because we heard from the FDA in 2015 and they didn't  
17 really indicate a reliance interest on the DMCA. They  
18 did express some statements about the original medical  
19 device data limitation, and how the Register addressed  
20 it at that time was to give a 12-month grace period to  
21 allow agencies to adjust and, you know, to the extent  
22 there was any reliance interest, you know, take it  
23 back into their own areas of expertise and not part of  
24 the copyright law, right, because we're trying to  
25 center our rulemaking on the adverse effects on likely

1 non-infringing use questions.

2 MR. REED: Right.

3 MS. SMITH: So I don't know if you can say  
4 anything to help us figure out if conditions have  
5 changed --

6 MR. REED: Yeah, I think --

7 MS. SMITH: -- or what to make of it. Thank  
8 you.

9 MR. REED: I think that the reality is the  
10 petitioner has gone further than the 2015 requests.  
11 Remember this is much more akin to a right-to-hack  
12 exemption than it is merely a patient data access  
13 question, and I think that's the thing that is  
14 concerning. As you point out, the previous  
15 exemption -- and we didn't object to the previous  
16 exemption in this case as well because I think it's  
17 something that, as you say, can respectfully center  
18 itself in where it should be standing on copyright  
19 law.

20 But the door-opener here to much more  
21 intrusive hacking onto medical devices is the area  
22 that raises the concern. So I think, if you look back  
23 at the 2015 letter and what they said and how do they  
24 do it, I think the two changes in industry between  
25 2015 and now is this incredible pressure to provide a

1 quality basis and a pre-approval on privacy and  
2 security before your product -- before you've even  
3 gone through a 510K. So between 2015 and now, you  
4 have our primary regulator asking for this.

5 So I think back to your primary question, if  
6 we center this on the copyright angle, it's broader  
7 than -- it's far broader than 2015. I don't think  
8 petitioners' request makes the case that it's vital.  
9 And since other agencies are doing the very things  
10 that they're asking to do, I think the uncertainty  
11 created by their request, the potential harm created  
12 by their request and the breadth of the potential  
13 request, I just don't think there's enough there there  
14 to merit where their request is going. And, again, we  
15 stand by the fact that we're not opposed to their  
16 original 2015 request moving forward as it stands.

17 MR. AMER: Okay. I see, Mr. Zemoudeh, I'm  
18 going to go to you if you'd like to respond to what's  
19 been said. And then I do think we want to after that  
20 drill down a bit on this idea of passive versus active  
21 monitoring, and so we'll have some questions on that.  
22 Mr. Zemoudeh?

23 MR. ZEMOUDEH: Sure, yeah, and I can address  
24 some of that right now. Just to respond to a few  
25 things that opposer has said, first of all, this is a

1 modest expansion, we are not going to be attempting to  
2 change requirements for device manufacturers. As the  
3 Copyright Office has stated, we wouldn't be -- the  
4 exemption wouldn't be limiting the ways in which  
5 manufacturers can implement TPMs on their devices.  
6 And moreover, this is just -- this exemption is just  
7 for access to data. Opposer suggests that non-passive  
8 monitoring would lead to access to software code, but  
9 that is not the case in many cases of non-passive  
10 monitoring.

11 For example, in our comment, we describe SD  
12 cards on CPAP machines, and to get the data off an SD  
13 card in no way touches on the software code of the  
14 device. The SD card only stores data. That is its  
15 main function. And there is some circumvention of  
16 TPMs that is required to get that data, but there is  
17 no software code that is implicated. And we can go  
18 into other ways of non-passive monitoring that we  
19 foresee happening in the future, but, before we get  
20 there, I'd also like to mention some other points that  
21 opposer made.

22 MR. AMER: Sure.

23 MR. ZEMOUDEH: Yeah. So, as far as other  
24 penalties under other regulations, those would still  
25 be available. And even if the FDA does not regulate

1 patients, as opposer suggests, there are other laws  
2 and regulations that would, such as the CFAA or HIPAA.  
3 So those penalties are still in place and those might  
4 even be more tailored and more nuanced regulations  
5 that would be able to address the violations in a  
6 better way, and they might even be less severe, those  
7 penalties under those other regulations, and we  
8 wouldn't want to overpenalize patients under the DMCA  
9 when other regulations do a better job of it.

10 Further, opposer mentioned that there are  
11 other procedures under the FDA under which patients  
12 can get data. However, that is not the case. Under  
13 the FDA website that opposer pointed to in their  
14 opposition, you could complain to the FDA about  
15 malfunctions in your device, but that in no way  
16 implicated getting data from the device itself through  
17 those complaint procedures.

18 MR. AMER: Okay. Let me just stop you  
19 there. That's helpful.

20 MR. REED: I need to -- yeah, sorry.

21 MR. AMER: Well, wait, I do want to just  
22 make sure we're sort of proceeding to each topic in  
23 turn. So it seems to me that this -- and, Mr. Reed, I  
24 think you indicated that the main change that, you  
25 know, at least you've been talking about so far is the

1 removal of the passive monitoring language. So I  
2 think we'd like to ask --

3 MR. REED: Yeah.

4 MR. AMER: Well, let me just finish. I  
5 think we'd like to ask first the proponents some  
6 questions about what that means, and I believe my  
7 colleague, Melinda Kern, has some questions about  
8 that.

9 MS. KERN: Thank you, Mr. Amer. So I do  
10 have a couple questions for the proponents. So I just  
11 wanted you guys to explain a little bit how passive  
12 monitoring is having an adverse effect on any users.  
13 And specifically, like, in the initial and reply  
14 comments, the only reference was to CPAP machines and  
15 I believe to the SD cards that were within them. So I  
16 was wondering if you could also give us a couple more  
17 examples of both implanted and non-implanted medical  
18 devices that are impacted by the passive monitoring  
19 limitation.

20 MR. ZEMOUDEH: Yeah. So, to the first part  
21 of your question as far as other types of non-passive  
22 monitoring that might occur and how it might work in  
23 the future, although we don't have specific examples  
24 of those in our comment, some ways that might work  
25 include reading the memory off your phone from data

1 that your phone collects from a device. In that case,  
2 there may or may not be circumvention necessary, but  
3 it might be required -- you might be required to  
4 decode the data off the memory on your phone.

5 Another way that non-passive monitoring  
6 might work is to actively connect to a medical device  
7 or a receiver on that device to request the data from  
8 a program on that device, so that might include, given  
9 if the device were connected to the internet, that  
10 might include a web request on the device, and that  
11 may require authentication, and that might implicate  
12 the TPM as well.

13 Another way that non-passive monitoring  
14 might work would be to actively intercept the data  
15 while the data is in route to a server from the  
16 device. So although that does sound like passive  
17 monitoring in that there is a wireless communication  
18 that you intercept, the difference there is that you  
19 might actually have to communicate with the device in  
20 order to get the data. So, although you're  
21 intercepting wireless data, you will have to still  
22 communicate with the device in order to gather all the  
23 data. So those are three ways that we might see  
24 non-passive monitoring happen in the future.

25 MS. KERN: (Technical interference.)

1 MR. AMER: I think --

2 MR. PEARLMAN: Did anyone else have  
3 difficulty hearing that? I had a little trouble.  
4 Okay.

5 MR. AMER: Yeah, we had a little -- there may  
6 be an issue.

7 MS. KERN: Can you hear me now?

8 MR. AMER: No, it's still a little garbled.

9 MR. GREENBERG: Melinda, it might help if  
10 you turn off your video.

11 MS. KERN: Okay. Can everyone hear me now?  
12 I just asked, -- no, no.

13 MS. SMITH: No, I think that didn't work. I  
14 don't know if you have headphones to try. If not, we  
15 can -- maybe it will go away.

16 MR. AMER: Yeah, so this is the world we're  
17 in now where little technical issues come up with  
18 Zoom, so we appreciate everybody understanding. Just  
19 to follow up, so there are certain -- those are  
20 examples of activities that you think are currently or  
21 at least arguably not permitted under the current  
22 language, is that right?

23 MR. ZEMOUDEH: Yes, that's correct.

24 MR. AMER: Okay. I'm going to give Mr. Reed  
25 a chance to respond to that, does that -- and what I

1 would like you to answer specifically is, does the  
2 sort of activity that the proponents described  
3 implicate any greater copyright concerns than passive  
4 monitoring?

5 MR. REED: Yeah, I think two things. Well,  
6 there's three things to cover, but I want to get to  
7 yours. This is probably my fault, but I should have  
8 referred directly to the copy here. I'd remind  
9 everyone that the petitioners' request also includes  
10 number two, to permit third parties to perform the  
11 circumvention with permission on behalf of the  
12 patients. So remember this is not merely that the  
13 patient has access to the passive data, whether it's  
14 implanted or otherwise, but it's the ability of third  
15 parties to create tool sets that would allow for that  
16 change.

17 And that I think -- I realized as we're  
18 talking about this maybe that's part of why we're  
19 talking past each other. It's that allowance of third  
20 parties I've been referring it to as kind of the right  
21 to hack, that ability to develop third-party tool sets  
22 that raises the greatest amount of question. And,  
23 again, I don't think the Copyright Office is in the  
24 habit of granting exceptions on might, but I do want  
25 to go back a little bit to something that's very

1 worrisome and nationally we need to correct.

2           The earlier mention of HIPAA. HIPAA doesn't  
3 regulate patients, it's actually a portability, it's  
4 the insurance portability, not a privacy act. It has  
5 something called the privacy rule that was passed in  
6 2000. But the only people that the Office of Civil  
7 Rights, which oversees HIPAA, can engage with are what  
8 are called covered entities or BAs, Business  
9 Associates, of covered entities. So the idea that the  
10 Office of Civil Rights could bring some action against  
11 a patient is ludicrous.

12           And that's actually what's very interesting  
13 about this whole question. HIPAA is exactly what  
14 empowers the ability for patients to go to a provider  
15 and request that information. It's an underpinning of  
16 the entire patient access to data. So the onus of  
17 HIPPA is on the provider of the covered entity, not on  
18 the patient.

19           And earlier there was a comment about the  
20 FDA -- you know, the FDA isn't the right vehicle. But  
21 I'd note that the 2016 guidance for everyone playing  
22 at home, I pulled it up on the screen, dated -- the  
23 manufacturer sharing patient specific information for  
24 medical devices with patients upon request is a 2016  
25 guidance that was provided to us, and it actually

1 includes that manufacturers are strongly encouraged to  
2 provide patient-specific information, including data a  
3 healthcare provider inputs in the device to record the  
4 status or ongoing treatment of an individual patient  
5 --

6 MR. AMER: Okay, let me just --

7 MR. REED: -- et cetera, et cetera.

8 MR. AMER: Let me just --

9 MR. REED: So I'll jump ahead. But that's --

10 MR. AMER: Okay. Let me just jump in, and  
11 we do have a few different -- I mean, just to sort of  
12 preview things and we want to be conscious of time,  
13 you've raised concern -- you've raised possible  
14 alternatives to circumvention, which you just were  
15 mentioning there, so we'll get to that. You also  
16 mentioned third-party assistance, which I also want to  
17 get to. But just to sort of wrap up this question on  
18 passive monitoring, and I'm going to first ask the  
19 proponents, so there seems to be a suggestion,  
20 although it's not entirely clear to me, that active  
21 monitoring could in some cases involve altering the  
22 software of the device. And I know, you know, the  
23 copyrighted work that we're talking about here is  
24 these compilations of medical device, which is  
25 separate from the software used to operate the device.

1 But I think I'm interested in knowing to what extent  
2 these additional monitoring activities you're talking  
3 about may necessitate alteration or involve alteration  
4 of the device firmware?

5 MR. ZEMOUDEH: Yeah, to address that, it is  
6 unlikely that any of these non-passive monitoring  
7 techniques would alter the software or firmware of the  
8 device. Specifically, to go back to some of the  
9 examples that we gave, if you were to read data off  
10 the memory of your phone, that wouldn't require any  
11 hacking of the software, as opposer describes. That  
12 would just be data on the memory of your phone that  
13 you read. And in other cases, you would just be  
14 requesting the data actively or intercepting the data.  
15 So there wouldn't be any -- for the most part, there  
16 wouldn't be any touching of software.

17 MS. SMITH: Can I ask a question? Is there  
18 a need for an exemption that would permit touching the  
19 firmware or software, or is that something we could  
20 just exclude?

21 MR. ZEMOUDEH: No, there is --

22 MR. PEARLMAN: I can --

23 MR. ZEMOUDEH: There is not a -- oh, go  
24 ahead, sure.

25 MR. PEARLMAN: I think part of this is that,

1 you know, due to the chilling effect we don't know  
2 exactly what would be needed. But we do know that if  
3 someone were to, you know, to access the firmware for  
4 purposes other than accessing their medical data, that  
5 that would still be outside our proposed exemption.  
6 And, you know, you have the Copyright Office in  
7 previous exemptions, if you look at the 2018  
8 exemptions, in several places has specifically said  
9 and not to access it for the purposes of gaining  
10 access to other copyrighted works, which could include  
11 media but could also include software.

12 But I'm not sure we would -- I don't think  
13 we would want to carve it out of the exemption because  
14 there might be some circumstances in which there is  
15 overlap, that in order to get to the data, something  
16 else is inadvertently accessed even though it's not  
17 used for any purpose.

18 MS. SMITH: Right. Well, I appreciate your  
19 spirit of invoking how we approached similar requests  
20 because that is sort of what I am thinking because it  
21 seems like if there's an opportunity for consensus to  
22 carve out some of the activities that Mr. Reed is  
23 worried about that you're not aware of a need for that  
24 might be a good way to adjust this exemption.

25 And one thing I wonder if you could

1 consider, and if you don't have an answer now, that's  
2 okay. But, in 2015, there was an exemption for auto  
3 repair that excluded access to the telematic system  
4 because there was not a record showing that was  
5 necessary. There was some concern about incidental  
6 access that was raised later. But we sort of did that  
7 incrementally upon a showing of need, and I'm  
8 wondering if that is an appropriate course to take  
9 here if we're not sure that we need to access or  
10 adjust the firmware or software.

11 MR. PEARLMAN: I think we might need to look  
12 a little more. I think part of the challenge here is  
13 there's not as clear a division between the telematic  
14 system and the other systems. There's not as clear a  
15 division in medical devices because we're talking  
16 about such a broad array of types of devices as there  
17 is with cars between the telematic systems and other  
18 systems. So I think it's harder to clearly carve that  
19 out without inadvertently impacting sort of normal  
20 forms of access.

21 I think this is a little bit closer to --  
22 and to be clear, I'm only talking about the case  
23 you're talking about where you need to access the  
24 software in order to get access to the data. I think  
25 it's a little closer to say the carrier unlocking

1 exemptions, which did allow access to software sort of  
2 inadvertently along the way, but still we're not  
3 permitted to modify the software or do other things  
4 that were not otherwise exempt. So I'm not sure it  
5 works as clearly in this instance as it does, but I  
6 don't think we are against it conceptually if that  
7 makes sense.

8 MS. SMITH: Yeah. Mr. Reed did you want to  
9 weigh in on any of the typical design features if  
10 there are? And I realize that I did put you on the  
11 spot, Mr. Pearlman, so thank you for engaging, and  
12 keeping the line open would be good.

13 MR. REED: No, it's okay. I think, though,  
14 that I think it's interesting to note that I kind of  
15 feel like Jef made my point, which is there is this  
16 close overlap between the software as a medical  
17 device, what it does, and I think when you couple that  
18 with Mr. Zemoudeh's point where he said it's "unlikely  
19 that it would have an impact." The difference between  
20 a DVD player is, if you get it wrong, it doesn't kill  
21 grandma. And we are talking about devices that do  
22 deliver insulin, that do deliver shocks to the heart,  
23 that do deliver information about your blood pressure,  
24 that can affect the medication that your doctor  
25 prescribes.

1           So I don't think the petitioners made a case  
2 when they acknowledged that the scope is broad because  
3 of the way the devices work and the best they can  
4 merit is it's unlikely when one considers the  
5 Medtronic impact on insulin pumps that merely had a  
6 potentially readable signal and that pulled 4,000  
7 pumps off the market. I just don't think the  
8 petitioners' case is strong enough in light of the  
9 fact that other agencies are doing the work to meet  
10 their stated need of access to patient data.

11           MR. AMER: Well, so, I mean, as the  
12 exemption is framed now, it refers to literary works  
13 consisting of compilations of data, but we do have  
14 lots of other exemptions that allow circumvention to  
15 access computer programs for various purposes and, you  
16 know, in many cases, you know, jailbreaking, security  
17 research, et cetera. And, you know, we have a pretty  
18 -- there are lots of examples where the Office has  
19 said, you know, that that sort of activity may well be  
20 fair use. So I'm not sure if the --, you know, to the  
21 extent that TPMs may be protecting both medical data  
22 and computer software, you know, I wonder if that  
23 would --, you know, one answer might be to consider  
24 expanding the exemption and then including language  
25 like we've talked about, you know, so long as the

1 circumvention is not undertaken for an infringing  
2 purpose with respect to the software.

3 MR. REED: I guess I don't know if that was  
4 directed at me, but I think the problem with it is, is  
5 I don't see the petitioners made the case that an  
6 exemption is needed as, again, as I said, the stated  
7 goal of the exemption is to make sure that patients  
8 have access to their data. Quite literally, most of  
9 the other arms of government in this instance are  
10 doing everything in their power to make sure that  
11 patients have access to data. And since this process,  
12 exemptions are to be granted narrowly and carefully,  
13 I'm not really sure that the barrier has been  
14 overcome, as I said, especially in light of the fact  
15 that there are these enormous forces coming to bear to  
16 get the outcome petitioners requested. I just don't  
17 think it meets the test yet, and maybe if it does, if  
18 we see in three years with it including, you know,  
19 with SaMD hitting more places, we can revisit it.  
20 But, right now, it's just not ready for primetime.

21 MR. AMER: Okay. Thank you. Ms. McClellan?

22 MS. MCCLELLAN: Yes. I'd like to just  
23 address Mr. Reed's point that he keeps, you know,  
24 repeating that patients do have access to their data  
25 or that other people, other organizations are working

1 to provide access to that data. But, in fact, this  
2 data isn't included in a health record that you  
3 request from your doctor. It's, you know, the raw  
4 data from a CPAP machine, that's a lot of information  
5 and I don't think that's written down anywhere in a  
6 health file that the patient can access from their  
7 doctor.

8 Furthermore, we're requesting real-time  
9 access for patients, so patients being able to access  
10 this data without having to go through talking to  
11 someone and filing a form and waiting to hear back and  
12 we're requesting for people to be able to access this  
13 stuff in real time.

14 MR. REED: So I would be happy to facilitate  
15 a conversation with the Office of National Coordinator  
16 with Micky Tripathi because the scope of the ONC rule  
17 actually does impact the ability of patients to  
18 request data. In fact, in our filings, we've actually  
19 been pushing hard to encourage the Office of National  
20 Coordinator to include two AAPIs for ability to access  
21 information where it's passed to a covered entity.  
22 Now we do have to occupy the space that is covered  
23 under OCR.

24 But I do think you should note that it is  
25 required that the data be provided in a reasonable and

1 timely way and that it even has cost restrictions.  
2 Your ability to request your data is limited; in other  
3 words, you can't be given an onerous cost when you  
4 request that data. So I think there are opportunities  
5 for us to work together to achieve the same goal,  
6 which is patient access to the data, and if that's the  
7 goal, that's great. If the goal is to encourage the  
8 development of third-party hacking tools, that's where  
9 I think we part ways.

10 And so I think, right now, back to Kevin's  
11 question, I don't think the bar has been met to  
12 include the language that says to permit third parties  
13 to perform circumvention. But I am happy to work with  
14 petitioners to extend the goal of data either through  
15 ONC or FDA on this.

16 MR. AMER: Okay. So let's take those in  
17 turn. So let's just put third-party assistance to the  
18 side for one second. But I do want to make sure I  
19 understand this dispute about whether there are  
20 adequate alternatives to circumvention. So let me  
21 start with the proponents. So I'd like you to respond  
22 to, you know, the potential alternative avenues that  
23 Mr. Reed mentioned. I know specifically in the App  
24 Association's submissions they talked about the CURES  
25 Act or the FDA's website. Could you address whether

1 those can provide the same type of data that you're  
2 seeking with this exemption?

3 MS. MCCLELLAN: Yes, I believe we discussed  
4 it in our reply comment, but we don't believe that  
5 this does provide the same access to that data, that  
6 it doesn't provide the same access to, like, the raw  
7 data from say a CPAP machine that you're going to get  
8 from reading the SD card and also, that going through  
9 that method you're still not getting real-time access,  
10 which is what we're seeking for patients who are  
11 looking to circumvent TPMs and access that data.

12 Also, I would just note that Mr. Reed said a  
13 couple times that, you know, he would like to work  
14 with us on gaining access to that data for patients.  
15 And, you know, we're happy to pursue other avenues as  
16 well, but the reality is that this shouldn't be a DMCA  
17 violation. And I think also just going to note that  
18 saying that, you know, his organization is working to  
19 provide better ways for patients to access that data  
20 just shows the fact that they can't access that data.

21 MR. AMER: Mr. Reed, would you like to  
22 respond?

23 MR. REED: Just to clarify, yeah, I think --

24 MR. AMER: Just one second. I'm especially  
25 interested in whether you have a response to the

1 specific point about, you know, whether through these  
2 alternative methods people can get access to the raw  
3 data and to do so in real time.

4 MR. REED: Right. So there are some really  
5 interesting questions about raw data access and what  
6 does it go through and what kind of APIs are available  
7 and what APIs government agencies are essentially  
8 requiring. The problem -- the thing that we're  
9 pushing for actually is kind of a step further, which  
10 is how do we make sure that the data is accessible in  
11 real time and also manageable by a third-party  
12 authorized application. So our solution to this  
13 problem, which is something that is supported by the  
14 FDA and others, is to ensure either through the use of  
15 the -- you know, we talk about fire standard and HLC-7  
16 and all that stuff. But, ultimately, the real goal  
17 should be that your medical device has a standardized  
18 API and standardized data formats that the patient can  
19 then choose their own application to run on. But, in  
20 order to do that, there has to be an assurance of  
21 security and privacy and security most importantly.

22 So what the problem that it's created is,  
23 again, taking them on a good-faith effort, if the end  
24 goal is to make sure that the patients can say access  
25 their CPAP data on an app on their phone and then can

1 engage with their doctor, their only way the physician  
2 is going to want that data to be provided to them is  
3 if they have some sense of the providence of the data  
4 and the way that it reaches there. And that's part of  
5 the reason that you've seen these other agencies  
6 really adopt this idea of standardized messages,  
7 standardized APIs, and a way for that material to  
8 reach the physician in a format that's usable.

9 Now, that said, we want engaged patients.  
10 So finding that middle ground, I just kind of go back  
11 to the primary. The Copyright Office is really --  
12 this is a space that isn't really the Copyright  
13 space's primary occupation. And so I think involving  
14 a 1201 language in this is disruptive to the end goal  
15 stated by the petitioner, and that is to get the  
16 communities aligned so that there's access to the  
17 data.

18 But, to your primary point, I disagree. Our  
19 meetings with the Health & Human Services, with FDA  
20 and others have made it very clear that it is a strong  
21 goal and something that they are attempting to  
22 achieve, and there are multiple opportunities to  
23 petition FDA and ONC to accomplish a more accurate and  
24 a more timely release of data.

25 So the rule, by the way, that governs this

1 went into effect literally three days ago. That's  
2 part of why my voice is worn out. The Office of  
3 National Coordinator's enforcement literally kicked  
4 off three days ago. So I don't think we're at the  
5 place where we need the Copyright Office to step in.  
6 We need to see how the 21st century CURES Act and the  
7 ONC anti-blocking rule play out a little longer than  
8 three days.

9 MR. AMER: Okay. Let me just -- thank you.  
10 Let me just make sure I understand. And you're right,  
11 this is not the space that we usually occupy, so this  
12 may be a very basic question. But, I mean, so say I'm  
13 a patient and, you know, I have a CPAP machine and for  
14 whatever reason I want to access the data that it's  
15 producing. What would be the procedure that you're  
16 suggesting I should follow in order to get that  
17 information short of circumventing the device?

18 MR. REED: Great question. So I think part  
19 of it is we are on a fast-moving treadmill. If your  
20 CPAP machine doesn't include its own connection to an  
21 application and doesn't provide that information to an  
22 EHR or doesn't provide the data to the EHR or to the  
23 physician with all of the metrics that the patient is  
24 requesting, I think that's something that's worth  
25 contacting the manufacturer about and saying where is

1 this data, why are we not being able to see it.  
2 Remember the patient can request information from any  
3 health developer or health info network.

4 So, in large part, what we're seeing is a  
5 reversal, that the industry is moving to devices that  
6 are providing data to the patients, are doing more to  
7 tie it to a mobile application that's available on  
8 your phone, to use the either Epic or Cerner or  
9 someone else's methodology to import that information  
10 into EHR. So, if you have that CPAP, the first thing  
11 I'd suggest you do is get a new CPAP that includes a  
12 connection to an app. If it doesn't have that, there  
13 are places to petition in the appropriate oversight  
14 areas of Food and Drug or the Office of National  
15 Coordinator. So products are on the market that do  
16 what they want, but I also respect that some people  
17 may not have those, so I think, you know, there is the  
18 ability to do that.

19 MR. AMER: Let me just jump in, and we're  
20 running short on time and I do want to get to  
21 third-party assistance, but I just want to make sure I  
22 understand this point. So you talk about going to the  
23 manufacturer. That's one option. And then what's the  
24 process that -- how would the -- if I go to the FDA,  
25 how do I get from that point to obtaining data from

1 this device that I have here in my house and the FDA,  
2 you know, doesn't have any connection to? That's what  
3 I'm not understanding.

4 MR. REED: Yeah, I understand. I mean,  
5 we're so far outside of copyright, so it's a little  
6 bit awkward. I'm trying to keep bringing it back to  
7 the copyright space. But, roughly speaking, under the  
8 guidance that's been in effect since 2016, you'd go to  
9 the FDA and say, hey, manufacturer X is not following  
10 the 2016 guidance on manufacturers sharing  
11 patient-specific information for medical devices. You  
12 can go and petition them. You'd also -- That is  
13 assuming your initial -- Kevin, that your initial  
14 question is, I went to the manufacturer and they told  
15 me no, they won't give me the data. If you're told  
16 that, then now we're into the legal recourse, and that  
17 is you can go to the FDA and say they're not abiding  
18 by the 2016 guidance.

19 If that doesn't work, you can also or  
20 concomitantly go to the Office of National Coordinator  
21 and say they are in violation of the anti-blocking  
22 rule or suggest that the data they're providing isn't  
23 appropriate and that the ONC's Inspector General  
24 Office needs to take action against that manufacturer.  
25 Those are all avenues that exist, and they are still

1 ones that exist in the framework of making sure that  
2 you don't kill grandma because you hacked her insulin  
3 pump and it overloads her insulin levels.

4 So I think that's -- And that's back to your  
5 third-party point, which is a lot of the areas in  
6 which you can get access to your data do involve  
7 taking an action to one of the existing regulators,  
8 and that's because they are concerned about life and  
9 welfare of the patient. So that's the juxtaposition  
10 on the -- on where we sit.

11 MR. AMER: Okay. Thank you very much. I  
12 want to go to Mr. Zambrano Ramos, and then I do want  
13 to just turn quickly to third-party assistance. I  
14 know we're getting close to time. Hopefully, everyone  
15 can run over just a few minutes. So Mr. Zambrano  
16 Ramos?

17 MR. ZAMBRANO RAMOS: Thank you so much, Mr.  
18 Amer.

19 Mr. Reed, first, going back to the point  
20 about this not being really the primary space where  
21 the Copyright Office plays, it's not also the space  
22 where NTIA plays. And I'm just curious that given  
23 that this is a process about copyright, should health  
24 and safety issues really figure in? On the one hand,  
25 it seemed the earlier discussion was about not

1 granting the exemption because it's dangerous from a  
2 health perspective. But, on the other hand, this is  
3 also, you know, a copyright proceeding. So I'm just  
4 curious if you could kind of square those few things  
5 together so that we can better understand?

6 MR. REED: So I think morally yes. I think  
7 the idea that the Copyright Office should be blind to  
8 the implications for health and safety is a little bit  
9 of an abrogation of kind of moral duty, which is to be  
10 a thinking person and say, yes, I understand this is  
11 outside the scope of it, but what are the  
12 implications, what doors am I opening, and as we  
13 started this, petitioner has one example of one CPAP  
14 machine. So I would say there's a little bit of a  
15 weighing of the equities here to say there is a little  
16 bit of a duty to be a thoughtful person about this.  
17 And since we're not being flooded with examples of  
18 company after company after company restricting access  
19 to patient data, I think it's pretty easy to take a  
20 stand that says, you know what, let's err on the side  
21 of safety in this instance.

22 So, yeah, I do think there's a little bit of  
23 a responsibility given that the proponents have  
24 brought one CPAP example from one company.

25 MR. AMER: Mr. Zemoudeh, if you could

1 respond very, very quickly, and then we're going to  
2 move to the next topic.

3 MR. ZEMOUDEH: Yeah, I just wanted to make  
4 the one point that as the Copyright Office has noted,  
5 the question here is whether adverse effects are  
6 occurring and whether the patients are making  
7 non-infringing uses of the underlying data. And if  
8 Congress wants to directly or indirectly regulate  
9 medical device safety, they can, but there has been no  
10 indication that Congress wants the Copyright Office to  
11 do this. And the amount of time that we have spent  
12 trying to parse out FDA regulations and the CURES Act  
13 here underlies the fact that really this is a  
14 congressional area and not something the Copyright  
15 Office needs to deal with.

16 MR. REED: I'd agree and that's why we  
17 shouldn't grant the petitioner, it's really not  
18 necessary.

19 MR. AMER: Okay. Thanks. So I'm going to  
20 turn it -- hopefully Ms. Kern's audio is back on  
21 track. So I think she had some questions on  
22 third-party assistance. Just bear with us one second.

23 (Pause.)

24 MR. AMER: Okay. I think it's still not  
25 working unfortunately. That's okay. So, on the third

1 parties, to the petitioners, you've asked to add  
2 language that would allow circumvention to be  
3 undertaken on or on behalf -- by or on behalf of a  
4 patient.

5 So, you know, as you may know, you know,  
6 we've had a lot of requests in previous years  
7 regarding third-party assistance, and the approach  
8 that we took, you know, we've always been conscious  
9 about not suggesting that not sort of potentially  
10 running afoul of the anti-trafficking provisions.  
11 So, in the repair exemption the last time, we were  
12 essentially silent on whether third parties might be  
13 able to be within the class of beneficiaries for an  
14 exemption. I'm wondering if you're familiar with that  
15 and if there's a reason, if you have views about  
16 whether we should take that same approach here.

17 MS. MCCLELLAN: Yes --

18 MR. AMER: Ms. McClellan?

19 MS. MCCLELLAN: Yes. We are cognizant of  
20 the fact that, you know, understandably, the Copyright  
21 Office has intent to write any exemption that might --  
22 in a way that might imply something is okay that  
23 wouldn't be okay under the anti-trafficking  
24 provisions, and as such, we're more than happy --  
25 we're okay with the idea of restructuring the

1 exemption language that we proposed to reflect similar  
2 language used by the Copyright Office in the repair  
3 exemption or in the exemption for, you know, changing  
4 devices for accessibility purposes for blind people or  
5 other disabled persons trying to use a copyrighted  
6 work that they otherwise couldn't. So both of those  
7 ways I think the Copyright Office used more passive  
8 language and kind of left it open for maybe a future  
9 court to provide more elaboration on what exactly  
10 would constitute a violation of the anti-trafficking  
11 provisions, and that's something that we would be okay  
12 with in this instance as well.

13 MR. AMER: Okay. Thank you. That's  
14 helpful. I want to give Mr. Reed a chance to address  
15 that and then just to let you know where we're going,  
16 I would like to also -- I'm going to have a question  
17 after that about the proposal that would take out the  
18 language regarding compliance with other applicable  
19 laws. So, Mr. Reed, I know that you are opposed and  
20 you've talked about the concern about third parties  
21 potentially being within the class of beneficiaries  
22 here. Is there anything else you would like to say on  
23 that? And I'm particularly interested in, you know,  
24 is the concern based on the sort of safety issues that  
25 you raised, or is there a particular sort of

1 copyright-related concern that you also want to bring  
2 to our attention?

3 MR. REED: No, I mean, I think the easiest  
4 way to note is that third parties are not subject to  
5 the obligations that we are, that health tech  
6 companies are obligated before the FDA, ONC. You  
7 know, we talked about HIPAA, covered entities. So,  
8 yeah, the real problem is third parties are not  
9 subject to the rigor and standard that we expect.

10 As far as beyond that, what you're talking  
11 about going further, I come back to the need to make  
12 sure that we are not erring on the side of putting  
13 things at greater risk. So, when it comes to the  
14 copyright language, you said how do we fit this into a  
15 copyright box. I guess I would say that I don't think  
16 that we're there yet on the third-party access  
17 because, as you noted, the likely outcome based on the  
18 petitioners' language is really the ability to engage  
19 with the underlying software that is built and, if  
20 it's SaMD or otherwise, has been approved through the  
21 FDA. So, bluntly put, yeah, I just don't think third  
22 parties will be regulated, and if they're not  
23 regulated, that puts health risks in play.

24 MR. AMER: Okay. Thank you. The last  
25 topic -- and I appreciate everyone's patience. The

1 last topic I wanted to ask about was the proposal to  
2 remove language about compliance with other laws. We  
3 talked about the same issue this morning in the  
4 context of the security research exemption. I'd like  
5 to ask the proponents, you know, as we noted before,  
6 you know, this language does track the language in the  
7 statutory permanent exemption in 1201(j) regarding  
8 security testing. In general, you know, the Office  
9 has tried where possible to retain the statutory  
10 language.

11 I'm wondering if you could elaborate on the  
12 particular basis for wanting to remove this language  
13 and in particular, whether, you know, there are any  
14 examples you want to introduce into the record about,  
15 you know, people being deterred or reluctant to engage  
16 in this kind of activity because of the other laws  
17 language.

18 MR. ZEMOUDEH: Yeah. So just to elaborate  
19 again on why we want to remove this language, we just  
20 think it's unnecessary and redundant to condition the  
21 exemption on compliance with other laws and  
22 regulations. As we've addressed, there are penalties  
23 under other laws and regulations that are deterrent  
24 enough. We do have one example regarding researchers.  
25 We mention in the comment researchers who did not want

1 to undertake research, you know, because of risk of  
2 not complying with security-related laws.

3 And, moreover, we did listen in on the  
4 hearings this morning, and we do think that the DOJ's  
5 recommendation on adding language about notifying  
6 people on having to comply with other laws, we do  
7 think that would be a good addition to the language in  
8 place of something like having to comply with other  
9 laws or lawfully accessing the data.

10 So I believe DOJ's recommendation was to add  
11 language requiring -- stating that qualification for  
12 an exemption is not a safe harbor or defense to  
13 liability under other applicable laws. And we think  
14 that would do a great job of notifying the public  
15 while not adding further penalties under the DMCA.

16 MR. AMER: Thank you. Mr. Reed?

17 MR. REED: Yeah. We did go over this this  
18 morning at great length. The one difference which  
19 compounds why we should not move forward with this  
20 exemption is, unlike the discussion this morning, if  
21 that device harms a patient, we're liable. So, if an  
22 anti-circumvention technology is used to break into a  
23 DVD so that you can stream it or watch it, the company  
24 manufacturing the DVD player isn't liable. If the  
25 medical device is hacked and it ends up harming a

1 patient in the methodology that its circumvention was  
2 undertaken, we're going to get sued, and people will  
3 die. So that's the difference in this context. And,  
4 again, Petitioner keeps saying that other regulations  
5 apply. Those regulations wouldn't apply in this  
6 instance because, in the example of third parties,  
7 they're not a regulated medical device manufacturer.  
8 They aren't --

9           Again, HIPAA only applies to covered  
10 entities or business associates of covered entities,  
11 and that requires the filing of an electronics  
12 insurance claim. So, in these instances, there's a  
13 lot of hand waving about laws that apply. But outside  
14 of the Federal Trade Commission's ability under unfair  
15 and deceptive, the laws apply to manufacturers of  
16 medical devices, including software as a medical  
17 device, and those engaged in the practice and  
18 provision of medicine.

19           So, yeah, it's a lot different than the  
20 conversation we had earlier this morning because the  
21 outcome of a mistake is so much more dramatic. But,  
22 other than that, you noted it. We covered all the  
23 four corners of the copyright portion earlier this  
24 morning.

25           MR. AMER: I'm not sure I understand the

1 liability concern. I mean, if a patient alters their  
2 device in such a way that, you know, it affects the  
3 way the device operates or is dangerous or something  
4 like that, is there a realistic likelihood that --

5 MR. REED: Yes.

6 MR. AMER: -- that the manufacturer would be  
7 liable?

8 MR. REED: A hundred percent. Happens  
9 regularly. Again, I mentioned the Medtronic Minimed  
10 503. They literally pulled that off the market on the  
11 possibility that the security hole was broad enough  
12 that it could, in fact, do that. No patient was  
13 harmed, nobody died. Medtronic had to pull 4,000  
14 insulin pumps off the market, recall them, re-alter  
15 the software and put in new devices to everybody. And  
16 that didn't actually even harm anyone, and yet the FDA  
17 was concerned enough about it to request strongly that  
18 Medtronic pull those products off the market.

19 So there are dozens of examples like that.  
20 It doesn't take a death to create the possibility of  
21 liability. It can create the -- that you did not do  
22 enough to prevent harm to the patient. So,  
23 absolutely, and if someone dies, they absolutely will  
24 sue and their claim in court would be, yes, Bob Jones  
25 altered the software on that product, but you,

1 manufacturer of the product, should have done more to  
2 prevent the ability to hack that product in a way that  
3 wouldn't have put the patient's safety at risk.  
4 That's a very standard conversation in the medical  
5 device marketplace, which it isn't just caveat emptor.  
6 It's what are you doing to proactively protect the  
7 patient. And so, yes, definitely liability would play  
8 a role.

9 MR. AMER: Okay. And so, I mean, I guess  
10 what we heard this morning, though, is that, you know,  
11 given that these laws continue to apply regardless of  
12 what the Copyright Office does, is there a need to tie  
13 eligibility for the 1201 exemption to compliance with  
14 laws that, as you say, are not really within our  
15 expertise?

16 MR. REED: Well, I think we kind of just  
17 said it. The idea of at least the exemption as it  
18 previously exists does say you need to comply with  
19 these other laws. The idea of removing that makes the  
20 negative outcomes more likely. At least this provides  
21 some band-aid to a third party that might wait to do  
22 it to say, well, we can't just claim a 1201 exemption  
23 because we still will have to make sure that we're  
24 meeting the 2013 guidance around medical -- mobile  
25 medical applications, for example. You know, we'll

1 still have to look at the risk framework, we still  
2 need to make sure we're meeting FIPS. So a third  
3 party that would look at this and say can I take  
4 advantage of it would have to say yeah, but we still  
5 need to comply with these other things, so we have a  
6 duty to do a better job. So, yeah, I think it would  
7 be a mistake to take them out.

8 MR. AMER: Thank you. We've run a little  
9 bit over, but I think I don't have any more questions.  
10 Do any of my Copyright Office colleagues or Mr.  
11 Zambrano Ramos have any questions? Yes, Mr. Zambrano  
12 Ramos?

13 MR. ZAMBRANO RAMOS: Thank you so much, Mr.  
14 Amer. This question is for Mr. Reed.

15 Would you just expand briefly on this point?  
16 I'm just curious how does -- I guess, how does § 1201  
17 foreclose the kind of losses that you're talking about  
18 -- because some of these exemption methods -- sorry,  
19 some of these tools to circumvent already exist.  
20 Whether or not they are lawful, I'm not speaking to  
21 that. So I'm just curious, what's the mechanism by  
22 which granting an exemption would lead to an increase  
23 in these lawsuits? Thank you.

24 MR. REED: You're essentially saying, you  
25 know, the barn door is open, so what does it really

1 matter? I think the difference really goes to that  
2 question about the petitioners' request to open the  
3 door to third-party tools being made available and we  
4 get into the trafficking area. I think to grant this  
5 exemption does open the barn door and does change  
6 what's inside. The fact that you would essentially  
7 have a product that now I can go and make a product  
8 that hacks into it and I can stand by the copyright's  
9 language to say this third-party tool allows me to do  
10 these things does create a market for tool sets that I  
11 can now publicly, not just on the Dark Web, but I can  
12 put out publicly and say buy my product to hack your  
13 insulin pump or your diabetes tool.

14 So I think that it does -- the real reason  
15 is this is a trafficking question. And, yes, there  
16 are some very interesting open-source products that  
17 exist that do provide ways to passively monitor the  
18 information that come off these devices, and I think  
19 that that's something that has to be constantly looked  
20 at by the FDA and others. But I think opening the  
21 door and saying yes, come on in, the water's fine,  
22 third parties build tools, that absolutely changes the  
23 environment in a way that has the potential to  
24 negatively impact patients. So, yeah, I don't think  
25 granting it accomplishes -- it's not foreclosed.

1           MR. ZAMBRANO RAMOS: Thanks. And just to be  
2 clear, I wasn't suggesting sort of the barn scenario.  
3 I was just asking about the connections between that  
4 and 1201. Thank you so much.

5           MR. AMER: Ms. McClellan?

6           MS. MCCLELLAN: Yeah. I just wanted to  
7 address, you know, the concept of, I guess, widespread  
8 commercial use of third-party tools. That's not  
9 really what we're advocating for here. Primarily,  
10 what we're trying to allow is for third-party  
11 assistance of patients just in this narrow exemption  
12 to be able to access their medical data, not, you  
13 know, like, widespread commercial release of a  
14 circumvented tool. I think we can all agree that  
15 would very clearly violate the anti-trafficking  
16 provisions in § 1201.

17           MR. AMER: Okay. Thank you all very much.  
18 I think that will conclude this session, and we will  
19 now move to our audience participation session. Thank  
20 you.

21           MS. SMITH: Thank you all. So I think if  
22 you are concluding this panel you can turn off your  
23 video. And I think, actually, we have one speaker,  
24 which is Mr. Richart, who was unable to participate in  
25 a panel on Monday. So if we can find him and either

1 promote him or perhaps someone from the Copyright  
2 Office can contact him and we can receive his  
3 contribution.

4 (Pause.)

5 MR. AMER: I think we're just waiting for  
6 the gentleman who asked to participate in the session,  
7 so -- so stay tuned.

8 (Pause.)

9 MR. AMER: Okay. So the person who had  
10 asked to participate doesn't seem to be on, so I think  
11 we're going to adjourn for today. And just as a  
12 reminder, we will have another audience participation  
13 session on April 21, so we will give him an  
14 opportunity to contribute then. Thank you all very  
15 much for participating, and we will see you on  
16 April 19.

17 (Whereupon, at 2:51 p.m., the hearing in the  
18 above entitled matter adjourned.)

19 //

20 //

21 //

22 //

23 //

24 //

25 //

CERTIFICATE

CASE TITLE: Section 1201 Rulemaking Hearing

DATE: April 8, 2021

LOCATION: Washington, D.C.

I hereby certify that the proceedings and evidence are contained fully and accurately on the digital recording and notes reported by me at the meeting in the above case before the Library of Congress.

Date: April 8, 2021



John Gillen  
Official Reporter  
Heritage Reporting Corporation  
Suite 206  
1220 L Street, N.W.  
Washington, D.C. 20005-4018

<p style="text-align: center;"><b>I</b></p> <hr/> <p>// <sup>[2]</sup> <b>523</b>:12,13,14,15,16,17,18,19, 20,21,22,23,24,25 <b>580</b>:19,20,21, 22,23,24,25</p> <hr/> <p style="text-align: center;"><b>1</b></p> <hr/> <p><b>1:30</b> <sup>[2]</sup> <b>523</b>:11 <b>524</b>:2  <b>10</b> <sup>[1]</sup> <b>522</b>:10  <b>10:33</b> <sup>[1]</sup> <b>431</b>:2  <b>106</b> <sup>[1]</sup> <b>497</b>:20  <b>11:50</b> <sup>[1]</sup> <b>486</b>:21  <b>12</b> <sup>[2]</sup> <b>466</b>:19 <b>510</b>:11  <b>12-month</b> <sup>[1]</sup> <b>541</b>:20  <b>12:30</b> <sup>[1]</sup> <b>432</b>:9  <b>12:39</b> <sup>[1]</sup> <b>523</b>:9  <b>1201</b> <sup>[39]</sup> <b>431</b>:6 <b>437</b>:18 <b>441</b>:22 <b>469</b>:10 <b>471</b>:10,11 <b>482</b>:17 <b>488</b>:5 <b>492</b>:17,22,23 <b>494</b>:25 <b>497</b>:1,2,18 <b>499</b>:11,17,18 <b>501</b>:6 <b>502</b>:22 <b>503</b>:6,11,18 <b>506</b>:25 <b>507</b>:2 <b>524</b>:11 <b>530</b>:6 <b>532</b>:25 <b>534</b>:9 <b>537</b>:4,7,20 <b>538</b>:8 <b>562</b>:14 <b>576</b>:13,22 <b>577</b>:16 <b>579</b>:4,16  <b>1201(i)</b> <sup>[3]</sup> <b>511</b>:20 <b>516</b>:19,25  <b>1201(j)</b> <sup>[8]</sup> <b>496</b>:22 <b>497</b>:13 <b>509</b>:14  <b>510</b>:12,14,17 <b>511</b>:20 <b>572</b>:7  <b>1202</b> <sup>[1]</sup> <b>501</b>:6  <b>1203</b> <sup>[3]</sup> <b>501</b>:5 <b>502</b>:16 <b>507</b>:10  <b>13</b> <sup>[2]</sup> <b>431</b>:7 <b>510</b>:11  <b>15</b> <sup>[2]</sup> <b>466</b>:18 <b>506</b>:20  <b>19</b> <sup>[1]</sup> <b>580</b>:16  <b>1998</b> <sup>[4]</sup> <b>511</b>:2,16,22 <b>512</b>:4</p>	<p><b>510K</b> <sup>[7]</sup> <b>530</b>:3 <b>531</b>:24 <b>532</b>:5,7 <b>539</b>:17,22 <b>543</b>:3</p> <hr/> <p style="text-align: center;"><b>7</b></p> <hr/> <p><b>7</b> <sup>[2]</sup> <b>517</b>:10 <b>522</b>:15</p> <hr/> <p style="text-align: center;"><b>8</b></p> <hr/> <p><b>8</b> <sup>[2]</sup> <b>468</b>:21 <b>523</b>:11</p> <hr/> <p style="text-align: center;"><b>9</b></p> <hr/> <p><b>9</b> <sup>[1]</sup> <b>524</b>:11</p> <hr/> <p style="text-align: center;"><b>A</b></p> <hr/> <p>a.m <sup>[1]</sup> <b>431</b>:2  <b>AAPIs</b> <sup>[1]</sup> <b>558</b>:20  <b>Aaron</b> <sup>[1]</sup> <b>434</b>:6  <b>abiding</b> <sup>[1]</sup> <b>565</b>:17  <b>abilities</b> <sup>[1]</sup> <b>492</b>:18  <b>ability</b> <sup>[16]</sup> <b>457</b>:24 <b>475</b>:7 <b>520</b>:25 <b>521</b>:3 <b>527</b>:13 <b>538</b>:20 <b>549</b>:14,21 <b>550</b>:14 <b>558</b>:17,20 <b>559</b>:2 <b>564</b>:18 <b>571</b>:18 <b>574</b>:14 <b>576</b>:2  <b>able</b> <sup>[28]</sup> <b>440</b>:13,20,24 <b>443</b>:5 <b>444</b>:2 <b>452</b>:16 <b>453</b>:6 <b>459</b>:10 <b>472</b>:6 <b>482</b>:6,7 <b>483</b>:1 <b>489</b>:22 <b>500</b>:8 <b>501</b>:19 <b>521</b>:8,14 <b>526</b>:23 <b>529</b>:1 <b>533</b>:2 <b>536</b>:18 <b>540</b>:5 <b>545</b>:5 <b>558</b>:9,12 <b>564</b>:1 <b>569</b>:13 <b>579</b>:12  <b>above</b> <sup>[2]</sup> <b>523</b>:10 <b>580</b>:18  <b>abrogation</b> <sup>[1]</sup> <b>567</b>:9  <b>absence</b> <sup>[1]</sup> <b>452</b>:2  <b>absolutely</b> <sup>[6]</sup> <b>461</b>:24 <b>470</b>:3 <b>510</b>:10 <b>575</b>:23,23 <b>578</b>:22  <b>abstract</b> <sup>[1]</sup> <b>465</b>:10  <b>abstraction</b> <sup>[1]</sup> <b>503</b>:8  <b>Abuse</b> <sup>[1]</sup> <b>437</b>:19  <b>abused</b> <sup>[1]</sup> <b>457</b>:2  <b>abuses</b> <sup>[2]</sup> <b>541</b>:3,3  <b>abusive</b> <sup>[2]</sup> <b>457</b>:16,25  <b>academic</b> <sup>[6]</sup> <b>443</b>:4 <b>449</b>:2,13,18 <b>455</b>:2 <b>485</b>:3  <b>academics</b> <sup>[2]</sup> <b>460</b>:3 <b>512</b>:23  <b>Access</b> <sup>[6]</sup> <b>434</b>:18 <b>449</b>:12 <b>451</b>:6 <b>455</b>:11 <b>456</b>:25 <b>515</b>:2 <b>526</b>:23 <b>527</b>:19,25 <b>528</b>:8,14 <b>529</b>:22 <b>530</b>:19,21 <b>534</b>:3,6 <b>535</b>:7 <b>537</b>:16 <b>542</b>:12 <b>544</b>:7,8 <b>549</b>:13 <b>550</b>:16 <b>553</b>:3,9,10 <b>554</b>:3,6,9,20,23,24 <b>555</b>:1 <b>556</b>:10,15 <b>557</b>:8,11,24 <b>558</b>:1,6,9,9,12,20 <b>559</b>:6 <b>560</b>:5,6,9,11,14,19,20 <b>561</b>:2,5,24 <b>562</b>:16 <b>563</b>:14 <b>566</b>:6 <b>567</b>:18 <b>571</b>:16 <b>579</b>:12  <b>accessed</b> <sup>[1]</sup> <b>553</b>:16  <b>accessibility</b> <sup>[1]</sup> <b>570</b>:4  <b>accessible</b> <sup>[1]</sup> <b>561</b>:10  <b>accessing</b> <sup>[2]</sup> <b>553</b>:4 <b>573</b>:9  <b>accidentally</b> <sup>[1]</sup> <b>494</b>:7  <b>accomplish</b> <sup>[1]</sup> <b>562</b>:23  <b>accomplishes</b> <sup>[1]</sup> <b>578</b>:25  <b>account</b> <sup>[1]</sup> <b>491</b>:10  <b>accurate</b> <sup>[2]</sup> <b>517</b>:12 <b>562</b>:23  <b>accurately</b> <sup>[1]</sup> <b>521</b>:13  <b>accused</b> <sup>[1]</sup> <b>466</b>:5  <b>achievable</b> <sup>[1]</sup> <b>541</b>:7</p>	<p><b>achieve</b> <sup>[3]</sup> <b>541</b>:4 <b>559</b>:5 <b>562</b>:22  <b>acknowledge</b> <sup>[1]</sup> <b>460</b>:22  <b>acknowledged</b> <sup>[2]</sup> <b>495</b>:16 <b>556</b>:2  <b>acquire</b> <sup>[2]</sup> <b>475</b>:8 <b>482</b>:3  <b>acquired</b> <sup>[16]</sup> <b>463</b>:9 <b>475</b>:2,17,23,24 <b>476</b>:3,16,24 <b>477</b>:5,13,17 <b>478</b>:10 <b>481</b>:1,10,13 <b>483</b>:9  <b>acquisition</b> <sup>[2]</sup> <b>478</b>:11,14  <b>across</b> <sup>[4]</sup> <b>441</b>:9 <b>475</b>:14 <b>491</b>:20 <b>493</b>:13  <b>Act</b> <sup>[7]</sup> <b>437</b>:19 <b>468</b>:1 <b>499</b>:13 <b>550</b>:4 <b>559</b>:25 <b>563</b>:6 <b>568</b>:12  <b>Acting</b> <sup>[1]</sup> <b>475</b>:9  <b>action</b> <sup>[6]</sup> <b>450</b>:22 <b>456</b>:10 <b>501</b>:6 <b>550</b>:10 <b>565</b>:24 <b>566</b>:7  <b>active</b> <sup>[3]</sup> <b>472</b>:1 <b>543</b>:20 <b>551</b>:20  <b>actively</b> <sup>[4]</sup> <b>445</b>:2 <b>547</b>:6,14 <b>552</b>:14  <b>activities</b> <sup>[14]</sup> <b>436</b>:5,9 <b>445</b>:6 <b>447</b>:6 <b>453</b>:21 <b>454</b>:9 <b>470</b>:19 <b>472</b>:24 <b>517</b>:14 <b>522</b>:17 <b>530</b>:15 <b>548</b>:20 <b>552</b>:2 <b>553</b>:22  <b>activity</b> <sup>[11]</sup> <b>451</b>:21,24 <b>453</b>:3,12,18 <b>478</b>:16,21 <b>538</b>:2 <b>549</b>:2 <b>556</b>:19 <b>572</b>:16  <b>actors</b> <sup>[3]</sup> <b>485</b>:9 <b>494</b>:3 <b>511</b>:5  <b>acts</b> <sup>[1]</sup> <b>452</b>:11  <b>actual</b> <sup>[2]</sup> <b>443</b>:7 <b>502</b>:19  <b>actually</b> <sup>[35]</sup> <b>440</b>:20 <b>442</b>:17 <b>445</b>:9,13 <b>447</b>:21 <b>449</b>:8,17 <b>454</b>:19 <b>456</b>:8 <b>457</b>:22 <b>458</b>:24 <b>467</b>:23 <b>468</b>:14 <b>469</b>:24 <b>470</b>:8 <b>497</b>:5,8 <b>499</b>:5 <b>500</b>:20 <b>504</b>:14 <b>508</b>:23 <b>517</b>:3,19 <b>520</b>:6 <b>534</b>:23 <b>538</b>:15 <b>547</b>:19 <b>550</b>:3,12,25 <b>558</b>:17,18 <b>561</b>:9 <b>575</b>:16 <b>579</b>:23  <b>Adams</b> <sup>[20]</sup> <b>433</b>:11,12,12 <b>436</b>:24 <b>437</b>:2,24 <b>450</b>:5,6,7 <b>468</b>:9 <b>484</b>:11 <b>485</b>:22 <b>492</b>:12,13 <b>493</b>:9 <b>498</b>:10 <b>499</b>:9,14,15 <b>500</b>:11  <b>Adams'</b> <sup>[2]</sup> <b>468</b>:4 <b>499</b>:8  <b>add</b> <sup>[13]</sup> <b>447</b>:23 <b>464</b>:17 <b>477</b>:7,9,11,14 <b>486</b>:19 <b>488</b>:13 <b>490</b>:20 <b>512</b>:18 <b>522</b>:11 <b>569</b>:1 <b>573</b>:10  <b>added</b> <sup>[1]</sup> <b>503</b>:12  <b>adder</b> <sup>[1]</sup> <b>438</b>:2  <b>adding</b> <sup>[3]</sup> <b>479</b>:25 <b>573</b>:5,15  <b>addition</b> <sup>[3]</sup> <b>459</b>:12 <b>533</b>:17 <b>573</b>:7  <b>additional</b> <sup>[9]</sup> <b>439</b>:13 <b>451</b>:11 <b>472</b>:24 <b>490</b>:8 <b>526</b>:13 <b>539</b>:17,22 <b>540</b>:1 <b>552</b>:2  <b>additionally</b> <sup>[1]</sup> <b>459</b>:17  <b>address</b> <sup>[16]</sup> <b>437</b>:7 <b>452</b>:14 <b>461</b>:6 <b>463</b>:12 <b>464</b>:22 <b>497</b>:16 <b>498</b>:1 <b>517</b>:2 <b>540</b>:7 <b>543</b>:23 <b>545</b>:5 <b>552</b>:5 <b>557</b>:23 <b>559</b>:25 <b>570</b>:14 <b>579</b>:7  <b>addressed</b> <sup>[5]</sup> <b>492</b>:10 <b>519</b>:10,12 <b>541</b>:19 <b>572</b>:22  <b>adequate</b> <sup>[1]</sup> <b>559</b>:20  <b>adjourn</b> <sup>[1]</sup> <b>580</b>:11  <b>adjourned</b> <sup>[1]</sup> <b>580</b>:18  <b>adjust</b> <sup>[3]</sup> <b>541</b>:21 <b>553</b>:24 <b>554</b>:10  <b>adjustment</b> <sup>[4]</sup> <b>434</b>:10 <b>524</b>:12</p>	<p><b>540</b>:3,7  <b>adjustments</b> <sup>[1]</sup> <b>431</b>:7  <b>administration</b> <sup>[4]</sup> <b>470</b>:24 <b>527</b>:22 <b>529</b>:14 <b>533</b>:20  <b>Administration's</b> <sup>[1]</sup> <b>528</b>:10  <b>administrative</b> <sup>[8]</sup> <b>451</b>:2 <b>455</b>:12 <b>460</b>:24 <b>472</b>:6 <b>476</b>:18 <b>483</b>:25 <b>484</b>:5 <b>486</b>:1  <b>Administrator</b> <sup>[1]</sup> <b>434</b>:19  <b>adopt</b> <sup>[1]</sup> <b>562</b>:6  <b>adopted</b> <sup>[1]</sup> <b>443</b>:18  <b>advance</b> <sup>[1]</sup> <b>490</b>:18  <b>Advanced</b> <sup>[2]</sup> <b>434</b>:18 <b>446</b>:22  <b>advancing</b> <sup>[2]</sup> <b>442</b>:17 <b>443</b>:12  <b>advantage</b> <sup>[2]</sup> <b>472</b>:18 <b>577</b>:4  <b>adverse</b> <sup>[11]</sup> <b>439</b>:8 <b>468</b>:15 <b>471</b>:16 <b>476</b>:19 <b>485</b>:23 <b>489</b>:14 <b>499</b>:12 <b>541</b>:7,25 <b>546</b>:12 <b>568</b>:5  <b>advice</b> <sup>[5]</sup> <b>445</b>:11 <b>461</b>:14 <b>503</b>:3 <b>504</b>:6 <b>505</b>:20  <b>advise</b> <sup>[3]</sup> <b>462</b>:3,4,6  <b>advised</b> <sup>[1]</sup> <b>505</b>:13  <b>Advisory</b> <sup>[1]</sup> <b>525</b>:24  <b>advocating</b> <sup>[1]</sup> <b>579</b>:9  <b>aerate</b> <sup>[1]</sup> <b>438</b>:11  <b>affect</b> <sup>[1]</sup> <b>555</b>:24  <b>affected</b> <sup>[1]</sup> <b>486</b>:17  <b>affects</b> <sup>[1]</sup> <b>575</b>:2  <b>affirmative</b> <sup>[2]</sup> <b>445</b>:7 <b>490</b>:9  <b>affirmatively</b> <sup>[3]</sup> <b>489</b>:8 <b>503</b>:19,25  <b>afford</b> <sup>[2]</sup> <b>461</b>:11 <b>462</b>:10  <b>afoul</b> <sup>[2]</sup> <b>462</b>:8 <b>569</b>:10  <b>afraid</b> <sup>[1]</sup> <b>449</b>:19  <b>afternoon</b> <sup>[1]</sup> <b>525</b>:2  <b>afternoon's</b> <sup>[1]</sup> <b>526</b>:3  <b>agencies</b> <sup>[6]</sup> <b>537</b>:6 <b>541</b>:21 <b>543</b>:9 <b>556</b>:9 <b>561</b>:7 <b>562</b>:5  <b>Agency</b> <sup>[5]</sup> <b>472</b>:11 <b>483</b>:3,7 <b>484</b>:15 <b>508</b>:10  <b>aggressive</b> <sup>[1]</sup> <b>456</b>:10  <b>ago</b> <sup>[9]</sup> <b>441</b>:23 <b>452</b>:19 <b>466</b>:18,19 <b>482</b>:14 <b>506</b>:20 <b>510</b>:11 <b>563</b>:1,4  <b>agonize</b> <sup>[1]</sup> <b>482</b>:25  <b>agonizing</b> <sup>[1]</sup> <b>483</b>:5  <b>agree</b> <sup>[10]</sup> <b>462</b>:15 <b>465</b>:12 <b>493</b>:19 <b>494</b>:9 <b>521</b>:8 <b>527</b>:18 <b>530</b>:19 <b>535</b>:25 <b>568</b>:16 <b>579</b>:14  <b>agreement</b> <sup>[5]</sup> <b>474</b>:11 <b>476</b>:25 <b>522</b>:2,7,14  <b>ahead</b> <sup>[18]</sup> <b>434</b>:13 <b>435</b>:24,25 <b>441</b>:18 <b>443</b>:14 <b>449</b>:8 <b>450</b>:23 <b>465</b>:20,21 <b>481</b>:22 <b>488</b>:16,17 <b>494</b>:16 <b>495</b>:22 <b>501</b>:3 <b>504</b>:3 <b>551</b>:9 <b>552</b>:24  <b>aids</b> <sup>[1]</sup> <b>526</b>:20  <b>aimed</b> <sup>[2]</sup> <b>470</b>:22 <b>485</b>:9  <b>akin</b> <sup>[1]</sup> <b>542</b>:11  <b>albeit</b> <sup>[2]</sup> <b>476</b>:9 <b>477</b>:4  <b>alert</b> <sup>[1]</sup> <b>448</b>:19  <b>Alex</b> <sup>[1]</sup> <b>433</b>:16  <b>aligned</b> <sup>[1]</sup> <b>562</b>:16  <b>alike</b> <sup>[1]</sup> <b>510</b>:24  <b>allege</b> <sup>[1]</sup> <b>488</b>:5</p>
---	--	---	--

<p><b>alleged</b> [2] 436:14 468:15  <b>Alliance</b> [1] 435:4  <b>allow</b> [12] 487:17 495:6 518:6 527:5 530:7 538:5 541:21 549:15 555:1 556:14 569:2 579:10  <b>allowance</b> [1] 549:19  <b>allowed</b> [3] 446:24,24 532:1  <b>allowing</b> [1] 516:10  <b>allows</b> [3] 477:18 529:21 578:9  <b>almost</b> [4] 459:7 462:16 512:3 522:10  <b>alphabetical</b> [1] 434:12  <b>already</b> [16] 437:25 443:16 449:10 467:6 472:10 477:15 486:20 490:7 509:11 514:11,18 517:10 529:24 541:2,7 577:19  <b>alter</b> [2] 539:10 552:7  <b>alteration</b> [2] 552:3,3  <b>altered</b> [1] 575:25  <b>altering</b> [1] 551:21  <b>alternative</b> [3] 447:13 559:22 561:2  <b>alternatives</b> [2] 551:14 559:20  <b>alters</b> [1] 575:1  <b>although</b> [8] 432:9 480:18 481:12 482:22 546:23 547:16,20 551:20  <b>altogether</b> [1] 532:8  <b>amateurs</b> [1] 442:25  <b>amazing</b> [1] 536:18  <b>ambit</b> [1] 469:11  <b>Amendment</b> [13] 470:17 471:6,7,14,22 473:4,8,10,19 474:3,20,21 492:11  <b>Amer</b> [74] 432:22,24,24 478:23 479:1,3 480:24 485:11 494:15,17,18 495:22,23 496:23 508:3,6 524:20,21,21 526:4,5 527:7 528:20 529:8 530:25 531:12 533:4,11 534:12,19 536:24 537:2 539:1,6,9 543:17 544:22 545:18,21 546:4,9 548:1,5,8,16,24 551:6,8,10 556:11 557:21 559:16 560:21,24 563:9 564:19 566:11,18 567:25 568:19,24 569:18 570:13 571:24 573:16 574:25 575:6 576:9 577:8,14 579:5,17 580:5,9  <b>Amer's</b> [1] 500:17  <b>amongst</b> [1] 468:7  <b>amount</b> [3] 490:5 549:22 568:11  <b>analogy</b> [2] 455:22 500:6  <b>Analysis</b> [3] 433:8 500:14 525:4  <b>analyst</b> [2] 433:7 525:3  <b>analyzing</b> [1] 478:1  <b>anchoring</b> [1] 498:8  <b>ancillary</b> [4] 447:6 454:3,9 471:14  <b>anecdotal</b> [1] 468:7  <b>anger</b> [1] 458:24  <b>angle</b> [1] 543:6  <b>animal</b> [1] 500:1  <b>animals</b> [1] 500:1  <b>annual</b> [1] 481:5  <b>anonymous</b> [1] 482:5</p>	<p><b>another</b> [8] 432:10 488:6 493:14 508:25 541:8 547:5,13 580:12  <b>answer</b> [8] 431:22 446:6 454:24 457:5 479:6 503:4 549:1 554:1  <b>anti-blocking</b> [3] 527:21 563:7 565:21  <b>anti-circumvention</b> [2] 518:23 573:22  <b>anti-trafficking</b> [4] 569:10,23 570:10 579:15  <b>antitrust</b> [1] 492:3  <b>anybody</b> [1] 489:18  <b>APA</b> [1] 522:24  <b>apart</b> [1] 455:25  <b>API</b> [1] 561:18  <b>APIs</b> [3] 561:6,7 562:7  <b>apologies</b> [3] 434:21 463:4 491:7  <b>apologize</b> [3] 435:22 449:6 490:3  <b>App</b> [8] 434:25 525:21 527:10,11,13 559:23 561:25 564:12  <b>apparent</b> [1] 483:11  <b>apparently</b> [1] 467:17  <b>appears</b> [1] 496:21  <b>appended</b> [1] 468:11  <b>Apple</b> [16] 447:15 455:19,20,24 456:7,17,18 457:24 458:24 462:11 465:19 466:4 489:16,24 490:4 501:17  <b>applicable</b> [4] 493:8 529:9 570:18 573:13  <b>application</b> [4] 561:12,19 563:21 564:7  <b>applications</b> [4] 440:6 527:23 533:17 576:25  <b>applies</b> [5] 436:4 455:13 478:10 486:9 574:9  <b>apply</b> [11] 491:11 494:22 496:1 501:9 509:23 537:25 574:5,5,13,15 576:11  <b>appreciate</b> [8] 431:25 437:3 485:16 487:25 493:12 548:18 553:18 571:25  <b>appreciated</b> [1] 480:18  <b>approach</b> [7] 467:16 479:12,23,25 497:12 569:7,16  <b>approached</b> [1] 553:19  <b>appropriate</b> [9] 439:15 509:16,25 510:22 511:20 516:20 554:8 564:13 565:23  <b>appropriately</b> [2] 465:6 530:2  <b>approval</b> [1] 532:5  <b>approved</b> [2] 532:23 571:20  <b>April</b> [4] 432:10 523:11 580:13,16  <b>apt</b> [1] 507:25  <b>area</b> [15] 442:14 473:14 477:23 481:2 492:3 493:8,14 506:1 527:1,2 531:13 536:22 542:21 568:14 578:4  <b>areas</b> [4] 442:14 541:23 564:14 566:5  <b>aren't</b> [4] 459:15 527:4 530:1 574:8</p>	<p><b>arguably</b> [1] 548:21  <b>argue</b> [2] 460:20 541:1  <b>argued</b> [1] 439:2  <b>arguing</b> [1] 460:17  <b>argument</b> [2] 508:14 540:19  <b>arguments</b> [4] 457:17,21 487:10,13  <b>arisen</b> [1] 509:21  <b>arms</b> [9] 539:12,13,15,18 557:9  <b>around</b> [16] 432:13 436:3,10 453:2 459:1 460:10 483:18 486:4 488:20 489:16 500:12 503:19 530:5 531:17 533:16 576:24  <b>array</b> [2] 501:11 554:16  <b>Article</b> [1] 507:19  <b>aside</b> [1] 438:19  <b>aspect</b> [1] 535:12  <b>aspects</b> [5] 434:10 455:5 462:4 507:22 535:10  <b>assess</b> [1] 465:7  <b>assistance</b> [8] 461:24 551:16 559:17 564:21 566:13 568:22 569:7 579:11  <b>Assistant</b> [3] 433:2 441:25 524:24  <b>associate</b> [1] 458:18  <b>Associates</b> [2] 550:9 574:10  <b>Association</b> [7] 434:18 435:1 458:11 461:8,13 525:21 527:10  <b>Association's</b> [1] 559:24  <b>associations</b> [1] 458:20  <b>assume</b> [2] 490:24 496:12  <b>assuming</b> [1] 565:13  <b>assurance</b> [1] 561:20  <b>assured</b> [1] 438:14  <b>attachment</b> [1] 450:16  <b>attacks</b> [2] 511:6 539:25  <b>attempting</b> [3] 463:21 544:1 562:21  <b>attention</b> [2] 450:19 571:2  <b>attentive</b> [1] 520:18  <b>attorney</b> [12] 433:25 434:2 458:13,18 459:3 461:8,9,12,14,15,17 462:20  <b>attorneys</b> [4] 458:22 459:15 461:7 462:15  <b>audience</b> [4] 432:5,10 579:19 580:12  <b>audio</b> [4] 432:19 440:4 524:18 568:20  <b>authentication</b> [1] 547:11  <b>authorized</b> [2] 451:7 561:12  <b>auto</b> [1] 554:2  <b>available</b> [10] 432:3 460:7 507:7,11 518:16 528:5 544:25 561:6 564:7 578:3  <b>avenues</b> [4] 528:18 559:22 560:15 565:25  <b>avoid</b> [1] 457:15  <b>avoiding</b> [2] 489:7,12  <b>aware</b> [10] 436:12 475:8 482:19 502:19 514:6 518:10 520:16 521:10 531:10 553:23</p>	<p><b>away</b> [3] 478:18 521:11 548:15  <b>awkward</b> [1] 565:6  <b>Ayers</b> [2] 434:11,15</p> <hr/> <p style="text-align: center;"><b>B</b></p> <p><b>back</b> [34] 436:9 439:25 440:4 441:21 464:21 466:18 482:14,20 484:12 496:20 498:13 506:11 509:12 512:4,8 513:13 520:1 523:3 524:3 527:23 537:12 541:23 542:22 543:5 549:25 552:8 558:11 559:10 562:10 565:6 566:4,19 568:20 571:11  <b>bad</b> [3] 459:22 460:10 469:22  <b>bad-faith</b> [1] 464:1  <b>baked</b> [1] 510:15  <b>Bakul</b> [1] 528:12  <b>balance</b> [3] 497:9,12 507:1  <b>ban</b> [2] 455:21,24  <b>band-aid</b> [1] 576:21  <b>bandwidth</b> [1] 441:13  <b>bar</b> [2] 451:8 559:11  <b>barn</b> [3] 577:25 578:5 579:2  <b>barrier</b> [1] 557:13  <b>BAs</b> [1] 550:8  <b>base</b> [1] 535:2  <b>based</b> [8] 439:11 446:11,12 452:20 456:10 499:3 570:24 571:17  <b>baseless</b> [1] 439:3  <b>basic</b> [3] 491:8 507:18 563:12  <b>basically</b> [12] 456:7 457:15,25 459:20 469:19 470:5 475:24 476:8 493:3 507:2 514:12 519:9  <b>basis</b> [6] 441:21 527:9,15 529:4 543:1 572:12  <b>bear</b> [2] 557:15 568:22  <b>bearing</b> [1] 487:25  <b>bears</b> [2] 500:2 511:21  <b>become</b> [3] 440:23 444:17 499:17  <b>beg</b> [2] 466:8 496:17  <b>beginning</b> [2] 464:21 506:12  <b>behalf</b> [6] 525:9,14 527:10 549:11 569:3,3  <b>behavior</b> [2] 469:20 504:1  <b>behind</b> [2] 448:13 463:8  <b>belabor</b> [1] 508:6  <b>believe</b> [16] 436:24 450:15 458:4 467:11 474:20 481:13 492:3 496:12 498:2,24 513:24 546:6,15 560:3,4 573:10  <b>believes</b> [1] 509:15  <b>belongs</b> [1] 514:4  <b>below</b> [1] 459:7  <b>beneficial</b> [1] 454:9  <b>beneficiaries</b> [2] 569:13 570:21  <b>benefit</b> [1] 509:3  <b>benefits</b> [1] 454:4  <b>besides</b> [1] 454:14  <b>best</b> [4] 431:14 440:12 508:13 556:3  <b>better</b> [13] 437:15,16 448:21 452:13 464:6,10 528:19 539:24 545:6,9 560:19 567:5 577:6</p>
--	---	--	--

<p><b>between</b> [11] 437:18 445:10 452:11 520:14 542:24 543:3 554:13, 17 555:16, 19 579:3  <b>beyond</b> [7] 439:3 454:2 465:10 510:17 526:13 530:12 571:10  <b>big</b> [1] 476:25  <b>biggest</b> [4] 438:2 459:1 491:7 530:23  <b>bit</b> [23] 431:12, 14 445:23 451:15 468:3 476:10 488:19 492:7 495:3 507:18 537:3, 9 541:11 543:20 546:11 549:25 554:21 565:6 567:8, 14, 16, 22 577:9  <b>bites</b> [1] 500:9  <b>Blake</b> [4] 433:21 439:18 458:23 510:4  <b>blanche</b> [1] 496:25  <b>bless</b> [1] 504:9  <b>blind</b> [2] 567:7 570:4  <b>blood</b> [1] 555:23  <b>Blu-ray</b> [1] 540:11  <b>bluntly</b> [1] 571:21  <b>Bob</b> [1] 575:24  <b>bodies</b> [1] 537:13  <b>body</b> [2] 495:9 528:4  <b>borders</b> [1] 493:13  <b>borne</b> [2] 440:11 519:16  <b>both</b> [14] 434:17 441:3 449:11 458:8 460:24 468:18 491:3 506:16 509:3 514:12 532:21 546:17 556:21 570:6  <b>bought</b> [1] 519:22  <b>bound</b> [1] 540:22  <b>bounds</b> [4] 449:20 451:6 503:6 540:16  <b>box</b> [1] 571:15  <b>boy</b> [1] 458:9  <b>Brad</b> [2] 433:1 524:24  <b>breach</b> [1] 481:16  <b>breached</b> [2] 467:1 505:17  <b>breadth</b> [2] 442:9 543:12  <b>break</b> [2] 530:21 573:22  <b>brief</b> [5] 431:20 444:1 498:17 522:9, 11  <b>briefly</b> [9] 447:1 463:11 497:16 498:1 506:12 512:12, 12 526:9 577:15  <b>bring</b> [5] 457:25 481:9 501:6 550:10 571:1  <b>bringing</b> [3] 478:4 506:18 565:6  <b>broad</b> [6] 467:6 512:23 513:14 554:16 556:2 575:11  <b>broaden</b> [2] 499:3 506:25  <b>broadened</b> [2] 440:17 506:13  <b>broadening</b> [3] 435:17 479:16 506:23  <b>broadly</b> [13] 435:11 442:15, 23 448:18 453:19 477:1 485:9 510:2, 6, 7 518:20 543:6, 7  <b>broken</b> [1] 505:12  <b>brought</b> [8] 455:20 471:17 481:12 501:12 502:19, 23 503:12 567:24</p>	<p><b>BSA</b> [6] 435:4 451:17 453:9 465:14 517:19 521:23  <b>build</b> [4] 531:23 537:6 539:24 578:22  <b>building</b> [3] 432:1 459:8 537:18  <b>built</b> [1] 571:19  <b>bully</b> [2] 456:20 466:5  <b>bunch</b> [1] 470:11  <b>burden</b> [7] 445:3 466:14, 14 467:3 468:24 474:6, 9  <b>buried</b> [1] 486:15  <b>business</b> [6] 455:5 457:20 458:16 489:25 550:8 574:10  <b>button</b> [5] 435:20, 22 438:5, 14 524:15  <b>buy</b> [2] 448:22 578:12  <b>byproduct</b> [1] 478:20</p> <hr/> <p style="text-align:center"><b>C</b></p> <hr/> <p><b>C.F.R</b> [3] 449:21 486:2 495:10  <b>cabin</b> [3] 447:5 455:22 459:14  <b>cable</b> [3] 508:19, 21, 24  <b>calculus</b> [2] 437:23 502:14  <b>calibrated</b> [1] 485:16  <b>call</b> [3] 442:12 458:20 512:4  <b>called</b> [9] 432:4 515:18 531:15, 20, 24 532:13 533:18 550:5, 8  <b>calls</b> [1] 511:18  <b>came</b> [5] 440:3 464:24 467:9 468:1 486:24  <b>candid</b> [1] 453:21  <b>cannot</b> [3] 436:16 477:21 504:9  <b>capable</b> [1] 537:18  <b>capacity</b> [1] 462:2  <b>card</b> [4] 496:25 544:13, 14 560:8  <b>cardioverter</b> [1] 526:21  <b>cards</b> [2] 544:12 546:15  <b>care</b> [2] 456:18 522:21  <b>careful</b> [4] 455:22 472:9 535:3 539:21  <b>carefully</b> [2] 538:18 557:12  <b>carrier</b> [1] 554:25  <b>carry</b> [1] 479:20  <b>cars</b> [1] 554:17  <b>carte</b> [1] 496:25  <b>carve</b> [3] 553:13, 22 554:18  <b>cascade</b> [1] 459:23  <b>case</b> [29] 444:21 445:7 447:12, 15, 16 452:3 455:13, 19 456:8 461:23 462:2 466:1 467:20 473:23, 25 474:2, 4 489:6 513:8 540:6 542:16 543:8 544:9 545:12 547:1 554:22 556:1, 8 557:5  <b>cases</b> [15] 462:6 465:25 471:1 473:9 484:7 492:19 494:12, 14 506:3 508:21, 22 544:9 551:21 552:13 556:16  <b>catching</b> [1] 434:21  <b>categories</b> [1] 526:13  <b>causation</b> [5] 498:21 499:7, 10, 11 513:3  <b>cause</b> [3] 499:12 500:3 541:10  <b>caused</b> [2] 481:19 518:23</p>	<p><b>caution</b> [2] 438:23 462:24  <b>cautious</b> [2] 465:5, 6  <b>caveat</b> [1] 576:5  <b>caveating</b> [1] 521:8  <b>caveats</b> [4] 444:6 457:1 461:16 486:11  <b>CD</b> [1] 440:4  <b>CDT</b> [1] 468:10  <b>cell</b> [2] 519:2, 4  <b>Center</b> [9] 433:12 448:8 455:8 528:11, 12 529:15 541:25 542:17 543:6  <b>century</b> [2] 513:6 563:6  <b>Cerner</b> [1] 564:8  <b>certain</b> [3] 526:8 532:2 548:19  <b>certainly</b> [7] 472:15 474:17 492:5 505:13 516:1 517:23 518:14  <b>certainty</b> [7] 440:25 456:25 460:18, 20 461:2, 3 489:10  <b>cetera</b> [10] 461:11, 11, 23 462:11 480:3, 5 516:8 551:7, 7 556:17  <b>CFAA</b> [14] 438:2 462:5, 6, 8 478:21 488:7 492:19, 24 497:25 500:2 505:19 508:12 509:7 545:2  <b>chain</b> [1] 455:4  <b>challenge</b> [1] 554:12  <b>chance</b> [3] 467:22 548:25 570:14  <b>change</b> [19] 443:17 452:4 479:17 495:8 514:2 528:16 529:5, 18 533:7, 8, 14, 22 534:10, 18 535:9 544:2 545:24 549:16 578:5  <b>changed</b> [6] 437:13 465:18 466:3 512:14 531:8 542:5  <b>changes</b> [7] 532:4, 6, 6 533:3 539:16 542:24 578:22  <b>changing</b> [4] 467:18 496:11 534:24 570:3  <b>characterized</b> [1] 473:25  <b>chasing</b> [1] 446:9  <b>chat</b> [2] 431:18 432:8  <b>checked</b> [1] 468:10  <b>chilled</b> [5] 445:2 464:25 465:10 470:16 490:10  <b>chilling</b> [12] 439:9 445:13, 15, 16, 19, 20 465:16 466:2 469:3 477:2 489:18 553:1  <b>chills</b> [1] 471:5  <b>choice</b> [1] 519:13  <b>choices</b> [1] 448:21  <b>choose</b> [2] 519:14 561:19  <b>chose</b> [1] 471:18  <b>Chris</b> [1] 434:23  <b>Christian</b> [4] 435:3 458:7 460:13 520:17  <b>circumstances</b> [2] 531:8 553:14  <b>circumvent</b> [4] 526:12 529:22 560:11 577:19  <b>circumvented</b> [1] 579:14  <b>circumventing</b> [1] 563:17  <b>circumvention</b> [19] 451:4 452:11 469:3 499:13 513:4, 7 516:10 518:6 531:4 544:15 547:2 549:11 551:</p>	<p>14 556:14 557:1 559:13, 20 569:2 574:1  <b>cited</b> [2] 482:11 517:19  <b>civil</b> [5] 462:17 501:6 502:2 550:6, 10  <b>claim</b> [6] 473:5 503:12, 13 574:12 575:24 576:22  <b>claimed</b> [1] 447:9  <b>claims</b> [1] 441:7  <b>clarification</b> [7] 468:9 479:24 480:12, 18, 23 492:10, 15  <b>clarified</b> [3] 449:12 472:11, 17  <b>clarify</b> [13] 431:23 451:2 467:25 472:14 485:13 493:22 496:23 510:5 516:12 517:8, 14 522:2 560:23  <b>clarifying</b> [2] 475:10 514:17  <b>clarity</b> [6] 436:3, 10, 14, 18 456:24 484:14  <b>Class</b> [7] 431:7 432:6 442:2 522:13 524:11 569:13 570:21  <b>clause</b> [2] 477:18, 21  <b>clear</b> [29] 431:20 436:6 439:11 445:21 446:20 447:12 451:20, 23 452:7 460:21 472:3 473:5 478:7, 9 487:8, 21 491:15 495:6 514:19, 23 515:17 520:5 527:8 551:20 554:13, 14, 22 562:20 579:2  <b>clearer</b> [1] 452:5  <b>clearly</b> [6] 432:19 495:9 516:11 554:18 555:5 579:15  <b>clients</b> [5] 462:4, 5, 6 465:14 493:23  <b>Clinic</b> [4] 433:23 434:3 525:14, 17  <b>Clinical</b> [2] 525:12, 15  <b>close</b> [4] 462:21 482:22 555:16 566:14  <b>closer</b> [2] 554:21, 25  <b>cloud</b> [1] 444:13  <b>Coalition</b> [3] 525:9, 14, 17  <b>code</b> [14] 501:14, 16, 18, 20 502:3, 5, 22 535:2, 8 539:11, 20 544:8, 13, 17  <b>cognizable</b> [2] 469:10 473:5  <b>cognizant</b> [1] 569:19  <b>colleague</b> [10] 436:22 441:24 442:10 447:22 450:8 477:6 482:22 503:20 504:18 546:7  <b>colleagues</b> [10] 438:10 443:8 444:4 461:19 465:5 470:13 486:12 488:18 522:4 577:10  <b>collecting</b> [1] 534:23  <b>collection</b> [3] 535:15, 17 536:6  <b>collects</b> [2] 518:7 547:1  <b>Colorado</b> [2] 433:23 434:4  <b>come</b> [18] 457:24 471:11 474:10 475:14 476:24 477:5 481:2, 6 495:21 506:18 507:25 508:16 509:12 533:19 548:17 571:11 578:18, 21  <b>comes</b> [8] 442:23 443:23 466:22 484:16 485:25 500:2 530:17 571:13  <b>comfort</b> [1] 461:17  <b>coming</b> [7] 450:12, 12 467:7 501:</p>
---	---	---	---

<p>17 539:25 541:12 557:15  <b>commands</b> [2] 519:22,24  <b>commensurately</b> [1] 506:17  <b>comment</b> [9] 436:2,5 471:25 516:16 544:11 546:24 550:19 560:4 572:25  <b>commenters</b> [1] 514:9  <b>comments</b> [32] 431:24,25 432:12 434:9 436:8 439:2 446:1 450:16 451:1 454:1 461:20 467:21 468:21 472:23 474:1,1,23 477:11,22 478:5 486:24 488:10 507:24 513:25 514:2 516:12 517:6,20 519:8 522:23 527:11 546:14  <b>commercial</b> [3] 465:20 579:8,13  <b>Commission's</b> [1] 574:14  <b>Committee</b> [2] 467:10 525:25  <b>common</b> [4] 462:7 466:25 477:23 481:16  <b>communicate</b> [2] 547:19,22  <b>communication</b> [2] 519:25 547:17  <b>communities</b> [3] 484:18 486:16 562:16  <b>community</b> [16] 442:23 448:2,5, 18 451:19 459:9 484:2,4,24 485:1, 18 486:3 487:14 512:22,23 515:24  <b>community's</b> [1] 481:5  <b>companies</b> [8] 451:17 455:17 458:12 463:21 477:25 485:6 512:24 571:6  <b>company</b> [15] 455:18 456:17,18 457:24 501:16,18 504:3 519:2,4 532:14 567:18,18,18,24 573:23  <b>comparable</b> [1] 505:7  <b>compared</b> [1] 435:13  <b>comparison</b> [1] 516:8  <b>compelling</b> [2] 474:2 513:18  <b>compete</b> [2] 447:11 527:14  <b>competing</b> [2] 447:20 460:2  <b>compilations</b> [2] 551:24 556:13  <b>complain</b> [1] 545:14  <b>complaint</b> [1] 545:17  <b>complementary</b> [1] 509:1  <b>complete</b> [1] 531:23  <b>completely</b> [1] 512:20  <b>complex</b> [1] 500:12  <b>complexity</b> [2] 476:2 480:19  <b>compliance</b> [10] 489:8 492:20 494:24 496:2 497:3 509:2 570:18 572:2,21 576:13  <b>complicate</b> [1] 493:11  <b>complicated</b> [3] 480:8,20 485:18  <b>complicates</b> [1] 437:22  <b>complicating</b> [1] 443:24  <b>complication</b> [1] 493:14  <b>complicated</b> [1] 495:13  <b>comply</b> [6] 445:18 496:9 573:6,8 576:18 577:5  <b>complying</b> [3] 489:11 504:8 573:2  <b>compounds</b> [1] 573:19</p>	<p><b>Computer</b> [10] 433:17,18 437:19 442:18 450:9 454:6 472:16,25 556:15,22  <b>computers</b> [1] 520:2  <b>computing</b> [1] 442:3  <b>concept</b> [1] 579:7  <b>concepts</b> [2] 507:19,20  <b>conceptually</b> [1] 555:6  <b>concern</b> [33] 455:2,3 469:9 477:12, 17 479:10,14 487:6 492:8,9 496:5, 10 497:4 501:10,22 502:24,25 503:2 505:16,20 527:15 529:8,9 536:23 538:25 541:12 542:22 551:13 554:5 570:20,24 571:1 575:1  <b>concerned</b> [3] 459:24 566:8 575:17  <b>concerning</b> [1] 542:14  <b>concerns</b> [34] 435:16,17 437:6 439:4,5,17 440:1,3 441:4 452:14, 18 455:6 466:15 468:3 469:17,22, 24,25 473:11 475:24,25 476:8 487:13 489:9 493:3 496:13 498:25 517:16 518:2 519:11 520:6 524:11 527:16 549:3  <b>conclude</b> [1] 579:18  <b>concluding</b> [1] 579:22  <b>concomitantly</b> [1] 565:20  <b>concrete</b> [3] 439:17 488:19 490:9  <b>condition</b> [2] 438:16 572:20  <b>conditional</b> [6] 438:2 497:23 499:19,22 500:13,17  <b>conditionally</b> [1] 499:17  <b>conditioned</b> [1] 497:3  <b>conditions</b> [1] 542:4  <b>conduct</b> [2] 488:7 489:8  <b>conducting</b> [2] 475:5 511:5  <b>conference</b> [1] 481:5  <b>confidence</b> [1] 443:3  <b>confident</b> [1] 492:18  <b>confine</b> [1] 498:3  <b>confusing</b> [1] 507:18  <b>confusion</b> [2] 492:24 537:22  <b>Congress</b> [12] 444:20 467:14 495:14,18,19 496:14 498:5 509:21 511:2 517:1 568:8,10  <b>congressional</b> [1] 568:14  <b>conjunction</b> [1] 488:6  <b>connect</b> [1] 547:6  <b>Connected</b> [3] 435:2 525:23 547:9  <b>connection</b> [4] 524:13 563:20 564:12 565:2  <b>connections</b> [1] 579:3  <b>conscious</b> [2] 551:12 569:8  <b>consensus</b> [1] 553:21  <b>consent</b> [1] 521:12  <b>consenting</b> [2] 520:16 521:13  <b>Conservancy</b> [6] 434:7 436:2 513:23 514:15,24 515:21  <b>Conservancy's</b> [1] 518:13  <b>consider</b> [6] 440:9 466:15 489:4 507:2 516:25 554:1</p>	<p><b>consideration</b> [3] 499:7 516:17 517:23  <b>considered</b> [1] 531:18  <b>considering</b> [3] 501:15 507:1 520:13  <b>considers</b> [1] 556:4  <b>consistent</b> [2] 454:10 503:7  <b>consisting</b> [1] 556:13  <b>constant</b> [2] 519:24 536:17  <b>constantly</b> [1] 578:19  <b>constitute</b> [1] 570:10  <b>constitutional</b> [1] 471:11  <b>construct</b> [1] 540:20  <b>construction</b> [5] 491:9,13 497:13, 18 507:21  <b>Consumer</b> [3] 514:16 519:1 539:15  <b>consumers</b> [5] 519:17 520:5,8 532:10 533:9  <b>contact</b> [1] 580:2  <b>contacting</b> [1] 563:25  <b>contain</b> [1] 526:20  <b>contained</b> [1] 536:2  <b>contains</b> [1] 464:13  <b>contending</b> [1] 485:17  <b>Content</b> [5] 434:19 444:12 504:23 508:18 509:7  <b>content-based</b> [1] 509:1  <b>contention</b> [1] 515:17  <b>context</b> [13] 455:21,23 473:18 477:24 485:3 498:9 506:6 508:13 510:21 529:10 532:1 572:4 574:3  <b>contexts</b> [1] 442:15  <b>continue</b> [4] 454:11 509:23 536:3 576:11  <b>continued</b> [3] 506:23 527:3 536:1  <b>continuing</b> [4] 437:7 456:9 512:4 527:2  <b>contours</b> [2] 540:7 541:1  <b>contract</b> [4] 447:13 475:6 481:16 505:17  <b>contracts</b> [2] 481:17 482:3  <b>contractual</b> [5] 477:20 478:2,12 480:5 481:23  <b>contradiction</b> [1] 483:12  <b>contrary</b> [3] 470:2 493:6 515:15  <b>contribute</b> [1] 580:14  <b>contribution</b> [1] 580:3  <b>contributions</b> [1] 442:25  <b>Control</b> [1] 434:18  <b>conundrum</b> [1] 530:2  <b>Conversancy's</b> [1] 518:2  <b>conversation</b> [4] 490:15 558:15 574:20 576:4  <b>conversations</b> [2] 504:24 505:2  <b>Coordinator</b> [7] 527:21 534:1 540:23 558:15,20 564:15 565:20  <b>Coordinator's</b> [1] 563:3  <b>Copy</b> [2] 434:18 549:8  <b>Copyright</b> [56] 431:5 435:7 443:20 444:23 446:14 453:6 456:9 459:12 467:25 469:12,16,25 470:4</p>	<p>472:4 473:15 478:8 492:4,20 494:21 498:24 500:20 507:7 508:9,13 511:7 524:10 528:16 530:6 541:24 542:18 543:6 544:3 549:3,23 553:6 562:11,12 563:5 565:5,7 566:21,23 567:3,7 568:4,10,14 569:20 570:2,7 571:14,15 574:23 576:12 577:10 580:1  <b>copyright's</b> [1] 578:8  <b>copyright-related</b> [1] 571:1  <b>copyright.gov</b> [1] 432:17  <b>copyrighted</b> [3] 551:23 553:10 570:5  <b>core</b> [3] 449:1 469:9 471:6  <b>Corellium</b> [5] 447:15 455:19 465:19 489:16 490:4  <b>Corellium's</b> [1] 447:16  <b>Corley</b> [1] 473:5  <b>corners</b> [1] 574:23  <b>correct</b> [6] 473:17 491:19 502:1 529:7 548:23 550:1  <b>correctly</b> [2] 495:2 514:13  <b>cost</b> [3] 458:15 559:1,3  <b>couldn't</b> [2] 461:11 570:6  <b>Counsel</b> [21] 431:4 432:25 433:2, 23 434:24 442:8 456:14,16 458:10,25 461:10,22 462:7 489:20,20 504:12,15,24 524:9,22,25  <b>count</b> [1] 505:18  <b>counter</b> [1] 478:7  <b>countervailing</b> [1] 479:14  <b>countries</b> [1] 491:21  <b>counts</b> [1] 485:23  <b>couple</b> [9] 444:10 447:2 473:23 515:10 530:25 546:10,16 555:17 560:13  <b>coupled</b> [2] 476:17 490:17  <b>course</b> [9] 445:12 456:6 472:8 474:16 480:18 492:2 493:18 502:11 554:8  <b>court</b> [16] 432:18 447:15 456:20 462:11 471:7,9,20 473:7,12 480:14 489:24 490:6 501:20 524:17 570:9 575:24  <b>courts</b> [1] 493:7  <b>cover</b> [13] 431:19 453:14 454:16 456:5 465:4 478:21 514:23,25 516:7 517:9,16 518:1 549:6  <b>coverage</b> [1] 496:1  <b>covered</b> [17] 436:7 437:25 458:8 504:16 517:10,15 526:14 531:14 550:8,9,17 558:21,22 571:7 574:9, 10,22  <b>covers</b> [7] 508:20 514:11,14,18 515:5 521:18 522:16  <b>CPAP</b> [12] 526:19 544:12 546:14 558:4 560:7 561:25 563:13,20 564:10,11 567:13,24  <b>create</b> [9] 447:5 453:4 460:10 464:7 513:16 549:15 575:20,21 578:10  <b>created</b> [3] 543:11,11 561:22</p>
---	---	--	---

<p><b>creates</b> [3] 483:11 489:17 521:5  <b>creating</b> [3] 457:16 476:18 518:4  <b>Creators</b> [2] 435:7 508:18  <b>criminal</b> [3] 462:5 494:2 508:12  <b>criminally</b> [1] 508:11  <b>critical</b> [1] 470:22  <b>criticism</b> [4] 447:7 463:24 470:12, 22  <b>criticize</b> [1] 466:9  <b>criticized</b> [2] 479:8 495:11  <b>criticizing</b> [1] 467:12  <b>CURES</b> [3] 559:24 563:6 568:12  <b>curious</b> [7] 484:1 515:3 537:8 566:22 567:4 577:16,21  <b>current</b> [27] 431:8 435:16 438:3 465:3,17 472:10 482:8 483:2 495:25 497:6 510:16,21 511:21 514:11,13,18,22 515:4 517:11 521:17 526:9,17 529:11 531:6 533:13 534:21 548:21  <b>currently</b> [3] 526:14,15 548:20  <b>cut</b> [1] 457:20  <b>cutoff</b> [1] 432:9  <b>cuts</b> [1] 441:2  <b>cyber</b> [1] 511:6  <b>cybersecurity</b> [9] 437:16 440:21 441:4 506:15 512:21 527:24 532:3,22 533:10</p>	<p>25  <b>decisions</b> [1] 518:25  <b>decode</b> [1] 547:4  <b>deeply</b> [1] 470:25  <b>Defcon</b> [1] 481:3  <b>defend</b> [1] 462:5  <b>defendants</b> [1] 462:5  <b>defense</b> [1] 573:12  <b>defensive</b> [1] 512:22  <b>defer</b> [4] 475:20 484:11 488:18 504:18  <b>deference</b> [1] 516:2  <b>defibrillators</b> [1] 526:21  <b>definitely</b> [4] 454:2 500:5 523:6 576:7  <b>degree</b> [4] 439:15 446:23 506:14, 15  <b>deliver</b> [3] 555:22,22,23  <b>delta</b> [1] 443:16  <b>demand</b> [1] 534:2  <b>Democracy</b> [2] 433:12 470:24  <b>demonstrably</b> [1] 466:13  <b>demonstrate</b> [4] 503:19 504:1 537:17 538:7  <b>demonstrated</b> [4] 439:18 452:2 494:5 519:20  <b>demonstrating</b> [1] 489:7  <b>Department</b> [6] 437:8,13 438:10 477:4 490:17 501:8  <b>department's</b> [1] 441:24  <b>dependent</b> [1] 512:2  <b>deprecated</b> [1] 540:5  <b>depth</b> [1] 511:25  <b>Deputy</b> [2] 432:24 524:21  <b>derived</b> [2] 449:15 469:15  <b>describe</b> [3] 436:14 502:20 544:11  <b>described</b> [3] 448:25 539:23 549:2  <b>describes</b> [1] 552:11  <b>description</b> [1] 442:4  <b>deserving</b> [1] 517:23  <b>design</b> [3] 532:17,17 555:9  <b>designed</b> [1] 509:20  <b>despite</b> [1] 441:6  <b>detailed</b> [1] 479:9  <b>details</b> [1] 465:7  <b>detecting</b> [1] 521:19  <b>determine</b> [1] 444:2  <b>deterred</b> [1] 572:15  <b>deterrent</b> [1] 572:23  <b>develop</b> [2] 531:21 549:21  <b>developed</b> [1] 473:6  <b>developer</b> [1] 564:3  <b>developers</b> [5] 461:22 477:18 505:13 527:12,13  <b>developing</b> [1] 536:17  <b>Development</b> [5] 433:8 448:5 525:4 532:15 559:8  <b>device</b> [51] 475:8 524:13 525:9 529:14 530:8,15 531:6,14,17,18, 22 532:19 533:2 534:11,25 535:</p>	<p>19 536:7 537:15,16 541:19 544:2, 14 545:15,16 547:1,6,7,8,9,10,16, 19,22 551:3,22,24,25 552:4,8 555:17 561:17 563:17 565:1 568:9 573:21,25 574:7,17 575:2,3 576:5  <b>devices</b> [29] 477:21 526:13,17,18, 24 527:1,4 530:1,7,12 532:10 534:22 536:2 537:24 538:3 542:21 544:5 546:18 550:24 554:15,16 555:21 556:3 564:5 565:11 570:4 574:16 575:15 578:18  <b>diabetes</b> [1] 578:13  <b>dialogue</b> [4] 449:14,18 452:18,20  <b>dictate</b> [1] 487:18  <b>die</b> [1] 574:3  <b>died</b> [2] 538:15 575:13  <b>dies</b> [1] 575:23  <b>difference</b> [9] 445:10 495:20 535:18 536:14 547:18 555:19 573:18 574:3 578:1  <b>different</b> [29] 442:5 454:13 457:4, 6 468:16,24 470:19 473:24 476:24 477:5 480:9 484:3,18 485:2 491:20,21 495:16 497:9 506:20 507:12 511:9 512:20 514:5,5 522:18 531:9 539:14 551:11 574:19  <b>differentiation</b> [1] 520:14  <b>difficult</b> [4] 446:6 466:21 485:1,12  <b>difficulty</b> [2] 452:9 548:3  <b>diffuse</b> [2] 484:21,24  <b>Digital</b> [1] 467:25  <b>dimension</b> [1] 505:2  <b>direct</b> [1] 470:23  <b>directed</b> [2] 470:21 557:4  <b>direction</b> [1] 537:13  <b>directionally</b> [1] 477:3  <b>directives</b> [1] 537:5  <b>directly</b> [7] 458:25 459:2 470:21 515:24 534:24 549:8 568:8  <b>Director</b> [4] 433:22 435:1,4 525:22  <b>disable</b> [1] 521:4  <b>disabled</b> [1] 570:5  <b>disabling</b> [2] 515:1 516:7  <b>disagree</b> [6] 487:23 521:17,21,23, 25 562:18  <b>disambiguate</b> [1] 439:21  <b>disclosed</b> [3] 515:13,16 520:14  <b>discouraged</b> [2] 475:5,15  <b>discover</b> [2] 448:11 521:2  <b>discovered</b> [1] 538:16  <b>discovery</b> [4] 460:2 474:12,13,14  <b>discs</b> [1] 540:11  <b>discuss</b> [4] 437:13 478:22 486:22 516:20  <b>discussed</b> [4] 470:19 495:3 522:17 560:3  <b>discussing</b> [3] 452:6 476:9 498:19  <b>discussion</b> [13] 432:1 453:21 467:9,15,20 468:1 470:8 475:23 507:17,23 526:3 566:25 573:20  <b>discussions</b> [1] 483:24</p>	<p><b>dismiss</b> [7] 468:23 471:19 473:2, 16 474:4,24 523:2  <b>dispel</b> [1] 486:11  <b>disproportionate</b> [1] 501:23  <b>dispute</b> [1] 559:19  <b>disruptive</b> [1] 562:14  <b>disseminate</b> [1] 448:17  <b>disseminates</b> [1] 518:7  <b>dissuade</b> [1] 477:25  <b>distinction</b> [4] 476:21 535:20,23 536:14  <b>distinguished</b> [1] 516:16  <b>distributors</b> [1] 508:18  <b>district</b> [1] 462:11  <b>disturb</b> [1] 499:25  <b>Disturbing</b> [1] 500:1  <b>diverge</b> [1] 476:23  <b>diverse</b> [2] 484:21,23  <b>division</b> [2] 554:13,15  <b>DMCA</b> [29] 442:7,9 443:17 452:24 458:13,15 459:16 462:4,9 473:3, 10 474:18 477:19 492:17,22,23 500:20,22 503:11 508:20,23 509:1 511:4,9,11 541:17 545:8 560:16 573:15  <b>doctor</b> [4] 555:24 558:3,7 562:1  <b>documented</b> [1] 450:18  <b>doing</b> [36] 439:23 455:4,15 457:12, 15,17 460:5 462:8 463:15,16,17, 22,23 470:11 479:15 486:8 489:18 494:21 503:1,5,7 504:9 506:17 508:9 513:5 516:3 522:5 524:9 530:4 534:1 538:11 543:9 556:9 557:10 564:6 576:6  <b>DOJ</b> [27] 438:15,19 467:20 468:18 469:2 470:14 471:2 475:10 476:12,15,23 486:23 488:3 490:21,24 491:8,16 492:16 493:3,12 494:5, 14 495:2,15 496:24 514:12 517:9  <b>DOJ's</b> [11] 491:5 492:14 493:18 494:1,3,8 496:6 497:22 498:15 573:4,10  <b>domestically</b> [2] 493:10,15  <b>donated</b> [1] 481:11  <b>done</b> [11] 459:12 462:10 482:24 494:7 495:18 506:21 513:6 528:3 530:21 535:6 576:1  <b>door</b> [6] 532:19 541:3 577:25 578:3,5,21  <b>door-opener</b> [1] 542:20  <b>doors</b> [1] 567:12  <b>down</b> [8] 456:21 458:1 462:18 502:9 538:22,22 543:20 558:5  <b>downstream</b> [1] 469:19  <b>dozen</b> [1] 512:7  <b>dozens</b> [1] 575:19  <b>draft</b> [3] 467:9,15 468:1  <b>drafted</b> [1] 511:9  <b>drafters</b> [3] 511:4,10,11  <b>drag</b> [1] 501:20  <b>dragged</b> [1] 489:24  <b>dramatic</b> [1] 574:21</p>
--	---	--	---

**D**

**damages** [1] 501:21  
**dangerous** [2] 567:1 575:3  
**Dark** [2] 460:7 578:11  
**data** [89] 519:3 524:13 526:23 527:19 528:1 529:23,25 530:13,14,17, 19 534:22,23 535:4,5,15,18 536:6, 21 541:19 542:12 544:7,12,14,16 545:12,16 546:25 547:4,7,14,15, 20,21,23 549:13 550:16 551:2 552:9,12,14,14 553:4,15 554:24 556:10,13,21 557:8,11,24 558:1,2, 4,10,18,25 559:2,4,6,14 560:1,5,7, 11,14,19,20 561:3,5,10,18,25 562:2,3,17,24 563:14,22 564:1,6,25 565:15,22 566:6 567:19 568:7 573:9 579:12  
**data-logging** [1] 526:20  
**databases** [1] 466:25  
**dated** [1] 550:22  
**dating** [1] 527:22  
**David** [2] 434:14,17  
**day** [6] 431:5 432:11 445:24 489:4 498:16 523:11  
**days** [3] 563:1,4,8  
**deal** [4] 485:15 502:14 512:1 568:15  
**dealing** [4] 476:2 496:16 503:25 511:5  
**death** [1] 575:20  
**decade** [2] 441:6 470:5  
**Deceptive** [2] 520:20 574:15  
**decide** [2] 473:8,13  
**decision** [4] 468:20,22 469:2 474:

<p><b>draw</b> <sup>[1]</sup> 486:6  <b>drawn</b> <sup>[1]</sup> 471:13  <b>draws</b> <sup>[1]</sup> 450:19  <b>drill</b> <sup>[1]</sup> 543:20  <b>Drug</b> <sup>[4]</sup> 527:22 528:10 529:14 564:14  <b>dual-purpose</b> <sup>[1]</sup> 463:20  <b>due</b> <sup>[2]</sup> 436:13 553:1  <b>duration</b> <sup>[1]</sup> 511:17  <b>during</b> <sup>[2]</sup> 470:20 502:11  <b>duty</b> <sup>[3]</sup> 567:9,16 577:6  <b>DVD</b> <sup>[4]</sup> 434:17 555:20 573:23,24  <b>DVDs</b> <sup>[1]</sup> 540:11  <b>dwelt</b> <sup>[1]</sup> 465:13  <b>dynamic</b> <sup>[1]</sup> 484:13</p>	<p><b>enabled</b> <sup>[1]</sup> 445:9  <b>encompass</b> <sup>[1]</sup> 480:4  <b>encourage</b> <sup>[4]</sup> 440:8 441:1 558:19 559:7  <b>encouraged</b> <sup>[1]</sup> 551:1  <b>encryption</b> <sup>[1]</sup> 529:17  <b>end</b> <sup>[9]</sup> 437:1 438:14 451:9 460:6, 20 462:9 538:10 561:23 562:14  <b>endorse</b> <sup>[1]</sup> 467:15  <b>ends</b> <sup>[3]</sup> 462:19 536:13 573:25  <b>enforcement</b> <sup>[3]</sup> 502:3 508:12 563:3  <b>enforces</b> <sup>[1]</sup> 508:10  <b>engage</b> <sup>[10]</sup> 451:18 458:25 459:2 481:7 530:14 536:15 550:7 562:1 571:18 572:15  <b>engaged</b> <sup>[4]</sup> 471:6 531:16 562:9 574:17  <b>engaging</b> <sup>[3]</sup> 475:15 534:24 555:11  <b>engineering</b> <sup>[3]</sup> 481:18 505:8,14  <b>English</b> <sup>[1]</sup> 459:13  <b>enormous</b> <sup>[1]</sup> 557:15  <b>enough</b> <sup>[17]</sup> 442:11 454:8 459:15 461:23 466:1 467:18 474:15 513:20 514:19 528:25 538:18 543:13 556:8 572:24 575:11,17,22  <b>ensure</b> <sup>[2]</sup> 535:1 561:14  <b>ensuring</b> <sup>[1]</sup> 527:25  <b>enter</b> <sup>[1]</sup> 459:23  <b>enterprise</b> <sup>[1]</sup> 440:7  <b>entire</b> <sup>[2]</sup> 460:10 550:16  <b>entirely</b> <sup>[3]</sup> 494:9,14 551:20  <b>entities</b> <sup>[5]</sup> 550:8,9 571:7 574:10, 10  <b>entitled</b> <sup>[2]</sup> 523:10 580:18  <b>entity</b> <sup>[2]</sup> 550:17 558:21  <b>entry</b> <sup>[1]</sup> 532:19  <b>environment</b> <sup>[2]</sup> 536:5 578:23  <b>environments</b> <sup>[1]</sup> 536:10  <b>Epic</b> <sup>[1]</sup> 564:8  <b>equipment</b> <sup>[5]</sup> 481:8,10,14 483:9, 10  <b>equipped</b> <sup>[1]</sup> 452:13  <b>equities</b> <sup>[4]</sup> 507:2,5,15 567:15  <b>err</b> <sup>[1]</sup> 567:20  <b>erring</b> <sup>[1]</sup> 571:12  <b>escalated</b> <sup>[1]</sup> 539:5  <b>escalation</b> <sup>[1]</sup> 540:1  <b>especially</b> <sup>[4]</sup> 480:21 538:10 557:14 560:24  <b>essentially</b> <sup>[14]</sup> 460:9 477:18 521:4 526:22 528:3 529:15 530:22 532:14,18 534:10 561:7 569:12 577:24 578:6  <b>established</b> <sup>[1]</sup> 510:13  <b>et</b> <sup>[10]</sup> 461:11,11,23 462:11 480:3,5 516:7 551:7,7 556:17  <b>ethical</b> <sup>[2]</sup> 444:16,17  <b>even</b> <sup>[23]</sup> 440:13 447:17 449:21 456:7 462:10 467:9 473:7 486:2 489:2 491:23 493:9,14 494:9 502:</p>	<p>6 520:3 538:19 543:2 544:25 545:4,6 553:16 559:1 575:16  <b>evenly</b> <sup>[1]</sup> 441:3  <b>event</b> <sup>[3]</sup> 481:4,9,20  <b>everybody</b> <sup>[5]</sup> 441:12 486:9 529:1 548:18 575:15  <b>everyone</b> <sup>[17]</sup> 433:6 438:6,24 442:19 443:13 470:15 483:19 487:25 490:24 513:23 524:3 525:3 534:3 548:11 549:9 550:21 566:14  <b>everyone's</b> <sup>[2]</sup> 514:6 571:25  <b>everything</b> <sup>[4]</sup> 440:6,7 503:7 557:10  <b>evidence</b> <sup>[15]</sup> 439:3,11,13 444:23 449:16 463:6 465:9 466:17,24 467:18 468:7 469:3 470:3 474:15 513:20  <b>evident</b> <sup>[1]</sup> 452:3  <b>evidentiary</b> <sup>[1]</sup> 513:17  <b>exactly</b> <sup>[7]</sup> 455:25 500:11 511:1 512:20 550:13 553:2 570:9  <b>example</b> <sup>[27]</sup> 441:23 447:9 455:18 468:15 474:3 476:4 481:1,21 482:12 483:4,8 484:23 490:12,15 501:13 504:2 508:8,19,25 515:15 519:21 544:11 567:13,24 572:24 574:6 576:25  <b>examples</b> <sup>[21]</sup> 464:25 465:16 475:4,14,21 488:4,19 490:8,9 509:4 515:10 526:11,19 546:17,23 548:20 552:9 556:18 567:17 572:14 575:19  <b>excel</b> <sup>[2]</sup> 449:20 451:6  <b>Excellence</b> <sup>[2]</sup> 528:11,12  <b>except</b> <sup>[1]</sup> 499:24  <b>exception</b> <sup>[2]</sup> 451:8 474:19  <b>exceptions</b> <sup>[5]</sup> 465:24 492:2,2 496:16 549:24  <b>excessive</b> <sup>[1]</sup> 466:6  <b>exclude</b> <sup>[1]</sup> 552:20  <b>excluded</b> <sup>[1]</sup> 554:3  <b>excuse</b> <sup>[1]</sup> 440:14  <b>Executive</b> <sup>[2]</sup> 435:1 525:22  <b>exempt</b> <sup>[2]</sup> 505:15 555:4  <b>exempted</b> <sup>[1]</sup> 538:9  <b>Exemption</b> <sup>[194]</sup> 431:7,8 433:11 435:11,13,16 436:4,8 437:14 438:3,7 439:6 440:4,14,18,19,25 443:17,18,24 444:5,6 446:14 449:20 451:20,22 452:7 453:14,17,17,19 454:7,16 456:23 457:9,11,14 460:5 462:19 463:1 464:10 465:4,23 467:5,6,11,16 469:14 470:5 471:4, 5,13,21 472:10 473:18 474:22 475:11 477:6 478:9,19 480:8,20 482:8,12 483:2,4,25 484:14,22 485:8,15,18,21 486:6,13 487:7,9, 14,17 488:9 489:5,11,17 490:18 493:21 494:8 495:6,8 496:2,7,22 497:1,24,25 499:3,23 502:18 505:9,15 506:4,5,13,18,24 507:3 509:4, 24 510:3,9,16,17,25 511:17,19</p>	<p>512:6 513:13 514:1,1,5,8,10,11,14, 16,18,23 515:4,8 516:7,14,18,23 517:7,11,15,21 518:1,4,20 519:10 520:24 521:18 522:16,21 524:12 526:9,17 527:5 529:11,21 530:6 531:7 533:13 534:9,18,20,21 539:6,7 541:10 542:12,15,16 544:4,6 552:18 553:5,13,24 554:2 556:12, 24 557:6,7 560:2 567:1 569:11,14, 21 570:1,3,3 572:4,7,21 573:12,20 576:13,17,22 577:18,22 578:5 579:11  <b>exemptions</b> <sup>[25]</sup> 444:20 466:16 468:2 473:18 479:8,16 482:14 484:19,25 485:10 498:4,6,13 509:16,20 510:1 512:5 513:15,16 540:8 553:7,8 555:1 556:14 557:12  <b>exercise</b> <sup>[3]</sup> 445:24 511:14 515:20  <b>exist</b> <sup>[5]</sup> 530:5 565:25 566:1 577:19 578:17  <b>existed</b> <sup>[1]</sup> 448:20  <b>existence</b> <sup>[2]</sup> 445:17 528:9  <b>existing</b> <sup>[15]</sup> 436:3,8 443:24 451:11 467:5,11 469:13 480:20 488:9 510:16 517:15 522:20 534:20 537:25 566:7  <b>exists</b> <sup>[3]</sup> 498:8 537:19 576:18  <b>expand</b> <sup>[5]</sup> 498:10 527:5,15 536:4 577:15  <b>expanded</b> <sup>[2]</sup> 433:11 439:6  <b>expanding</b> <sup>[1]</sup> 556:24  <b>expansion</b> <sup>[8]</sup> 526:10,16,22 527:12 529:10 535:8,11 544:1  <b>expansions</b> <sup>[1]</sup> 516:25  <b>expect</b> <sup>[3]</sup> 439:4 518:18 571:9  <b>expensive</b> <sup>[1]</sup> 444:14  <b>experience</b> <sup>[3]</sup> 444:3,4 484:1  <b>expert</b> <sup>[2]</sup> 442:13 459:10  <b>expertise</b> <sup>[3]</sup> 515:25 541:23 576:15  <b>experts</b> <sup>[2]</sup> 458:13 459:9  <b>explain</b> <sup>[3]</sup> 491:10 534:19 546:11  <b>explained</b> <sup>[1]</sup> 443:23  <b>explicit</b> <sup>[1]</sup> 437:17  <b>explicitly</b> <sup>[1]</sup> 511:13  <b>exploration</b> <sup>[1]</sup> 444:18  <b>explored</b> <sup>[1]</sup> 444:15  <b>exploring</b> <sup>[1]</sup> 442:2  <b>express</b> <sup>[1]</sup> 541:18  <b>extend</b> <sup>[1]</sup> 559:14  <b>extent</b> <sup>[16]</sup> 452:5,14 453:4 454:15 469:21 478:12 486:6 499:1 514:22 515:4 518:22,24 529:9 541:21 552:1 556:21  <b>extra</b> <sup>[2]</sup> 492:22,24  <b>extraneous</b> <sup>[1]</sup> 469:22  <b>extraterritorial</b> <sup>[4]</sup> 491:12,12 492:6 501:9  <b>extraterritoriality</b> <sup>[1]</sup> 493:1  <b>extremely</b> <sup>[3]</sup> 455:10 456:10 498:17  <b>eyes</b> <sup>[1]</sup> 479:20</p>
<b>E</b>			
<p><b>each</b> <sup>[5]</sup> 439:21 484:19 506:17 545:22 549:19  <b>eager</b> <sup>[1]</sup> 438:8  <b>earlier</b> <sup>[15]</sup> 470:8 484:13 485:4,22 489:16 490:13 503:17,24 507:23 511:1 550:2,19 566:25 574:20,23  <b>easier</b> <sup>[1]</sup> 463:14  <b>easiest</b> <sup>[2]</sup> 527:17 571:3  <b>easily</b> <sup>[3]</sup> 492:9 517:4 529:2  <b>easy</b> <sup>[2]</sup> 484:3 567:19  <b>eat</b> <sup>[1]</sup> 500:3  <b>eBay</b> <sup>[2]</sup> 481:11,15  <b>ecosystem</b> <sup>[1]</sup> 460:10  <b>ecosystems</b> <sup>[2]</sup> 444:11,13  <b>ECPA</b> <sup>[1]</sup> 462:6  <b>Education</b> <sup>[1]</sup> 525:25  <b>effect</b> <sup>[11]</sup> 468:16 469:3 477:3 485:24 489:18 499:12 541:7 546:12 553:1 563:1 565:8  <b>effectively</b> <sup>[4]</sup> 446:15 500:10 512:5 515:12  <b>effects</b> <sup>[10]</sup> 439:8,9 465:16 466:2 471:14,16 476:19 489:14 541:25 568:5  <b>effort</b> <sup>[3]</sup> 487:8 530:4 561:23  <b>efforts</b> <sup>[1]</sup> 485:16  <b>EHR</b> <sup>[4]</sup> 534:2 563:22,22 564:10  <b>either</b> <sup>[6]</sup> 492:22 521:24 559:14 561:14 564:8 579:25  <b>elaborate</b> <sup>[4]</sup> 537:3,9 572:11,18  <b>elaboration</b> <sup>[1]</sup> 570:9  <b>election</b> <sup>[5]</sup> 440:22 477:24 478:25 481:2,8  <b>elections</b> <sup>[1]</sup> 470:24  <b>electoral</b> <sup>[5]</sup> 501:14,16,18,20 502:21  <b>Electronic</b> <sup>[2]</sup> 461:21 511:6  <b>electronics</b> <sup>[1]</sup> 574:11  <b>eligibility</b> <sup>[1]</sup> 576:13  <b>else's</b> <sup>[1]</sup> 564:9  <b>embedded</b> <sup>[1]</sup> 530:12  <b>employed</b> <sup>[1]</sup> 540:4  <b>employer</b> <sup>[1]</sup> 504:15  <b>empowers</b> <sup>[1]</sup> 550:14  <b>emptor</b> <sup>[1]</sup> 576:5  <b>enable</b> <sup>[2]</sup> 452:21 515:1</p>	<p>574:17  <b>engaging</b> <sup>[3]</sup> 475:15 534:24 555:11  <b>engineering</b> <sup>[3]</sup> 481:18 505:8,14  <b>English</b> <sup>[1]</sup> 459:13  <b>enormous</b> <sup>[1]</sup> 557:15  <b>enough</b> <sup>[17]</sup> 442:11 454:8 459:15 461:23 466:1 467:18 474:15 513:20 514:19 528:25 538:18 543:13 556:8 572:24 575:11,17,22  <b>ensure</b> <sup>[2]</sup> 535:1 561:14  <b>ensuring</b> <sup>[1]</sup> 527:25  <b>enter</b> <sup>[1]</sup> 459:23  <b>enterprise</b> <sup>[1]</sup> 440:7  <b>entire</b> <sup>[2]</sup> 460:10 550:16  <b>entirely</b> <sup>[3]</sup> 494:9,14 551:20  <b>entities</b> <sup>[5]</sup> 550:8,9 571:7 574:10, 10  <b>entitled</b> <sup>[2]</sup> 523:10 580:18  <b>entity</b> <sup>[2]</sup> 550:17 558:21  <b>entry</b> <sup>[1]</sup> 532:19  <b>environment</b> <sup>[2]</sup> 536:5 578:23  <b>environments</b> <sup>[1]</sup> 536:10  <b>Epic</b> <sup>[1]</sup> 564:8  <b>equipment</b> <sup>[5]</sup> 481:8,10,14 483:9, 10  <b>equipped</b> <sup>[1]</sup> 452:13  <b>equities</b> <sup>[4]</sup> 507:2,5,15 567:15  <b>err</b> <sup>[1]</sup> 567:20  <b>erring</b> <sup>[1]</sup> 571:12  <b>escalated</b> <sup>[1]</sup> 539:5  <b>escalation</b> <sup>[1]</sup> 540:1  <b>especially</b> <sup>[4]</sup> 480:21 538:10 557:14 560:24  <b>essentially</b> <sup>[14]</sup> 460:9 477:18 521:4 526:22 528:3 529:15 530:22 532:14,18 534:10 561:7 569:12 577:24 578:6  <b>established</b> <sup>[1]</sup> 510:13  <b>et</b> <sup>[10]</sup> 461:11,11,23 462:11 480:3,5 516:7 551:7,7 556:17  <b>ethical</b> <sup>[2]</sup> 444:16,17  <b>even</b> <sup>[23]</sup> 440:13 447:17 449:21 456:7 462:10 467:9 473:7 486:2 489:2 491:23 493:9,14 494:9 502:</p>	<p>6 520:3 538:19 543:2 544:25 545:4,6 553:16 559:1 575:16  <b>evenly</b> <sup>[1]</sup> 441:3  <b>event</b> <sup>[3]</sup> 481:4,9,20  <b>everybody</b> <sup>[5]</sup> 441:12 486:9 529:1 548:18 575:15  <b>everyone</b> <sup>[17]</sup> 433:6 438:6,24 442:19 443:13 470:15 483:19 487:25 490:24 513:23 524:3 525:3 534:3 548:11 549:9 550:21 566:14  <b>everyone's</b> <sup>[2]</sup> 514:6 571:25  <b>everything</b> <sup>[4]</sup> 440:6,7 503:7 557:10  <b>evidence</b> <sup>[15]</sup> 439:3,11,13 444:23 449:16 463:6 465:9 466:17,24 467:18 468:7 469:3 470:3 474:15 513:20  <b>evident</b> <sup>[1]</sup> 452:3  <b>evidentiary</b> <sup>[1]</sup> 513:17  <b>exactly</b> <sup>[7]</sup> 455:25 500:11 511:1 512:20 550:13 553:2 570:9  <b>example</b> <sup>[27]</sup> 441:23 447:9 455:18 468:15 474:3 476:4 481:1,21 482:12 483:4,8 484:23 490:12,15 501:13 504:2 508:8,19,25 515:15 519:21 544:11 567:13,24 572:24 574:6 576:25  <b>examples</b> <sup>[21]</sup> 464:25 465:16 475:4,14,21 488:4,19 490:8,9 509:4 515:10 526:11,19 546:17,23 548:20 552:9 556:18 567:17 572:14 575:19  <b>excel</b> <sup>[2]</sup> 449:20 451:6  <b>Excellence</b> <sup>[2]</sup> 528:11,12  <b>except</b> <sup>[1]</sup> 499:24  <b>exception</b> <sup>[2]</sup> 451:8 474:19  <b>exceptions</b> <sup>[5]</sup> 465:24 492:2,2 496:16 549:24  <b>excessive</b> <sup>[1]</sup> 466:6  <b>exclude</b> <sup>[1]</sup> 552:20  <b>excluded</b> <sup>[1]</sup> 554:3  <b>excuse</b> <sup>[1]</sup> 440:14  <b>Executive</b> <sup>[2]</sup> 435:1 525:22  <b>exempt</b> <sup>[2]</sup> 505:15 555:4  <b>exempted</b> <sup>[1]</sup> 538:9  <b>Exemption</b> <sup>[194]</sup> 431:7,8 433:11 435:11,13,16 436:4,8 437:14 438:3,7 439:6 440:4,14,18,19,25 443:17,18,24 444:5,6 446:14 449:20 451:20,22 452:7 453:14,17,17,19 454:7,16 456:23 457:9,11,14 460:5 462:19 463:1 464:10 465:4,23 467:5,6,11,16 469:14 470:5 471:4, 5,13,21 472:10 473:18 474:22 475:11 477:6 478:9,19 480:8,20 482:8,12 483:2,4,25 484:14,22 485:8,15,18,21 486:6,13 487:7,9, 14,17 488:9 489:5,11,17 490:18 493:21 494:8 495:6,8 496:2,7,22 497:1,24,25 499:3,23 502:18 505:9,15 506:4,5,13,18,24 507:3 509:4, 24 510:3,9,16,17,25 511:17,19</p>	<p>512:6 513:13 514:1,1,5,8,10,11,14, 16,18,23 515:4,8 516:7,14,18,23 517:7,11,15,21 518:1,4,20 519:10 520:24 521:18 522:16,21 524:12 526:9,17 527:5 529:11,21 530:6 531:7 533:13 534:9,18,20,21 539:6,7 541:10 542:12,15,16 544:4,6 552:18 553:5,13,24 554:2 556:12, 24 557:6,7 560:2 567:1 569:11,14, 21 570:1,3,3 572:4,7,21 573:12,20 576:13,17,22 577:18,22 578:5 579:11  <b>exemptions</b> <sup>[25]</sup> 444:20 466:16 468:2 473:18 479:8,16 482:14 484:19,25 485:10 498:4,6,13 509:16,20 510:1 512:5 513:15,16 540:8 553:7,8 555:1 556:14 557:12  <b>exercise</b> <sup>[3]</sup> 445:24 511:14 515:20  <b>exist</b> <sup>[5]</sup> 530:5 565:25 566:1 577:19 578:17  <b>existed</b> <sup>[1]</sup> 448:20  <b>existence</b> <sup>[2]</sup> 445:17 528:9  <b>existing</b> <sup>[15]</sup> 436:3,8 443:24 451:11 467:5,11 469:13 480:20 488:9 510:16 517:15 522:20 534:20 537:25 566:7  <b>exists</b> <sup>[3]</sup> 498:8 537:19 576:18  <b>expand</b> <sup>[5]</sup> 498:10 527:5,15 536:4 577:15  <b>expanded</b> <sup>[2]</sup> 433:11 439:6  <b>expanding</b> <sup>[1]</sup> 556:24  <b>expansion</b> <sup>[8]</sup> 526:10,16,22 527:12 529:10 535:8,11 544:1  <b>expansions</b> <sup>[1]</sup> 516:25  <b>expect</b> <sup>[3]</sup> 439:4 518:18 571:9  <b>expensive</b> <sup>[1]</sup> 444:14  <b>experience</b> <sup>[3]</sup> 444:3,4 484:1  <b>expert</b> <sup>[2]</sup> 442:13 459:10  <b>expertise</b> <sup>[3]</sup> 515:25 541:23 576:15  <b>experts</b> <sup>[2]</sup> 458:13 459:9  <b>explain</b> <sup>[3]</sup> 491:10 534:19 546:11  <b>explained</b> <sup>[1]</sup> 443:23  <b>explicit</b> <sup>[1]</sup> 437:17  <b>explicitly</b> <sup>[1]</sup> 511:13  <b>exploration</b> <sup>[1]</sup> 444:18  <b>explored</b> <sup>[1]</sup> 444:15  <b>exploring</b> <sup>[1]</sup> 442:2  <b>express</b> <sup>[1]</sup> 541:18  <b>extend</b> <sup>[1]</sup> 559:14  <b>extent</b> <sup>[16]</sup> 452:5,14 453:4 454:15 469:21 478:12 486:6 499:1 514:22 515:4 518:22,24 529:9 541:21 552:1 556:21  <b>extra</b> <sup>[2]</sup> 492:22,24  <b>extraneous</b> <sup>[1]</sup> 469:22  <b>extraterritorial</b> <sup>[4]</sup> 491:12,12 492:6 501:9  <b>extraterritoriality</b> <sup>[1]</sup> 493:1  <b>extremely</b> <sup>[3]</sup> 455:10 456:10 498:17  <b>eyes</b> <sup>[1]</sup> 479:20</p>

<b>F</b>			
<p><b>face</b> [3] 437:11 441:20 528:6  <b>facilitate</b> [2] 451:21 558:14  <b>facilitates</b> [2] 469:16 535:7  <b>facing</b> [3] 443:9 529:13 540:1  <b>fact</b> [31] 439:8 444:10 445:17 454:3 456:7 468:23 470:2 476:12,15 479:16 481:15 486:11 487:15,22 491:17 493:6 499:12 506:2 520:15 527:20 536:2 543:15 556:9 557:14 558:1,18 560:20 568:13 569:20 575:12 578:6  <b>factor</b> [1] 499:2  <b>factors</b> [2] 443:24 445:22  <b>facts</b> [1] 473:6  <b>faculty</b> [3] 441:24 442:5,21  <b>failure</b> [1] 445:3  <b>fair</b> [5] 445:21 447:16 507:20 509:5 556:20  <b>fairly</b> [7] 445:3 452:7 455:17,17 507:6 513:15 529:19  <b>faith</b> [8] 459:21,22,22 460:10 463:15 464:2 469:23 496:12  <b>fall</b> [3] 436:9 454:11 472:24  <b>familiar</b> [2] 490:24 569:14  <b>far</b> [21] 443:9 446:8,13 447:6 462:18 473:9,15 482:2,18 497:17 507:4 512:7 518:20 530:12 539:15 543:7 544:23 545:25 546:21 565:5 571:10  <b>fast-moving</b> [1] 563:19  <b>faster</b> [1] 533:9  <b>fault</b> [1] 549:7  <b>favorably</b> [1] 482:12  <b>FDA</b> [42] 529:18,19,24 530:1 531:9,16,19 532:8,15,20,20 533:6,15,15,22 534:4 537:13,23,25 538:1,7,11 541:16 544:25 545:11,13,14 550:20,20 559:15 561:14 562:19,23 564:24 565:1,9,17 568:12 571:6,21 575:16 578:20  <b>FDA's</b> [4] 526:1 529:14 533:10 559:25  <b>fear</b> [12] 450:11,12,14,18 451:15 468:6,7 485:23,23,24 486:12 494:13  <b>feature</b> [2] 431:15 520:3  <b>features</b> [1] 555:9  <b>federal</b> [5] 501:20 502:10 525:24 537:5 574:14  <b>feel</b> [1] 555:15  <b>feelings</b> [1] 454:16  <b>feet</b> [1] 519:1  <b>Fellow</b> [3] 433:3 458:9 524:23  <b>few</b> [9] 444:24 470:20 481:3 506:3 514:7 543:24 551:11 566:15 567:4  <b>field</b> [1] 443:1  <b>figure</b> [8] 443:20 445:18 451:10 455:13 485:13 533:8 542:4 566:24  <b>figured</b> [1] 506:8</p>	<p><b>file</b> [3] 466:3 494:12 558:6  <b>filed</b> [4] 434:9 488:24 516:12 531:6  <b>filing</b> [5] 494:14 495:4 518:3 558:11 574:11  <b>filings</b> [2] 527:20 558:18  <b>fill</b> [2] 509:20 523:7  <b>filling</b> [1] 438:21  <b>filtered</b> [1] 484:25  <b>final</b> [3] 473:7 484:16 521:14  <b>finally</b> [1] 467:19  <b>find</b> [17] 442:7,8,13 458:18 459:3,10,16 474:9 500:21 502:9 509:25 519:23 521:1 535:1 538:6 540:25 579:25  <b>finding</b> [1] 562:10  <b>findings</b> [2] 448:17 449:1  <b>fine</b> [3] 467:5 528:24 578:21  <b>finer</b> [2] 496:23 501:1  <b>fines</b> [1] 502:3  <b>finger</b> [1] 517:25  <b>finish</b> [1] 546:4  <b>FIPS</b> [1] 577:2  <b>fire</b> [1] 561:15  <b>firmware</b> [5] 552:4,7,19 553:3 554:10  <b>first</b> [36] 435:9 439:25 444:21 456:15 461:6 464:23 467:24 468:15 470:17 471:6,7,14,22 473:3,8,10,19 474:2,20,20 490:3 496:22 498:14 510:10,12,12 519:6 522:5 525:11 531:3 543:25 546:5,20 551:18 564:10 566:19  <b>fit</b> [3] 492:19 496:14 571:14  <b>five</b> [1] 442:5  <b>fixed</b> [3] 448:13,15,15  <b>fixes</b> [1] 497:22  <b>flag</b> [1] 518:1  <b>flaw</b> [3] 436:7 515:9 518:11  <b>flaws</b> [3] 515:18 518:15 521:19  <b>flexibility</b> [1] 454:9  <b>flip</b> [1] 440:16  <b>flood</b> [1] 440:2  <b>flooded</b> [1] 567:17  <b>floors</b> [1] 459:7  <b>focus</b> [3] 469:22 470:2 509:1  <b>focused</b> [1] 456:9  <b>focusing</b> [1] 516:23  <b>folk</b> [1] 486:4  <b>folks</b> [13] 447:14 455:3 456:24,25 471:6 485:2,25 489:19 490:5,9 496:13 497:10 528:22  <b>follow</b> [8] 472:22 500:6 508:3 518:21 522:4 529:2 548:19 563:16  <b>follow-up</b> [7] 476:12 479:3 482:9 492:25 494:15 516:5 534:13  <b>following</b> [3] 445:22 537:5 565:9  <b>Food</b> [4] 527:22 528:10 529:14 564:14  <b>foothold</b> [1] 457:16  <b>footnote</b> [1] 450:16  <b>forces</b> [1] 557:15</p>	<p><b>foreclose</b> [1] 577:17  <b>foreclosed</b> [1] 578:25  <b>foreign</b> [7] 437:21 491:17 493:7,19,20 503:13 511:5  <b>foresee</b> [2] 509:21 544:19  <b>forgot</b> [1] 454:15  <b>form</b> [2] 474:17 558:11  <b>format</b> [1] 562:8  <b>formats</b> [1] 561:18  <b>former</b> [1] 450:8  <b>forms</b> [1] 554:20  <b>formulation</b> [2] 469:17,21 474:11 498:7 526:3 530:10 531:20 532:8,12 533:20 543:16 573:19  <b>found</b> [6] 431:14 439:10 447:15 448:19 459:5 528:22  <b>Foundation</b> [1] 461:21  <b>four</b> [2] 431:5 574:23  <b>framed</b> [2] 457:9 556:12  <b>framework</b> [3] 537:19 566:1 577:1  <b>framing</b> [3] 488:20 489:2 517:12  <b>frankly</b> [2] 470:23 531:21  <b>Fraud</b> [1] 437:19  <b>free</b> [3] 443:1 461:10 496:8  <b>Freedom</b> [8] 434:7 436:2 513:23 514:15,24 515:21 518:2,13  <b>frequently</b> [1] 477:25  <b>friend</b> [1] 444:15  <b>friends</b> [1] 498:18  <b>Frontier</b> [1] 461:21  <b>fruit</b> [1] 440:11  <b>FTC</b> [2] 520:19,23  <b>full</b> [1] 442:9  <b>fulsome</b> [1] 517:24  <b>fun</b> [1] 523:5  <b>function</b> [2] 528:23 544:15  <b>functionalities</b> [2] 515:1 516:7  <b>functionality</b> [3] 518:6,9 521:5  <b>further</b> [10] 481:18,24 484:12 489:22 490:19 542:10 545:10 561:9 571:11 573:15  <b>Furthermore</b> [1] 558:8  <b>future</b> [5] 448:21 544:19 546:23 547:24 570:8</p>	<p><b>434:24 448:9 479:4 489:15 492:1,3 510:19,22 516:24 519:11 524:9,22,25 526:6 565:23 572:8</b>  <b>generally</b> [7] 474:18,23 506:4 507:1 509:16 519:12 531:5  <b>gentleman</b> [1] 580:6  <b>genuine</b> [2] 539:6,7  <b>geotracking</b> [1] 519:3  <b>gesticulating</b> [1] 503:22  <b>get-go</b> [1] 540:25  <b>get-out-of-jail-free</b> [1] 496:25  <b>gets</b> [4] 458:1 462:21 531:13 539:20  <b>getting</b> [10] 442:24 449:9 451:8 457:20 471:8 489:12 523:3 545:16 560:9 566:14  <b>GitHub</b> [1] 454:25  <b>GitHub's</b> [2] 454:1,16  <b>give</b> [18] 439:16 441:22 444:23 449:23 457:23 461:3 462:7 478:8 505:19 508:8 516:1 522:24 541:20 546:16 548:24 565:15 570:14 580:13  <b>given</b> [7] 456:3 504:9 547:8 559:3 566:22 567:23 576:11  <b>giving</b> [1] 504:6  <b>go-ahead</b> [1] 504:2  <b>goal</b> [11] 541:1,4 557:7 559:5,7,7,14 561:16,24 562:14,21  <b>goals</b> [2] 534:6,7  <b>good-faith</b> [28] 443:19 449:15 451:5 452:21 454:4,5,10,18 457:12 460:5,8 463:13,17 472:7,25 475:6,12,16 480:2 482:16 486:8 494:3 503:5 514:13 517:11 521:17,18 561:23  <b>gosh</b> [2] 458:17 459:2  <b>got</b> [12] 442:4,7 445:21 465:1 475:20 489:21,22 490:16 502:7 503:4 504:7 519:13  <b>gotten</b> [3] 456:7 486:21 519:19  <b>Gottlieb</b> [1] 533:19  <b>Government</b> [6] 431:12 432:21 474:5 524:14 557:9 561:7  <b>governs</b> [1] 562:25  <b>grace</b> [1] 541:20  <b>gradually</b> [1] 440:18  <b>grandma</b> [2] 555:21 566:2  <b>grant</b> [3] 451:7 568:17 578:4  <b>granted</b> [3] 468:2 534:18 557:12  <b>granting</b> [4] 549:24 567:1 577:22 578:25  <b>grapple</b> [1] 501:10  <b>Great</b> [14] 431:3 446:4 447:21 450:20 508:18 522:21 524:7 525:18 526:2 537:11 559:7 563:18 573:14,18  <b>greater</b> [3] 511:24 549:3 571:13  <b>greatest</b> [1] 549:22  <b>Green</b> [11] 467:20 468:18,22 469:2,7 470:7,14 471:2 472:14 473:1,23  <b>Greenberg</b> [101] 432:23 433:1,2</p>

**G**

**gaining** [2] 553:9 560:14  
**game** [2] 539:13,13  
**games** [1] 440:2  
**gaps** [1] 509:20  
**garbled** [1] 548:8  
**gates** [1] 458:2  
**gather** [1] 547:22  
**gathering** [2] 535:4 536:21  
**gave** [3] 461:9 515:9 552:9  
**gee** [1] 456:16  
**General** [19] 431:4 432:25 433:2

<p>436:22 438:7,11,12 441:8,12,17  443:14 444:7 446:4,5,25 447:21  449:3,5 450:2,6,23,24 452:17,25  453:8,22 454:23 456:2 458:3 460:  11,14 462:13 464:4,15 465:11  466:11 467:23 469:6 473:20 475:  1,19 476:11 477:8 478:3,24 479:1,  2 480:13 483:13,22 486:18 487:  20 488:14,16,22 490:2,19,23 491:  15,20 492:12,13,25 493:16 494:16  495:22 496:20 498:11 499:5 500:  5,24,25 501:2,22 504:11,20,25  505:21 507:13 508:2,5 509:8 510:  5,7 512:10 513:1,9,21 516:4 517:  3,17 518:21 520:9 521:16,22 522:  1 523:1 524:20,24,24 548:9  <b>Greenberg's</b> [1] 457:5  <b>GREENSBERG</b> [1] 505:4  <b>ground</b> [1] 562:10  <b>Groundhog</b> [1] 445:24  <b>group</b> [1] 528:25  <b>groups</b> [1] 485:2  <b>growth</b> [3] 526:25 527:3 536:1  <b>guarantees</b> [1] 540:20  <b>guess</b> [14] 435:9 443:15 447:25  451:12 456:12 483:3 534:16 540:  2 541:5 557:3 571:15 576:9 577:  16 579:7  <b>guidance</b> [27] 451:2,11 455:10,10  456:3,15,19 460:25 470:10 472:6  478:7 483:25 484:5,24 486:3,15  527:24,24 528:11 533:16,19 550:  21,25 565:8,10,18 576:24  <b>guys</b> [1] 546:11</p>	<p>463:5 497:10 499:8 503:20 515:5  532:10,11,20 533:9  <b>hands-on</b> [1] 481:7  <b>happen</b> [2] 539:18 547:24  <b>happened</b> [2] 466:18 538:13  <b>happening</b> [3] 520:22 529:18 544:  19  <b>happens</b> [3] 490:15 538:1 575:8  <b>happy</b> [7] 448:7 454:22 498:9 558:  14 559:13 560:15 569:24  <b>harbor</b> [2] 497:2 573:12  <b>hard</b> [9] 446:16 458:10 459:4,10  462:14 466:22 483:18 508:16 558:  19  <b>harder</b> [2] 444:1 554:18  <b>harm</b> [10] 466:24 467:2,7 509:2  538:10,16 541:10 543:11 575:16,  22  <b>harmed</b> [1] 575:13  <b>harming</b> [1] 573:25  <b>harms</b> [2] 439:18 573:21  <b>harped</b> [1] 458:9  <b>hash</b> [1] 488:25  <b>head</b> [2] 521:23 528:12  <b>headed</b> [1] 537:14  <b>headphones</b> [1] 548:14  <b>Health</b> [15] 435:2 525:23,24 527:  14 534:4 558:2,6 562:19 564:3,3  566:23 567:2,8 571:5,23  <b>healthcare</b> [1] 551:3  <b>hear</b> [17] 441:12,16 451:12 454:24  460:17 465:24 468:25 469:10 494:  1 497:10 505:5 506:6 516:4 522:6  548:7,11 558:11  <b>heard</b> [6] 463:24 478:7 479:13,19  541:16 576:10  <b>hearing</b> [8] 439:21 455:1 490:23  523:9 524:10 526:19 548:3 580:  17  <b>hearings</b> [5] 431:5 432:11 439:23  501:13 573:4  <b>heart</b> [1] 555:22  <b>heed</b> [1] 471:8  <b>held</b> [1] 482:20  <b>Hello</b> [4] 524:3,6,7,21  <b>help</b> [9] 431:23 442:18 458:22 459:  3 460:25 479:10 521:1 542:4 548:  9  <b>helped</b> [1] 480:22  <b>helpful</b> [7] 438:20 445:5 455:11  506:24 528:22 545:19 570:14  <b>helping</b> [2] 450:20 523:7  <b>helps</b> [2] 480:6 500:13  <b>HHS</b> [2] 534:1,5  <b>Hi</b> [5] 433:6 434:1,6 525:2,12  <b>high-level</b> [1] 439:1  <b>highlighted</b> [1] 518:3  <b>highly</b> [3] 444:16,17 447:17  <b>HIPAA</b> [7] 545:2 550:2,2,7,13 571:  7 574:9  <b>HIPPA</b> [1] 550:17  <b>hire</b> [4] 446:18 462:15 470:9 472:4</p>	<p><b>historic</b> [1] 516:8  <b>history</b> [3] 511:13 519:16 541:13  <b>hit</b> [1] 438:14  <b>hitting</b> [1] 557:19  <b>HLC-7</b> [1] 561:15  <b>hobby</b> [1] 443:1  <b>hold</b> [2] 474:17 483:1  <b>holders</b> [1] 447:13  <b>holding</b> [1] 441:21  <b>hole</b> [2] 462:18 575:11  <b>home</b> [1] 550:22  <b>hook</b> [1] 494:23  <b>hoops</b> [1] 470:11  <b>hope</b> [5] 437:7,12 444:16 450:24  523:5  <b>hopefully</b> [9] 444:9,17 475:22 522:  5 528:23 534:7 536:17 566:14  568:20  <b>hoping</b> [2] 536:20 537:2  <b>horrified</b> [1] 511:8  <b>hour</b> [1] 476:9  <b>house</b> [2] 485:6 565:1  <b>However</b> [2] 486:20 545:12  <b>Human</b> [2] 525:24 562:19  <b>humility</b> [2] 511:15 515:20  <b>hundred</b> [2] 460:6 575:8  <b>hurdle</b> [1] 498:20  <b>hypothetical</b> [1] 508:17  <b>hypotheticals</b> [1] 507:24</p> <hr/> <p style="text-align: center;"><b>I</b></p> <hr/> <p><b>idea</b> [14] 458:9 459:18 461:1 483:  24 533:20 534:8 537:20 543:20  550:9 562:6 567:7 569:25 576:17,  19  <b>ideally</b> [1] 466:23  <b>identifiable</b> [2] 518:8,16  <b>identified</b> [2] 447:3 497:23  <b>ignores</b> [2] 491:8 528:3  <b>Ill</b> [1] 507:19  <b>impact</b> [7] 474:24 527:11,13 555:  19 556:5 558:17 578:24  <b>impacted</b> [1] 546:18  <b>impacting</b> [1] 554:19  <b>impeded</b> [1] 445:17  <b>implanted</b> [14] 526:18,18,25 527:4  531:17 534:22 535:19,19 536:11,  12,19,22 546:17 549:14  <b>implausible</b> [1] 477:13  <b>implement</b> [1] 544:5  <b>implementing</b> [1] 539:11  <b>implicate</b> [3] 455:16 547:11 549:3  <b>implicated</b> [7] 471:23 476:6 477:1  478:13 503:14 544:17 545:16  <b>implications</b> [2] 567:8,12  <b>imply</b> [1] 569:22  <b>import</b> [3] 508:18 511:18 564:9  <b>importance</b> [1] 532:23  <b>important</b> [22] 442:2 448:4 455:8  456:23 461:23 465:15 470:1,1  471:3,15,21 476:17 484:17 485:8,  9,20 486:5 489:2,4 493:25 512:2  527:19</p>	<p><b>importantly</b> [2] 510:17 561:21  <b>imported</b> [2] 507:21 513:12  <b>impose</b> [2] 475:11 477:2  <b>impossible</b> [1] 482:2  <b>improve</b> [2] 448:9 482:1  <b>improved</b> [1] 441:4  <b>inadvertently</b> [3] 553:16 554:19  555:2  <b>incidental</b> [1] 554:5  <b>include</b> [10] 497:20 526:16 546:25  547:8,10 553:10,11 558:20 559:  12 563:20  <b>included</b> [5] 450:15 495:14 497:  21 521:3 558:2  <b>includes</b> [7] 437:18 480:2 497:19  526:17 549:9 551:1 564:11  <b>including</b> [11] 443:25 477:20 478:  1 500:1 509:7 526:11 540:22 551:  2 556:24 557:18 574:16  <b>inclusion</b> [2] 437:7 438:1  <b>inconsistent</b> [1] 491:22  <b>incorporate</b> [2] 479:6 496:14  <b>incorporates</b> [1] 467:10  <b>incorporating</b> [1] 496:7  <b>increase</b> [3] 529:15,16 577:22  <b>increased</b> [3] 440:24 506:16,19  <b>incredible</b> [2] 489:17 542:25  <b>incredibly</b> [1] 471:3  <b>incrementally</b> [2] 440:18 554:7  <b>incumbent</b> [1] 471:12  <b>indeed</b> [3] 489:11 501:7 507:9  <b>independent</b> [3] 451:18 484:8  485:5  <b>indicate</b> [3] 431:18 435:19 541:17  <b>indicated</b> [1] 545:24  <b>indicates</b> [1] 496:15  <b>indicating</b> [1] 450:11  <b>indication</b> [1] 568:10  <b>indirectly</b> [1] 568:8  <b>individual</b> [3] 461:22 516:20 551:  4  <b>individuals</b> [2] 462:7 512:24  <b>industry</b> [12] 455:3 520:17 521:2,  10,11 531:13 534:6 535:1 536:20  541:11 542:24 564:5  <b>industrywide</b> [1] 533:8  <b>infirmities</b> [1] 510:14  <b>info</b> [1] 564:3  <b>information</b> [22] 449:14 469:14  515:2,13 518:8,16 519:4 528:5,8  540:21 550:15,23 551:2 555:23  558:4,21 563:17,21 564:2,9 565:  11 578:18  <b>informative</b> [1] 523:6  <b>infrastructure</b> [1] 512:25  <b>infringement</b> [11] 440:15 441:5  443:7 447:13 456:9 469:12,16,25  470:4 500:20 507:7  <b>infringing</b> [2] 439:5 557:1  <b>inhibit</b> [2] 451:25 537:4  <b>initial</b> [6] 515:7 516:16 519:8 546:  13 565:13,13</p>
--	---	--	--

<p><b>initially</b> [1] 466:14  <b>Initiative</b> [2] 435:2 525:23  <b>injection</b> [2] 534:8,15  <b>injunction</b> [2] 474:7,14  <b>injured</b> [1] 501:5  <b>inputs</b> [1] 551:3  <b>inquiry</b> [1] 445:13  <b>insecure</b> [1] 515:14  <b>insert</b> [1] 495:5  <b>inside</b> [1] 578:6  <b>insights</b> [2] 459:11 483:6  <b>insofar</b> [1] 511:21  <b>inspector</b> [2] 502:6 565:23  <b>instance</b> [8] 447:17 481:15 487:17  <b>555:5 557:9 567:21 570:12 574:6</b>  <b>instances</b> [4] 482:15 518:14 540:  <b>8 574:12</b>  <b>instead</b> [1] 496:7  <b>institution</b> [1] 484:8  <b>institutions</b> [1] 485:3  <b>insufficient</b> [1] 498:7  <b>insulin</b> [7] 538:19 555:22 556:5  <b>566:2,3 575:14 578:13</b>  <b>insurance</b> [2] 550:4 574:12  <b>integrated</b> [1] 455:5  <b>Intellectual</b> [2] 525:13,16  <b>intended</b> [2] 451:3 479:18  <b>intends</b> [1] 451:4  <b>intent</b> [2] 460:8 569:21  <b>intentionally</b> [1] 487:9  <b>intercept</b> [2] 547:14,18  <b>intercepting</b> [2] 547:21 552:14  <b>interest</b> [5] 451:20 475:22 526:12  <b>541:17,22</b>  <b>interested</b> [4] 452:1 552:1 560:25  <b>570:23</b>  <b>interesting</b> [6] 459:5 474:9 550:  <b>12 555:14 561:5 578:16</b>  <b>interests</b> [2] 455:16 515:22  <b>interference</b> [1] 547:25  <b>Intermediate</b> [1] 474:21  <b>Intern</b> [2] 525:13,16  <b>internally</b> [1] 532:16  <b>international</b> [1] 502:11  <b>internet</b> [1] 547:9  <b>interpret</b> [2] 460:25 473:17  <b>interpretation</b> [1] 452:24  <b>interpretations</b> [3] 456:11 480:9  <b>487:18</b>  <b>interpreted</b> [1] 492:5  <b>interpreting</b> [1] 469:2  <b>interrupt</b> [4] 449:5,6 490:2 533:4  <b>interrupting</b> [1] 490:3  <b>intervener</b> [1] 526:1  <b>interwoven</b> [1] 483:23  <b>introduce</b> [9] 432:22 433:10,15  <b>524:19 525:6,7,11,19 572:14</b>  <b>intrusive</b> [3] 530:16 538:20 542:  <b>21</b>  <b>investigational</b> [1] 448:4  <b>investment</b> [1] 444:14  <b>invited</b> [1] 481:6</p>	<p><b>invoking</b> [1] 553:19  <b>involve</b> [4] 513:7 551:21 552:3  <b>566:6</b>  <b>involved</b> [1] 458:12  <b>involvement</b> [1] 494:1  <b>involving</b> [2] 449:14 562:13  <b>ironic</b> [1] 458:10  <b>isn't</b> [12] 440:9 453:6 471:22 506:7  <b>531:14 534:23 550:20 558:2 562:  12 565:22 573:24 576:5</b>  <b>issue</b> [24] 432:13 445:14 451:13  <b>453:2,7 459:9 462:1 465:13 466:  10 473:9 483:23 488:8,20 493:11  496:21 497:13 499:10 503:9 508:  24 509:10 513:3 541:8 548:6 572:  3</b>  <b>issues</b> [16] 431:19 435:15 436:20  <b>441:13 453:4 461:12 473:4 476:1  478:13 515:18 516:21 519:20 541:  6 548:17 566:24 570:24</b>  <b>issuing</b> [1] 478:8  <b>item</b> [1] 528:21  <b>items</b> [2] 467:11 531:1  <b>itself</b> [11] 478:11 484:14 496:15  <b>505:23 514:8,21 520:3 530:15  531:18 542:18 545:16</b></p> <hr/> <p style="text-align: center;"><b>J</b></p> <hr/> <p><b>jailbreaking</b> [1] 556:16  <b>jeeze</b> [1] 527:22  <b>Jef</b> [2] 525:8 555:15  <b>job</b> [4] 459:13 545:9 573:14 577:6  <b>Joe</b> [3] 450:9 459:6,6  <b>Joint</b> [1] 435:7  <b>Jones</b> [1] 575:24  <b>Judge</b> [3] 474:1,10,16  <b>judgment</b> [2] 457:22 468:22  <b>judgments</b> [1] 519:18  <b>Judiciary</b> [1] 467:10  <b>jump</b> [11] 437:24 449:8,25 450:5  <b>451:14 470:10 474:13 487:3 551:  9,10 564:19</b>  <b>June</b> [2] 468:17 469:2  <b>junior</b> [2] 442:10 458:18  <b>jurisdiction</b> [1] 469:11  <b>jurisprudence</b> [1] 473:14  <b>Justice</b> [5] 437:9 438:10 477:4  <b>490:17 501:8</b>  <b>Justice's</b> [1] 437:13  <b>Justification</b> [2] 496:11 516:9  <b>justified</b> [1] 516:13  <b>justify</b> [2] 467:18 504:7  <b>juxtaposition</b> [1] 566:9</p> <hr/> <p style="text-align: center;"><b>K</b></p> <hr/> <p><b>Kate</b> [1] 525:15  <b>keep</b> [8] 432:15 438:24 442:19 450:  <b>25 451:13 464:5 512:24 565:6</b>  <b>keeping</b> [4] 435:14 443:12 483:18  <b>555:12</b>  <b>keeps</b> [3] 483:17 557:23 574:4  <b>Keon</b> [2] 525:11,12  <b>Kern</b> [11] 432:23 433:3,3 524:20,</p>	<p>23,23 546:7,9 547:25 548:7,11  <b>Kern's</b> [1] 568:20  <b>Kevin</b> [4] 432:24 524:21 539:23  <b>565:13</b>  <b>Kevin's</b> [1] 559:10  <b>kick</b> [1] 526:4  <b>kicked</b> [1] 563:3  <b>kill</b> [2] 555:20 566:2  <b>kind</b> [34] 442:8 443:7 446:15 448:  <b>25 450:20 453:24 459:14 464:21  465:10 476:3 478:2 480:23 481:  22 483:23 484:4 492:7 498:22  502:22 517:3 521:11 526:9 534:  16 537:4 549:20 555:14 561:6,9  562:10 567:4,9 570:8 572:16 576:  16 577:17</b>  <b>kinds</b> [9] 443:2 444:12 445:6 476:  <b>4 480:20 484:3 492:6 512:1 522:  16</b>  <b>knowing</b> [3] 466:21 502:6 552:1  <b>knowledge</b> [2] 440:12 448:17  <b>known</b> [1] 459:6  <b>Knupp</b> [1] 435:6</p> <hr/> <p style="text-align: center;"><b>L</b></p> <hr/> <p><b>labeling</b> [1] 532:6  <b>lack</b> [4] 436:3,14,18 444:24  <b>land</b> [1] 502:22  <b>landscape</b> [1] 500:12  <b>language</b> [68] 452:3,5 456:22 460:  <b>22 465:17 469:9 475:10 476:18  479:13,23 480:1 483:25 484:1,4,  14 495:5,8,13,15 496:7 497:7,7,8,  20,21 498:3,8 502:18 505:9 509:  14,17,24 510:2 513:12,19 514:19,  21 517:8 518:3,5,19 519:7 521:14  526:8 531:2 546:1 548:22 556:24  559:12 562:14 569:2 570:1,2,8,18  571:14,18 572:2,6,6,10,12,17,19  573:5,7,11 578:9</b>  <b>large</b> [8] 438:24 443:22 448:10  <b>455:17 457:24 484:21,23 564:4</b>  <b>largely</b> [3] 439:10 522:14,16  <b>largest</b> [1] 481:5  <b>last</b> [14] 432:4,11 450:10,17 451:1  <b>476:9 481:3 505:22 509:9 510:6  512:7 569:11 571:24 572:1</b>  <b>late</b> [1] 522:13  <b>later</b> [3] 467:22 491:3 554:6  <b>Law</b> [40] 433:22,23 434:3,4 437:18  <b>442:14,14 446:1 461:16 462:17  466:6 476:5 478:12 486:1 488:6  489:8,11 490:18 491:22 492:21  495:7 499:14 500:22,23 501:7,24  502:9 503:8,12,13 504:8 505:11  508:13,25 511:7 525:17 530:6  539:11 541:24 542:19</b>  <b>lawful</b> [1] 577:20  <b>lawfully</b> [17] 463:9 475:2,17,23,24  <b>476:3,16,23 477:5,12,16 478:10  481:1,13 483:9 505:9 573:9</b>  <b>laws</b> [77] 437:8,14,19,20,21 438:7,  <b>16,20 441:5 442:16 443:25 463:9</b></p>	<p><b>475:3,25 476:6,13,20 477:1,2 480:  22 487:2 488:1 490:10,14 491:1,  17,17,22 492:4 493:8,10,19,20  494:20,22 495:10,13 496:1,2,4,9,  17 497:1,2,3,4,6,19 498:20,21 499:  11,17,23 501:9,11 505:10,18 507:  8 509:6,14 528:16 537:25 545:1  570:19 572:2,16,21,23 573:2,6,9,  13 574:13,15 576:11,14,19</b>  <b>lawsuit</b> [2] 466:3 488:24  <b>lawsuits</b> [6] 465:25 466:1,8 488:  <b>21 503:23 577:23</b>  <b>lawyer</b> [8] 442:7,9 446:18 455:11,  <b>15 465:12 470:9 472:5</b>  <b>lawyers</b> [6] 443:10,11 456:24 457:  <b>1 479:10 482:6</b>  <b>lay</b> [1] 452:14  <b>lead</b> [3] 487:13 544:8 577:22  <b>leading</b> [3] 440:2 458:13 538:10  <b>learned</b> [1] 449:18  <b>least</b> [8] 438:15 445:20 468:12 479:  <b>15 545:25 548:21 576:17,20</b>  <b>leaves</b> [1] 483:11  <b>left</b> [3] 463:12 486:14 570:8  <b>legal</b> [24] 437:9 441:20 445:14 450:  <b>21 461:9 476:1 478:16,17,19 480:  20 488:4,22 489:2 500:11,14,19  501:15 503:3 504:15 530:8 537:  20,21 539:25 565:16</b>  <b>legally</b> [1] 446:9  <b>legislative</b> [1] 511:13  <b>legitimate</b> [4] 496:5,10 538:8 539:  <b>25</b>  <b>length</b> [1] 573:18  <b>lengthy</b> [1] 495:12  <b>less</b> [5] 460:20 464:9 487:4 529:10  <b>545:6</b>  <b>letter</b> [10] 438:9,15,19 486:24 488:  <b>3 490:17,21,25 522:3 542:23</b>  <b>letting</b> [1] 451:14  <b>level</b> [4] 443:3 502:4,11 503:8  <b>levels</b> [2] 485:7 566:3  <b>liability</b> [8] 494:25 496:3 497:4  <b>505:19 573:13 575:1,21 576:7</b>  <b>liable</b> [3] 573:21,24 575:7  <b>librarian</b> [1] 484:17  <b>Licensing</b> [1] 434:19  <b>lies</b> [1] 467:3  <b>life</b> [1] 566:8  <b>light</b> [4] 451:10 538:22 556:8 557:  <b>14</b>  <b>likelihood</b> [2] 502:5 575:4  <b>likely</b> [9] 439:6 444:21 493:7 498:6  <b>504:9 540:16 541:25 571:17 576:  20</b>  <b>limit</b> [1] 475:7  <b>limitation</b> [28] 437:8 449:9,13 453:  <b>9,11,16 457:9 460:21 469:13,18  475:17 476:16,20,24 477:2,17  478:10 481:23 490:11,14 491:1  493:21,24 502:23 505:8 510:2  541:19 546:19</b></p>
---	--	--	--

<p><b>limitations</b> <sup>[9]</sup> 438:21 440:19 447:3 451:7 462:24 463:1,7 478:18 510:8</p> <p><b>limited</b> <sup>[10]</sup> 432:12 453:12 454:8, 10 488:7 490:5 520:25 532:3 539:16 559:2</p> <p><b>limiting</b> <sup>[4]</sup> 453:24 454:13 537:15 544:4</p> <p><b>limits</b> <sup>[2]</sup> 451:23 465:22</p> <p><b>line</b> <sup>[4]</sup> 452:11 462:22 527:25 555:12</p> <p><b>lined</b> <sup>[1]</sup> 499:6</p> <p><b>link</b> <sup>[6]</sup> 432:3,7 446:13 499:19,22 508:11</p> <p><b>listen</b> <sup>[1]</sup> 573:3</p> <p><b>listening</b> <sup>[1]</sup> 538:21</p> <p><b>literally</b> <sup>[8]</sup> 458:12 459:7 487:4 528:4 557:8 563:1,3 575:10</p> <p><b>literary</b> <sup>[2]</sup> 524:12 556:12</p> <p><b>litigants</b> <sup>[1]</sup> 500:19</p> <p><b>litigation</b> <sup>[13]</sup> 440:13 457:23,25 461:18 462:9 472:1 488:4 489:7, 15 502:19 503:18 506:7 507:4</p> <p><b>litigious</b> <sup>[1]</sup> 455:18</p> <p><b>little</b> <sup>[32]</sup> 431:14 451:15 459:4 468:3 476:9 486:10 488:19 491:2 503:17 537:3,9,22 538:20 539:14 541:11,13 546:11 548:3,5,8,17 549:25 554:12,21,25 563:7 565:5 567:8, 14,15,22 577:8</p> <p><b>live</b> <sup>[3]</sup> 511:17,21 512:3</p> <p><b>live-streamed</b> <sup>[1]</sup> 432:16</p> <p><b>lived</b> <sup>[1]</sup> 511:22</p> <p><b>lives</b> <sup>[1]</sup> 443:10</p> <p><b>living</b> <sup>[2]</sup> 511:3,16</p> <p><b>local</b> <sup>[4]</sup> 437:20 501:11 502:5,10</p> <p><b>location</b> <sup>[1]</sup> 519:3</p> <p><b>lock</b> <sup>[1]</sup> 538:22</p> <p><b>logistical</b> <sup>[1]</sup> 528:21</p> <p><b>long</b> <sup>[8]</sup> 439:24 454:17 464:17 473:3 475:22 485:20 528:18 556:25</p> <p><b>longer</b> <sup>[2]</sup> 540:5 563:7</p> <p><b>look</b> <sup>[15]</sup> 444:11 451:22 455:19 470:18 487:16 504:7 517:24 518:5 530:10 541:8 542:22 553:7 554:11 577:1,3</p> <p><b>looked</b> <sup>[3]</sup> 435:10 482:11 578:19</p> <p><b>looking</b> <sup>[13]</sup> 431:25 454:2 464:1 465:8 481:22 488:3 490:7 494:6, 12 502:8 508:22 526:2 560:11</p> <p><b>looks</b> <sup>[3]</sup> 442:20 512:3,20</p> <p><b>losses</b> <sup>[1]</sup> 577:17</p> <p><b>lost</b> <sup>[1]</sup> 441:14</p> <p><b>lot</b> <sup>[28]</sup> 431:19 438:16 440:21 444:11 446:9 462:14,23 463:14,21 465:9 470:18 478:16 479:23 484:2 485:23 488:11,21 489:9 508:21 519:22 530:9 534:11 536:16 558:4 566:5 569:6 574:13,19</p> <p><b>lots</b> <sup>[2]</sup> 556:14,18</p> <p><b>love</b> <sup>[4]</sup> 467:21 482:5 520:11 521:13</p>	<p><b>low</b> <sup>[1]</sup> 502:7</p> <p><b>lowered</b> <sup>[1]</sup> 441:3</p> <p><b>ludicrous</b> <sup>[1]</sup> 550:11</p> <p><b>Luis</b> <sup>[3]</sup> 433:7 447:22 525:3</p> <p><b>lunch</b> <sup>[1]</sup> 523:2</p> <hr/> <p style="text-align: center;"><b>M</b></p> <hr/> <p><b>machine</b> <sup>[7]</sup> 477:24 481:4 558:4 560:7 563:13,20 567:14</p> <p><b>machines</b> <sup>[8]</sup> 481:10,17,23 482:1 511:6 526:19 544:12 546:14</p> <p><b>mad</b> <sup>[1]</sup> 456:17</p> <p><b>made</b> <sup>[16]</sup> 446:15 461:6 465:13 478:9 488:4 493:4 513:25 516:23 518:10 540:3 544:21 555:15 556:1 557:5 562:20 578:3</p> <p><b>main</b> <sup>[7]</sup> 435:16,17 437:6 448:10 493:19 544:15 545:24</p> <p><b>maintain</b> <sup>[1]</sup> 497:24</p> <p><b>major</b> <sup>[1]</sup> 533:7</p> <p><b>majority</b> <sup>[1]</sup> 448:24</p> <p><b>malfunction</b> <sup>[1]</sup> 437:4</p> <p><b>malfunctions</b> <sup>[1]</sup> 545:15</p> <p><b>manageable</b> <sup>[1]</sup> 561:11</p> <p><b>manner</b> <sup>[2]</sup> 469:15 528:6</p> <p><b>manufacturer</b> <sup>[9]</sup> 550:23 563:25 564:23 565:9,14,24 574:7 575:6 576:1</p> <p><b>manufacturers</b> <sup>[5]</sup> 544:2,5 551:1 565:10 574:15</p> <p><b>manufacturing</b> <sup>[1]</sup> 573:24</p> <p><b>many</b> <sup>[11]</sup> 444:6 448:11 450:11 454:5,6 471:17 506:1,2 510:13 544:9 556:16</p> <p><b>marginal</b> <sup>[1]</sup> 507:6</p> <p><b>market</b> <sup>[12]</sup> 446:10,12 518:24,25 538:24 540:12 556:7 564:15 575:10,14,18 578:10</p> <p><b>marketed</b> <sup>[1]</sup> 482:2</p> <p><b>marketplace</b> <sup>[2]</sup> 527:14 576:5</p> <p><b>marrying</b> <sup>[1]</sup> 502:17</p> <p><b>material</b> <sup>[1]</sup> 562:7</p> <p><b>materialize</b> <sup>[1]</sup> 439:6</p> <p><b>materialized</b> <sup>[3]</sup> 440:3,11 441:6</p> <p><b>matter</b> <sup>[6]</sup> 489:15 510:20,22 523:10 578:1 580:18</p> <p><b>Matthew</b> <sup>[1]</sup> 435:5</p> <p><b>MCCLELLAN</b> <sup>[13]</sup> 525:15,15 526:15 527:18 534:2 557:21,22 560:3 569:17,18,19 579:5,6</p> <p><b>mean</b> <sup>[43]</sup> 444:10,24,25 445:22 460:21 473:4,24 479:7,13 487:21 488:10,23 489:1 491:25 492:1,7 493:2,18,20 494:18,21 495:23 496:12 499:2 502:1 503:16 506:6 508:7,9,15 510:5 512:12 529:6,8 534:16 539:2 551:11 556:11 563:12 565:4 571:3 575:1 576:9</p> <p><b>meaning</b> <sup>[3]</sup> 461:3 487:23 512:15</p> <p><b>means</b> <sup>[4]</sup> 513:7 519:24 520:6 546:6</p> <p><b>meant</b> <sup>[1]</sup> 492:15</p> <p><b>mechanism</b> <sup>[1]</sup> 577:21</p>	<p><b>mechanisms</b> <sup>[1]</sup> 526:20</p> <p><b>media</b> <sup>[1]</sup> 553:11</p> <p><b>medical</b> <sup>[41]</sup> 524:13 525:9 526:16, 18,24 527:1,3,23 531:6,14,18,22 532:6,10 533:17 535:19 536:2 537:24 538:3 539:22 541:18 542:21 546:17 547:6 550:24 551:24 553:4 554:15 555:16 556:21 561:17 565:11 568:9 573:25 574:7,16, 16 576:4,24,25 579:12</p> <p><b>medication</b> <sup>[1]</sup> 555:24</p> <p><b>medicine</b> <sup>[1]</sup> 574:18</p> <p><b>Medtronic</b> <sup>[6]</sup> 538:14,17 556:5 575:9,13,18</p> <p><b>meet</b> <sup>[8]</sup> 443:18 445:3 466:14 530:3 533:10 534:6,7 556:9</p> <p><b>meeting</b> <sup>[3]</sup> 441:24 576:24 577:2</p> <p><b>meetings</b> <sup>[1]</sup> 562:19</p> <p><b>meets</b> <sup>[2]</sup> 457:13 557:17</p> <p><b>Melinda</b> <sup>[4]</sup> 433:3 524:23 546:7 548:9</p> <p><b>member</b> <sup>[3]</sup> 451:17 461:13 525:24</p> <p><b>members</b> <sup>[4]</sup> 442:5 458:14,15 467:14</p> <p><b>memory</b> <sup>[4]</sup> 546:25 547:4 552:10, 12</p> <p><b>mention</b> <sup>[7]</sup> 467:8,19 480:25 528:21 544:20 550:2 572:25</p> <p><b>mentioned</b> <sup>[9]</sup> 480:23 485:4 505:24 530:25 531:1 545:10 551:16 559:23 575:9</p> <p><b>mentioning</b> <sup>[1]</sup> 551:15</p> <p><b>mere</b> <sup>[1]</sup> 445:17</p> <p><b>merely</b> <sup>[7]</sup> 478:18 489:12 530:13, 16 542:12 549:12 556:5</p> <p><b>merit</b> <sup>[2]</sup> 543:14 556:4</p> <p><b>meritless</b> <sup>[1]</sup> 488:6</p> <p><b>merits</b> <sup>[1]</sup> 457:23</p> <p><b>message</b> <sup>[2]</sup> 456:12 471:20</p> <p><b>messages</b> <sup>[1]</sup> 562:6</p> <p><b>met</b> <sup>[2]</sup> 541:2 559:11</p> <p><b>metes</b> <sup>[1]</sup> 503:6</p> <p><b>method</b> <sup>[1]</sup> 560:9</p> <p><b>methodologies</b> <sup>[1]</sup> 529:25</p> <p><b>methodology</b> <sup>[4]</sup> 528:14 532:15 564:9 574:1</p> <p><b>methods</b> <sup>[2]</sup> 561:2 577:18</p> <p><b>metrics</b> <sup>[2]</sup> 526:1 563:23</p> <p><b>Michigan</b> <sup>[1]</sup> 433:18</p> <p><b>Micky</b> <sup>[1]</sup> 558:16</p> <p><b>middle</b> <sup>[1]</sup> 562:10</p> <p><b>might</b> <sup>[47]</sup> 442:6 447:10 456:18 457:17 459:22 462:8 482:24 484:25 487:10,18 491:17,22 500:19,23 501:9,11,18 504:7,18 505:12,16, 18,19 511:9 545:3,6 546:22,22,24 547:3,3,6,8,10,11,14,19,23 548:9 549:24 553:14,24 554:11 569:12, 21,22 576:21</p> <p><b>mind</b> <sup>[2]</sup> 432:16 464:7</p> <p><b>mine</b> <sup>[1]</sup> 450:8</p> <p><b>miniature</b> <sup>[1]</sup> 476:10</p>	<p><b>Minimed</b> <sup>[2]</sup> 538:14 575:9</p> <p><b>minimizes</b> <sup>[1]</sup> 471:13</p> <p><b>minimum</b> <sup>[1]</sup> 498:25</p> <p><b>minor</b> <sup>[2]</sup> 502:2 505:18</p> <p><b>minute</b> <sup>[8]</sup> 435:14 442:6 449:24 452:19 476:14 487:4 496:21 532:9</p> <p><b>minutes</b> <sup>[4]</sup> 432:13 522:10 523:4 566:15</p> <p><b>misguided</b> <sup>[1]</sup> 452:4</p> <p><b>misinterpret</b> <sup>[1]</sup> 487:9</p> <p><b>misread</b> <sup>[1]</sup> 497:6</p> <p><b>miss</b> <sup>[1]</sup> 488:11</p> <p><b>missed</b> <sup>[1]</sup> 454:14</p> <p><b>mission</b> <sup>[1]</sup> 449:2</p> <p><b>mistake</b> <sup>[2]</sup> 574:21 577:7</p> <p><b>misunderstood</b> <sup>[1]</sup> 472:15</p> <p><b>Mitchell</b> <sup>[1]</sup> 435:6</p> <p><b>mix</b> <sup>[1]</sup> 511:7</p> <p><b>mobile</b> <sup>[5]</sup> 527:14,23 533:17 564:7 576:24</p> <p><b>modest</b> <sup>[1]</sup> 544:1</p> <p><b>modification</b> <sup>[2]</sup> 497:22 538:24</p> <p><b>modifications</b> <sup>[2]</sup> 532:2 539:21</p> <p><b>modify</b> <sup>[4]</sup> 533:2 539:19,20 555:3</p> <p><b>Mohr</b> <sup>[23]</sup> 434:1,1,22,23,23 441:10, 14,16,18 444:7,8 447:2 491:6,6,7, 19,25 493:6 497:11 498:15,15,16 507:16,17</p> <p><b>Mohr's</b> <sup>[1]</sup> 493:1</p> <p><b>moment</b> <sup>[1]</sup> 478:22</p> <p><b>Monday</b> <sup>[1]</sup> 579:25</p> <p><b>monitor</b> <sup>[1]</sup> 578:17</p> <p><b>monitoring</b> <sup>[19]</sup> 530:16 531:2 543:21 544:8,10,18 546:1,12,18,22 547:5,13,17,24 549:4 551:18,21 552:2,6</p> <p><b>monologuing</b> <sup>[1]</sup> 444:9</p> <p><b>moral</b> <sup>[1]</sup> 567:9</p> <p><b>morally</b> <sup>[1]</sup> 567:6</p> <p><b>moreover</b> <sup>[2]</sup> 544:6 573:3</p> <p><b>Morgan</b> <sup>[4]</sup> 434:25 439:20 472:17 525:20</p> <p><b>morning</b> <sup>[11]</sup> 432:24 433:1,21 435:5 572:3 573:4,18,20 574:20,24 576:10</p> <p><b>Morris</b> <sup>[1]</sup> 463:4</p> <p><b>most</b> <sup>[12]</sup> 431:10 437:25 440:21 442:21 448:23 460:3 462:7 498:6 520:5 552:15 557:8 561:21</p> <p><b>motion</b> <sup>[9]</sup> 468:23,23 473:2,16 474:4,8,14,24 536:17</p> <p><b>motivated</b> <sup>[1]</sup> 502:7</p> <p><b>move</b> <sup>[20]</sup> 463:5 469:7 474:11 475:3 487:2 490:21 495:10 497:6 504:3 505:21 508:4 509:9 512:16 513:22 530:10,11 532:12 568:2 573:19 579:19</p> <p><b>moved</b> <sup>[3]</sup> 465:20,20 512:7</p> <p><b>moving</b> <sup>[9]</sup> 464:5 483:17 487:25 531:15,19 532:8 533:19 543:16 564:5</p>
--	--	--	---

<p><b>MS</b> <sup>[80]</sup> 431:3 432:23 433:3,4,9,14, 19 434:5,8,14,16,20 435:8,23 436:12,19,23,25 438:4,12 443:14,15 450:23,24 452:19 455:9 457:3 464:24 471:24 482:9 483:3 502:13,15,16 503:10,22 504:5 505:24 524:3,7,20,23 525:1,5,15,18 526:2, 536:11 540:2,11,14 541:5,15 542:3,7 546:9 547:25 548:7,11,13 552:17 553:18 555:8 557:21,22 560:3 568:20 569:17,18,19 579:5,6,21 <b>much</b> <sup>[30]</sup> 437:3 443:10 444:1 447:24 460:12 464:8 468:19 473:22 479:20,21 480:7,22 483:21 487:15 493:17 502:12 504:23 512:9,13,22 523:5 542:11,20 566:11,17 574:21 577:13 579:4,17 580:15 <b>multiple</b> <sup>[3]</sup> 447:4 532:21 562:22 <b>mundane</b> <sup>[1]</sup> 501:11 <b>must</b> <sup>[3]</sup> 506:8 529:15,16 <b>mute</b> <sup>[2]</sup> 432:19 524:18 <b>muted</b> <sup>[3]</sup> 491:6 498:15 520:10 <b>muting</b> <sup>[1]</sup> 498:17 <b>myself</b> <sup>[2]</sup> 444:9 482:21</p>	<p>20 <b>negatively</b> <sup>[1]</sup> 578:24 <b>neither</b> <sup>[1]</sup> 518:17 <b>Netflix</b> <sup>[1]</sup> 539:19 <b>network</b> <sup>[3]</sup> 537:6 538:17 564:3 <b>networks</b> <sup>[1]</sup> 463:24 <b>never</b> <sup>[9]</sup> 440:3,11,11,11 441:6 443:3 493:20 501:11 507:3 <b>new</b> <sup>[10]</sup> 442:2 486:23 501:9 518:4 527:3 529:10 533:20 534:15 564:11 575:15 <b>next</b> <sup>[6]</sup> 467:24 468:13 486:20 524:4 527:6 568:2 <b>nexus</b> <sup>[1]</sup> 515:9 <b>nice</b> <sup>[1]</sup> 522:6 <b>nobody</b> <sup>[2]</sup> 538:15 575:13 <b>nodding</b> <sup>[1]</sup> 521:23 <b>non-implanted</b> <sup>[4]</sup> 526:16,25 527:1 546:17 <b>non-infringing</b> <sup>[3]</sup> 540:17 542:1 568:7 <b>non-passive</b> <sup>[8]</sup> 544:7,9,18 546:21 547:5,13,24 552:6 <b>none</b> <sup>[2]</sup> 465:1 474:3 <b>nonprofit</b> <sup>[3]</sup> 461:9,20 489:21 <b>nor</b> <sup>[2]</sup> 439:4 518:17 <b>normal</b> <sup>[2]</sup> 442:11 554:19 <b>normally</b> <sup>[2]</sup> 503:14 531:14 <b>norms</b> <sup>[1]</sup> 486:3 <b>notably</b> <sup>[2]</sup> 533:24,24 <b>note</b> <sup>[18]</sup> 447:8 468:4,20 469:13 478:3 486:20 493:25 510:10,15 522:10,12 533:25 550:21 555:14 558:24 560:12,17 571:4 <b>noted</b> <sup>[9]</sup> 472:1 509:13,18 530:11 537:17 568:4 571:17 572:5 574:22 <b>notes</b> <sup>[1]</sup> 529:17 <b>nothing</b> <sup>[5]</sup> 465:3,6 494:7 512:3 538:1 <b>notice</b> <sup>[6]</sup> 453:25 493:2 495:25 507:20 519:13 520:5 <b>notice-and-consent</b> <sup>[1]</sup> 520:15 <b>noticed</b> <sup>[2]</sup> 510:21 522:23 <b>notifying</b> <sup>[2]</sup> 573:5,14 <b>notion</b> <sup>[1]</sup> 537:3 <b>NTIA</b> <sup>[2]</sup> 447:22 566:22 <b>NTIA's</b> <sup>[2]</sup> 433:7 525:4 <b>nuanced</b> <sup>[1]</sup> 545:4 <b>number</b> <sup>[3]</sup> 491:2 495:15 549:10 <b>numerous</b> <sup>[1]</sup> 485:5</p>	<p><b>obtained</b> <sup>[1]</sup> 505:9 <b>obtaining</b> <sup>[2]</sup> 505:12 564:25 <b>obvious</b> <sup>[1]</sup> 529:13 <b>obviously</b> <sup>[8]</sup> 447:14 476:5,22,25 496:8 497:20 509:18 520:18 <b>occupation</b> <sup>[1]</sup> 562:13 <b>occupy</b> <sup>[2]</sup> 558:22 563:11 <b>occur</b> <sup>[3]</sup> 476:4 493:13 546:22 <b>occurring</b> <sup>[1]</sup> 568:6 <b>OCR</b> <sup>[1]</sup> 558:23 <b>odd</b> <sup>[1]</sup> 497:21 <b>oddity</b> <sup>[1]</sup> 497:18 <b>odds</b> <sup>[1]</sup> 536:9 <b>offense</b> <sup>[1]</sup> 443:10 <b>offering</b> <sup>[1]</sup> 519:5 <b>offers</b> <sup>[1]</sup> 529:24 <b>Office</b> <sup>[69]</sup> 431:5 433:8 439:16 440:8,17 443:20 444:23 445:25 446:14 451:7 453:6 459:8,12 460:23 462:19 468:20 469:1,22 471:3,8,18,21 472:4 473:16 478:8 479:8 482:11,18 485:12 489:13 498:24 506:12 509:15,22 514:17 516:24 517:13 522:18 524:10 525:4 527:20 533:25 540:23 544:3 549:23 550:6,10 553:6 556:18 558:15,19 562:11 563:2,5 564:14 565:20,24 566:21 567:7 568:4,10,15 569:21 570:2,7 572:8 576:12 577:10 580:2 <b>office's</b> <sup>[4]</sup> 467:15 469:11 506:23 510:15 <b>often</b> <sup>[12]</sup> 448:8 450:19 451:19 454:5,6 463:20 470:23 489:5,6 494:1 506:6 513:8 <b>OGC</b> <sup>[1]</sup> 442:13 <b>Okay</b> <sup>[68]</sup> 435:8,23 436:1,25 438:4,11 441:8,12,13,18 450:6 458:3 460:14 464:15,17 472:12 473:20 475:1 483:13,20 486:18 499:5 504:5 505:4,21 508:2 512:10 513:9,21 517:17 520:9 521:22 523:1 528:20 530:25 534:12 535:15,18,24 536:11,12,24 539:1 543:17 545:18 548:4,11,24 551:6,10 554:2 555:13 557:21 559:16 563:9 566:11 568:19,24,25 569:22,23,25 570:11,13 571:24 576:9 579:17 580:9 <b>ominous</b> <sup>[1]</sup> 494:2 <b>on-staff</b> <sup>[1]</sup> 458:13 <b>ONC</b> <sup>[6]</sup> 540:20 558:16 559:15 562:23 563:7 571:6 <b>ONC's</b> <sup>[1]</sup> 565:23 <b>one</b> <sup>[64]</sup> 431:16 437:6 438:16 441:22 444:25 448:11 454:8,23 455:18 458:12 459:10,17 461:12 466:8 467:9,25 469:8,9,10 477:22 481:1,21 482:4 484:8 485:17 493:2,25 496:3 500:8,9 501:13 503:23 504:19 506:12,22 507:19 508:19,25 509:9 511:10,11 516:5 528:21</p>	<p>529:4 534:13 536:16 538:10 541:15 553:25 556:4 559:18 560:24 564:23 566:7,24 567:13,13,24,24 568:4,22 572:24 573:18 579:23 <b>onerous</b> <sup>[1]</sup> 559:3 <b>ones</b> <sup>[2]</sup> 540:22 566:1 <b>ongoing</b> <sup>[1]</sup> 551:4 <b>only</b> <sup>[13]</sup> 437:19 448:17 454:8 478:10 504:23 511:20 530:21 544:14 546:14 550:6 554:22 562:1 574:9 <b>onus</b> <sup>[1]</sup> 550:16 <b>open</b> <sup>[8]</sup> 444:18 452:6 480:9 555:12 570:8 577:25 578:2,5 <b>open-source</b> <sup>[2]</sup> 461:10 578:16 <b>opening</b> <sup>[2]</sup> 567:12 578:20 <b>openly</b> <sup>[1]</sup> 447:11 <b>opens</b> <sup>[1]</sup> 541:2 <b>operate</b> <sup>[1]</sup> 551:25 <b>operates</b> <sup>[2]</sup> 507:10 575:3 <b>operating</b> <sup>[2]</sup> 435:17 503:18 <b>operative</b> <sup>[1]</sup> 451:10 <b>opinion</b> <sup>[3]</sup> 493:18 495:16,20 <b>opinions</b> <sup>[1]</sup> 516:2 <b>opponent</b> <sup>[1]</sup> 502:7 <b>opponents</b> <sup>[18]</sup> 439:2,7 457:10 464:9 468:19 469:1 477:10 479:14 487:22 491:4 507:3,13 508:7 509:13 510:24 514:4 521:17 522:7 <b>opportunities</b> <sup>[3]</sup> 446:20 559:4 562:22 <b>opportunity</b> <sup>[5]</sup> 437:12 459:23 464:23 553:21 580:14 <b>oppose</b> <sup>[2]</sup> 465:15 534:20 <b>opposed</b> <sup>[4]</sup> 514:10 521:2 543:15 570:19 <b>opposer</b> <sup>[7]</sup> 543:25 544:7,21 545:1,10,13 552:11 <b>opposite</b> <sup>[1]</sup> 537:8 <b>opposition</b> <sup>[5]</sup> 434:10 463:25 466:24 531:5 545:14 <b>option</b> <sup>[1]</sup> 564:23 <b>oral</b> <sup>[1]</sup> 432:1 <b>order</b> <sup>[9]</sup> 509:3 529:22 538:4 547:20,22 553:15 554:24 561:20 563:16 <b>ordinances</b> <sup>[1]</sup> 437:20 <b>ordinarily</b> <sup>[1]</sup> 451:6 <b>organization</b> <sup>[2]</sup> 489:25 560:18 <b>organizations</b> <sup>[3]</sup> 461:20 489:21 557:25 <b>organizer</b> <sup>[1]</sup> 482:21 <b>organizers</b> <sup>[3]</sup> 481:9,20 482:23 <b>original</b> <sup>[3]</sup> 521:3 541:18 543:16 <b>originally</b> <sup>[1]</sup> 513:25 <b>origins</b> <sup>[1]</sup> 483:10 <b>other</b> <sup>[138]</sup> 431:16 437:8,14,18 438:7,16,18,20,21 439:21 441:5 442:14,16 443:25 445:5,7,25 446:1 452:9 453:24 454:12 455:5 463:9 466:9 470:18 475:3,25,25 476:4,13,20 477:1 478:21 480:22 481:</p>
<p><b>N</b></p>			
<p><b>name</b> <sup>[3]</sup> 431:4 436:16 525:20 <b>narrow</b> <sup>[5]</sup> 477:13 486:7 513:15 532:4 579:11 <b>narrowed</b> <sup>[1]</sup> 469:24 <b>narrower</b> <sup>[3]</sup> 476:5,5 487:15 <b>narrowing</b> <sup>[1]</sup> 522:22 <b>narrowly</b> <sup>[1]</sup> 557:12 <b>nation's</b> <sup>[2]</sup> 440:21 441:4 <b>national</b> <sup>[10]</sup> 493:13 506:15 527:20 533:25 540:23 558:15,19 563:3 564:14 565:20 <b>nationally</b> <sup>[1]</sup> 550:1 <b>natural</b> <sup>[1]</sup> 478:19 <b>nature</b> <sup>[2]</sup> 467:1 470:25 <b>navigating</b> <sup>[1]</sup> 485:12 <b>nearly</b> <sup>[1]</sup> 464:13 <b>necessarily</b> <sup>[6]</sup> 461:3 488:23 515:14,23,25 518:11 <b>necessary</b> <sup>[7]</sup> 492:20 493:5 508:11 541:4 547:2 554:5 568:18 <b>necessitate</b> <sup>[1]</sup> 552:3 <b>need</b> <sup>[46]</sup> 435:11 442:8 445:10 446:18 453:20 459:3 460:17 464:3 470:10,10 476:14 486:25 487:16 488:25 489:10 490:6 492:17,22 493:22 494:24 495:13 497:14 503:19,25 509:20 517:24 522:4 526:10,12 538:6 545:20 550:1 552:18 553:23 554:7,9,11,23 556:10 563:5,6 571:11 576:12,18 577:2,5 <b>needed</b> <sup>[5]</sup> 482:19 513:4,6 553:2 557:6 <b>needing</b> <sup>[1]</sup> 479:10 <b>needs</b> <sup>[8]</sup> 437:15,16 443:18 465:17 466:2 492:23 565:24 568:15 <b>negative</b> <sup>[4]</sup> 446:7,16 466:21 576:</p>	<p style="text-align: center;"><b>O</b></p> <p><b>object</b> <sup>[1]</sup> 542:15 <b>objection</b> <sup>[3]</sup> 487:1 527:9 529:4 <b>obligated</b> <sup>[1]</sup> 571:6 <b>obligation</b> <sup>[2]</sup> 496:9 539:9 <b>obligations</b> <sup>[3]</sup> 494:23 531:9 571:5 <b>obscure</b> <sup>[2]</sup> 491:24,25 <b>observation</b> <sup>[1]</sup> 455:14 <b>observed</b> <sup>[1]</sup> 454:23 <b>obtain</b> <sup>[1]</sup> 515:2</p>	<p style="text-align: center;">Heritage Reporting Corporation (202) 628-4888</p>	
<p>Sheet 11</p>			<p>MS - other</p>

<p>10 484:25 485:10 487:2 488:1  <b>490:</b>10,14 <b>491:</b>1,17 <b>494:</b>20,22  <b>495:</b>7,10,13 <b>496:</b>1,2,4,9,17 <b>497:</b>1,  2,3,6,10,10,19 <b>498:</b>19,21,21 <b>499:</b>  11,13,17,21,22,25 <b>500:</b>1,9,18,22,  23 <b>501:</b>24 <b>503:</b>8,8 <b>504:</b>8 <b>505:</b>10,  18 <b>506:</b>24 <b>507:</b>6,8 <b>508:</b>7,12,23  <b>509:</b>6,14 <b>513:</b>7 <b>528:</b>4,15,18 <b>530:</b>  15 <b>536:</b>10 <b>537:</b>5,5,13 <b>540:</b>8 <b>541:</b>2  <b>543:</b>9 <b>544:</b>18,20,23,24 <b>545:</b>1,7,9,  11 <b>546:</b>21 <b>549:</b>19 <b>552:</b>13 <b>553:</b>4,  10 <b>554:</b>14,17 <b>555:</b>3 <b>556:</b>9,14 <b>557:</b>  9,25,25 <b>559:</b>2 <b>560:</b>15 <b>562:</b>5 <b>567:</b>2  <b>570:</b>5,18 <b>572:</b>2,16,21,23 <b>573:</b>6,8,  13 <b>574:</b>4,22 <b>576:</b>19 <b>577:</b>5  <b>others</b> [9] <b>436:</b>19 <b>478:</b>22 <b>490:</b>18  <b>513:</b>5 <b>516:</b>5 <b>517:</b>10 <b>561:</b>14 <b>562:</b>  20 <b>578:</b>20  <b>otherwise</b> [11] <b>436:</b>21 <b>482:</b>24 <b>488:</b>  8 <b>493:</b>24 <b>503:</b>13 <b>505:</b>14 <b>515:</b>14  <b>549:</b>14 <b>555:</b>4 <b>570:</b>6 <b>571:</b>20  <b>ourselves</b> [3] <b>432:</b>22 <b>524:</b>19 <b>538:</b>  6  <b>out</b> [62] <b>437:</b>9 <b>443:</b>20 <b>444:</b>15,24  <b>445:</b>18 <b>447:</b>18 <b>450:</b>13 <b>451:</b>10 <b>455:</b>  3,13 <b>456:</b>23 <b>458:</b>1 <b>459:</b>5 <b>460:</b>15  <b>461:</b>20 <b>463:</b>18,19 <b>467:</b>9 <b>468:</b>1  <b>471:</b>17 <b>472:</b>5 <b>473:</b>9 <b>475:</b>23 <b>477:</b>  22 <b>479:</b>23 <b>480:</b>19 <b>484:</b>16 <b>485:</b>13,  14 <b>486:</b>16 <b>488:</b>25 <b>489:</b>25 <b>494:</b>6,  13 <b>495:</b>21 <b>506:</b>8 <b>508:</b>22 <b>509:</b>4  <b>511:</b>1 <b>513:</b>11 <b>515:</b>7 <b>516:</b>11 <b>519:</b>7,  16,23 <b>522:</b>6,15 <b>523:</b>7 <b>530:</b>13 <b>533:</b>  8,19 <b>542:</b>4,14 <b>553:</b>13,22 <b>554:</b>19  <b>563:</b>2,7 <b>568:</b>12 <b>570:</b>17 <b>577:</b>7 <b>578:</b>  12  <b>outcome</b> [4] <b>530:</b>19 <b>557:</b>16 <b>571:</b>  17 <b>574:</b>21  <b>outcomes</b> [1] <b>576:</b>20  <b>outlier</b> [1] <b>473:</b>13  <b>outlined</b> [1] <b>517:</b>15  <b>Outreach</b> [1] <b>525:</b>25  <b>outside</b> [7] <b>446:</b>18 <b>508:</b>13 <b>540:</b>15  <b>553:</b>5 <b>565:</b>5 <b>567:</b>11 <b>574:</b>13  <b>over</b> [16] <b>440:</b>17 <b>451:</b>8 <b>460:</b>23 <b>482:</b>  25 <b>490:</b>4,7,7 <b>494:</b>4 <b>495:</b>17 <b>510:</b>13  <b>520:</b>19 <b>522:</b>10 <b>534:</b>1 <b>566:</b>15 <b>573:</b>  17 <b>577:</b>9  <b>overbroad</b> [2] <b>492:</b>8,8  <b>overcome</b> [1] <b>557:</b>14  <b>overlap</b> [3] <b>468:</b>3 <b>553:</b>15 <b>555:</b>16  <b>overlay</b> [3] <b>478:</b>16,17,19  <b>overloads</b> [1] <b>566:</b>3  <b>overly</b> [4] <b>453:</b>15 <b>465:</b>5 <b>477:</b>13  <b>495:</b>11  <b>overpenalize</b> [1] <b>545:</b>8  <b>overreach</b> [1] <b>471:</b>4  <b>overriding</b> [1] <b>480:</b>19  <b>oversees</b> [1] <b>550:</b>7  <b>oversight</b> [2] <b>520:</b>19 <b>564:</b>13  <b>overstate</b> [1] <b>474:</b>24  <b>overview</b> [2] <b>436:</b>20 <b>444:</b>1</p>	<p><b>overwhelmed</b> [1] <b>461:</b>24  <b>own</b> [7] <b>463:</b>22,24 <b>500:</b>2 <b>521:</b>5 <b>541:</b>  23 <b>561:</b>19 <b>563:</b>20  <b>owner's</b> [1] <b>494:</b>21  <b>Owners</b> [1] <b>435:</b>7</p> <hr/> <p style="text-align: center;"><b>P</b></p> <hr/> <p><b>p.m</b> [4] <b>523:</b>9,11 <b>524:</b>2 <b>580:</b>17  <b>page</b> [1] <b>468:</b>21  <b>paid</b> [1] <b>457:</b>20  <b>palatable</b> [1] <b>464:</b>9  <b>panel</b> [8] <b>438:</b>24 <b>467:</b>13 <b>487:</b>1 <b>497:</b>  15 <b>515:</b>25 <b>524:</b>4 <b>579:</b>22,25  <b>panelist</b> [1] <b>432:</b>7  <b>panelists</b> [3] <b>432:</b>15 <b>433:</b>10 <b>439:</b>  15  <b>paper</b> [1] <b>457:</b>19  <b>paramount</b> [2] <b>440:</b>23 <b>532:</b>23  <b>parse</b> [1] <b>568:</b>12  <b>part</b> [31] <b>438:</b>4 <b>443:</b>1,19,22 <b>449:</b>21,  21 <b>456:</b>8 <b>460:</b>16 <b>487:</b>6 <b>490:</b>14  <b>493:</b>21 <b>499:</b>18,18 <b>523:</b>4 <b>530:</b>23  <b>531:</b>12,19 <b>532:</b>23 <b>540:</b>18,24 <b>541:</b>  23 <b>546:</b>20 <b>549:</b>18 <b>552:</b>15,25 <b>554:</b>  12 <b>559:</b>9 <b>562:</b>4 <b>563:</b>2,18 <b>564:</b>4  <b>partially</b> [1] <b>526:</b>18  <b>participants</b> [2] <b>431:</b>12 <b>481:</b>12  <b>participate</b> [3] <b>579:</b>24 <b>580:</b>6,10  <b>participating</b> [3] <b>521:</b>11 <b>524:</b>4  <b>580:</b>15  <b>participation</b> [6] <b>432:</b>5,10 <b>494:</b>4,9  <b>579:</b>19 <b>580:</b>12  <b>particular</b> [11] <b>432:</b>6 <b>438:</b>9 <b>445:</b>12  <b>469:</b>18 <b>475:</b>21 <b>526:</b>11 <b>532:</b>22,22  <b>570:</b>25 <b>572:</b>12,13  <b>particularly</b> [6] <b>451:</b>10 <b>477:</b>23  <b>505:</b>24 <b>507:</b>6,25 <b>570:</b>23  <b>parties</b> [14] <b>474:</b>10 <b>506:</b>8 <b>549:</b>10,  15,20 <b>559:</b>12 <b>569:</b>1,12 <b>570:</b>20  <b>571:</b>4,8,22 <b>574:</b>6 <b>578:</b>22  <b>parts</b> [1] <b>512:</b>24  <b>party</b> [2] <b>576:</b>21 <b>577:</b>3  <b>passed</b> [3] <b>508:</b>20 <b>550:</b>5 <b>558:</b>21  <b>passive</b> [17] <b>531:</b>2 <b>534:</b>21,23 <b>535:</b>  4,14,17 <b>536:</b>6,21 <b>543:</b>20 <b>546:</b>1,11,  18 <b>547:</b>16 <b>549:</b>3,13 <b>551:</b>18 <b>570:</b>7  <b>passively</b> [2] <b>530:</b>14 <b>578:</b>17  <b>past</b> [4] <b>449:</b>11 <b>460:</b>23 <b>512:</b>7 <b>549:</b>  19  <b>Patel</b> [1] <b>528:</b>12  <b>path</b> [1] <b>518:</b>4  <b>patience</b> [2] <b>439:</b>22 <b>571:</b>25  <b>patient</b> [38] <b>527:</b>18,25 <b>528:</b>5,8 <b>529:</b>  23 <b>530:</b>19 <b>534:</b>5 <b>535:</b>5,7 <b>536:</b>5,8  <b>537:</b>25 <b>538:</b>1,2 <b>540:</b>21 <b>542:</b>12  <b>549:</b>13 <b>550:</b>11,16,18,23 <b>551:</b>4  <b>556:</b>10 <b>558:</b>6 <b>559:</b>6 <b>561:</b>18 <b>563:</b>  13,23 <b>564:</b>2 <b>566:</b>9 <b>567:</b>19 <b>569:</b>4  <b>573:</b>21 <b>574:</b>1 <b>575:</b>1,12,22 <b>576:</b>7  <b>patient's</b> [1] <b>576:</b>3  <b>patient-specific</b> [2] <b>551:</b>2 <b>565:</b>11  <b>Patients</b> [32] <b>525:</b>9 <b>526:</b>23 <b>528:</b>14  <b>529:</b>25 <b>530:</b>22 <b>532:</b>11,20 <b>534:</b>3</p>	<p><b>537:</b>23 <b>538:</b>16 <b>545:</b>1,8,11 <b>549:</b>12  <b>550:</b>3,14,24 <b>557:</b>7,11,24 <b>558:</b>9,9,  17 <b>560:</b>10,14,19 <b>561:</b>24 <b>562:</b>9  <b>564:</b>6 <b>568:</b>6 <b>578:</b>24 <b>579:</b>11  <b>Pause</b> [3] <b>568:</b>23 <b>580:</b>4,8  <b>Pearlman</b> [8] <b>525:</b>5,8,8 <b>548:</b>2 <b>552:</b>  22,25 <b>554:</b>11 <b>555:</b>11  <b>penalties</b> [5] <b>544:</b>24 <b>545:</b>3,7 <b>572:</b>  22 <b>573:</b>15  <b>penalty</b> [1] <b>501:</b>23  <b>pending</b> [1] <b>474:</b>8  <b>penetrate</b> [1] <b>486:</b>16  <b>people</b> [35] <b>431:</b>10 <b>442:</b>23,24 <b>443:</b>  2 <b>444:</b>15 <b>446:</b>10 <b>448:</b>20 <b>459:</b>9  <b>460:</b>7 <b>466:</b>8 <b>482:</b>23 <b>483:</b>19 <b>494:</b>6,  22 <b>495:</b>6,25 <b>502:</b>25 <b>503:</b>3,25 <b>507:</b>  11 <b>518:</b>18 <b>519:</b>22 <b>520:</b>15 <b>521:</b>12  <b>533:</b>1 <b>540:</b>15 <b>550:</b>6 <b>557:</b>25 <b>558:</b>  12 <b>561:</b>2 <b>564:</b>16 <b>570:</b>4 <b>572:</b>15  <b>573:</b>6 <b>574:</b>2  <b>people's</b> [2] <b>479:</b>20 <b>518:</b>15  <b>percent</b> [2] <b>460:</b>6 <b>575:</b>8  <b>perform</b> [2] <b>549:</b>10 <b>559:</b>13  <b>perhaps</b> [6] <b>442:</b>14 <b>465:</b>23 <b>472:</b>23  <b>485:</b>10 <b>503:</b>1 <b>580:</b>1  <b>period</b> [2] <b>532:</b>18 <b>541:</b>20  <b>permanent</b> [11] <b>496:</b>21 <b>498:</b>4,12  <b>509:</b>19,24 <b>510:</b>2,9 <b>511:</b>19 <b>513:</b>15  <b>516:</b>18 <b>572:</b>7  <b>permission</b> [1] <b>549:</b>11  <b>permit</b> [3] <b>549:</b>10 <b>552:</b>18 <b>559:</b>12  <b>permits</b> [1] <b>472:</b>11  <b>permitted</b> [3] <b>488:</b>8 <b>548:</b>21 <b>555:</b>3  <b>permitting</b> [1] <b>514:</b>25  <b>person</b> [4] <b>501:</b>5 <b>567:</b>10,16 <b>580:</b>9  <b>personal</b> [2] <b>515:</b>2,13  <b>personally</b> [3] <b>505:</b>3 <b>518:</b>8,16  <b>persons</b> [1] <b>570:</b>5  <b>perspective</b> [4] <b>437:</b>14 <b>442:</b>21  <b>494:</b>21 <b>567:</b>2  <b>petition</b> [7] <b>445:</b>4,9 <b>516:</b>11 <b>530:</b>1  <b>562:</b>23 <b>564:</b>13 <b>565:</b>12  <b>Petitioner</b> [9] <b>529:</b>17 <b>536:</b>1 <b>537:</b>  17 <b>541:</b>1 <b>542:</b>10 <b>562:</b>15 <b>567:</b>13  <b>568:</b>17 <b>574:</b>4  <b>Petitioners</b> [8] <b>537:</b>24 <b>538:</b>5,19  <b>556:</b>1 <b>557:</b>5,16 <b>559:</b>14 <b>569:</b>1  <b>petitioners'</b> [9] <b>528:</b>2,7 <b>530:</b>11  <b>537:</b>22 <b>543:</b>8 <b>549:</b>9 <b>556:</b>8 <b>571:</b>18  <b>578:</b>2  <b>philosophically</b> [1] <b>533:</b>22  <b>philosophy</b> [1] <b>533:</b>15  <b>phone</b> [13] <b>442:</b>12 <b>458:</b>19,20 <b>516:</b>  9 <b>519:</b>2,4 <b>546:</b>25 <b>547:</b>1,4 <b>552:</b>10,  12 <b>561:</b>25 <b>564:</b>8  <b>phrased</b> [1] <b>457:</b>10  <b>physical</b> [2] <b>431:</b>17 <b>531:</b>23  <b>physician</b> [3] <b>562:</b>1,8 <b>563:</b>23  <b>physicist</b> [1] <b>455:</b>24  <b>picks</b> [1] <b>458:</b>19  <b>piece</b> [1] <b>531:</b>1  <b>pieces</b> [1] <b>511:</b>19</p>	<p><b>pilot</b> [1] <b>532:</b>13  <b>pipeline</b> [1] <b>533:</b>21  <b>piracy</b> [6] <b>440:</b>2 <b>466:</b>17,22 <b>508:</b>19,  21,24  <b>place</b> [18] <b>435:</b>12 <b>444:</b>21 <b>446:</b>8  <b>456:</b>15 <b>461:</b>1 <b>476:</b>25 <b>477:</b>4,5 <b>506:</b>  20 <b>516:</b>20 <b>521:</b>7 <b>529:</b>21 <b>538:</b>8  <b>539:</b>3,9 <b>545:</b>3 <b>563:</b>5 <b>573:</b>8  <b>places</b> [4] <b>495:</b>15 <b>553:</b>8 <b>557:</b>19  <b>564:</b>13  <b>plain</b> [2] <b>459:</b>13 <b>460:</b>22  <b>plaintiff</b> [1] <b>468:</b>24  <b>plaintiffs</b> [1] <b>474:</b>12  <b>play</b> [5] <b>478:</b>16 <b>499:</b>11 <b>563:</b>7 <b>571:</b>  23 <b>576:</b>7  <b>player</b> [2] <b>555:</b>20 <b>573:</b>24  <b>players</b> [1] <b>459:</b>1  <b>playing</b> [1] <b>550:</b>21  <b>plays</b> [3] <b>448:</b>2 <b>566:</b>21,22  <b>please</b> [6] <b>431:</b>21 <b>432:</b>18 <b>433:</b>15  <b>434:</b>13 <b>524:</b>5 <b>525:</b>6  <b>plenty</b> [3] <b>461:</b>7 <b>490:</b>16 <b>493:</b>10  <b>plethora</b> [1] <b>458:</b>21  <b>poignantly</b> [1] <b>470:</b>21  <b>point</b> [61] <b>444:</b>24 <b>451:</b>16,16 <b>452:</b>5,  8 <b>454:</b>19,25 <b>455:</b>8 <b>458:</b>23 <b>460:</b>15  <b>461:</b>6 <b>462:</b>21 <b>465:</b>12 <b>468:</b>5 <b>470:</b>2,  7 <b>471:</b>17 <b>472:</b>14 <b>473:</b>12 <b>475:</b>23  <b>478:</b>14 <b>485:</b>11,22 <b>490:</b>12 <b>491:</b>16  <b>493:</b>1,4,5 <b>494:</b>19 <b>495:</b>21 <b>496:</b>23  <b>498:</b>10,11,17 <b>500:</b>7 <b>501:</b>1 <b>502:</b>16  <b>503:</b>16,24 <b>505:</b>20 <b>511:</b>2 <b>513:</b>11  <b>518:</b>14 <b>519:</b>7,11 <b>520:</b>12,21 <b>522:</b>2,  8 <b>542:</b>14 <b>555:</b>15,18 <b>557:</b>23 <b>561:</b>1  <b>562:</b>18 <b>564:</b>22,25 <b>566:</b>5,19 <b>568:</b>4  <b>577:</b>15  <b>pointed</b> [12] <b>437:</b>9 <b>444:</b>15 <b>459:</b>5  <b>461:</b>20 <b>463:</b>18,19 <b>472:</b>5 <b>477:</b>22  <b>480:</b>19 <b>511:</b>1 <b>515:</b>7 <b>545:</b>13  <b>points</b> [6] <b>437:</b>25 <b>444:</b>10 <b>467:</b>8  <b>511:</b>14 <b>521:</b>9 <b>544:</b>20  <b>policy</b> [10] <b>433:</b>7,8,23 <b>434:</b>3 <b>435:</b>4  <b>437:</b>16 <b>491:</b>23 <b>506:</b>16 <b>525:</b>3,4  <b>polycymaking</b> [1] <b>496:</b>18  <b>political</b> [1] <b>470:</b>25  <b>portability</b> [2] <b>550:</b>3,4  <b>portion</b> [6] <b>438:</b>20 <b>486:</b>22,25 <b>497:</b>  15 <b>517:</b>7 <b>574:</b>23  <b>pose</b> [1] <b>498:</b>20  <b>posed</b> [1] <b>431:</b>22  <b>poses</b> [1] <b>473:</b>3  <b>posing</b> [1] <b>524:</b>15  <b>position</b> [7] <b>491:</b>5 <b>514:</b>3 <b>516:</b>22  <b>517:</b>12 <b>522:</b>15 <b>535:</b>4 <b>538:</b>6  <b>possibility</b> [2] <b>575:</b>11,20  <b>possible</b> [3] <b>509:</b>17 <b>551:</b>13 <b>572:</b>9  <b>post-circumvention</b> [1] <b>451:</b>24  <b>post-hearing</b> [1] <b>522:</b>3  <b>posting</b> [1] <b>432:</b>17  <b>posture</b> [2] <b>473:</b>24 <b>474:</b>6  <b>potential</b> [9] <b>464:</b>1 <b>467:</b>2 <b>508:</b>16  <b>518:</b>4 <b>541:</b>3 <b>543:</b>11,12 <b>559:</b>22</p>
--	--	--	---

<p>578:23  <b>potentially</b> <sup>[9]</sup> 437:21 461:18 476:6 480:9 517:20 522:24 556:6 569:9 570:21  <b>power</b> <sup>[1]</sup> 557:10  <b>practice</b> <sup>[3]</sup> 462:3 520:20 574:17  <b>practices</b> <sup>[2]</sup> 515:16 539:10  <b>pre-approval</b> <sup>[1]</sup> 543:1  <b>pre-certification</b> <sup>[4]</sup> 530:5 531:20 532:13,24  <b>pre-COVID</b> <sup>[1]</sup> 459:7  <b>precisely</b> <sup>[1]</sup> 490:14  <b>preclude</b> <sup>[1]</sup> 477:19  <b>preference</b> <sup>[1]</sup> 496:15  <b>preliminary</b> <sup>[2]</sup> 474:7,14  <b>prescribes</b> <sup>[1]</sup> 555:25  <b>presence</b> <sup>[3]</sup> 440:14 445:14 489:14  <b>present</b> <sup>[1]</sup> 468:17  <b>presents</b> <sup>[1]</sup> 484:22  <b>preserve</b> <sup>[1]</sup> 519:14  <b>President</b> <sup>[3]</sup> 434:23,25 525:21  <b>pressure</b> <sup>[2]</sup> 542:25 555:23  <b>presumption</b> <sup>[1]</sup> 491:11  <b>pretend</b> <sup>[1]</sup> 459:15  <b>pretty</b> <sup>[13]</sup> 438:23 458:19 459:13 463:8,8 487:24 499:16 506:16 511:23 517:4 529:1 556:17 567:19  <b>prevalent</b> <sup>[1]</sup> 455:7  <b>prevent</b> <sup>[4]</sup> 481:24 538:12 575:22 576:2  <b>prevented</b> <sup>[1]</sup> 475:15  <b>preview</b> <sup>[1]</sup> 551:12  <b>previous</b> <sup>[6]</sup> 431:11 501:13 542:14,15 553:7 569:6  <b>previously</b> <sup>[3]</sup> 468:5 533:12 576:18  <b>primarily</b> <sup>[8]</sup> 436:2,11 447:4 453:25 464:6 469:8 487:10 579:9  <b>primary</b> <sup>[9]</sup> 463:6 468:15 536:22 543:4,5 562:11,13,18 566:20  <b>primetime</b> <sup>[1]</sup> 557:20  <b>principle</b> <sup>[4]</sup> 453:24 454:14 509:23,23  <b>principles</b> <sup>[1]</sup> 454:17  <b>priori</b> <sup>[1]</sup> 519:18  <b>priority</b> <sup>[1]</sup> 506:16  <b>privacy</b> <sup>[29]</sup> 436:4,6 486:25 497:14 509:10 513:22 514:10,11,14,25 515:11,15,16 516:21 517:9 519:5,11,15,19 520:6 521:19 522:16 532:16,17,21 543:1 550:4,5 561:21  <b>privileged</b> <sup>[2]</sup> 442:22 461:14  <b>proactively</b> <sup>[1]</sup> 576:6  <b>probably</b> <sup>[15]</sup> 438:20 443:3 446:13 453:6 455:15 460:3 464:8 486:22 498:6 505:4 509:4 516:19 521:7 523:4 549:7  <b>probative</b> <sup>[1]</sup> 445:3  <b>probe</b> <sup>[3]</sup> 450:25 502:16 541:8</p>	<p><b>probing</b> <sup>[1]</sup> 451:13  <b>problem</b> <sup>[30]</sup> 443:23 444:5,6 450:21 459:17,19 460:9 470:4 472:16 475:12 491:7 493:15,19,23 499:18,20 509:25 518:23 528:2 529:12 530:23 537:12 538:4 540:18,24 557:4 561:8,13,22 571:8  <b>problematic</b> <sup>[2]</sup> 447:8 498:22  <b>problems</b> <sup>[11]</sup> 441:22 447:6 448:14,19,20 476:4 497:23 498:19 521:2,6 522:24  <b>procedural</b> <sup>[1]</sup> 473:24  <b>procedure</b> <sup>[1]</sup> 563:15  <b>procedures</b> <sup>[2]</sup> 545:11,17  <b>proceed</b> <sup>[3]</sup> 444:3 462:10 500:22  <b>proceeding</b> <sup>[7]</sup> 465:24 474:19 494:4 507:25 509:19 545:22 567:3  <b>process</b> <sup>[22]</sup> 442:12 449:24 452:16 467:10 468:1,12 473:18 511:12 516:14,19 528:19 531:24 532:7,9,24,25 537:4,7 539:18 557:11 564:24 566:23  <b>producers'</b> <sup>[1]</sup> 515:16  <b>producing</b> <sup>[1]</sup> 563:15  <b>product</b> <sup>[14]</sup> 460:3 515:1,16 531:23,25 532:7 538:23 543:2 575:25 576:1,2 578:7,7,12  <b>products</b> <sup>[16]</sup> 446:10,11 447:10,20 448:12,22 460:6 470:23 515:22 519:14 533:9,21 539:15 564:15 575:18 578:16  <b>professional</b> <sup>[1]</sup> 443:4  <b>Professor</b> <sup>[58]</sup> 433:14,17,19,24 437:2,25 439:19,25 440:20 441:8,14,25 447:25 448:1 449:3 450:2 451:25 452:1 454:21 458:8 463:19 465:2 466:16 467:13 469:4 470:13 471:24 475:17,20 479:5 480:14,15 483:17,22 484:11 485:4 486:14 487:5 488:17 489:6 490:13 498:10 499:8,9 501:2,12 504:19,20,22 505:25 511:24 512:11,13,17,18,19 520:10 522:8  <b>professors</b> <sup>[1]</sup> 472:6  <b>proffered</b> <sup>[2]</sup> 513:20 518:19  <b>proffering</b> <sup>[1]</sup> 487:12  <b>program</b> <sup>[8]</sup> 518:7,10,12,12 530:5 531:21 532:13 547:8  <b>programs</b> <sup>[2]</sup> 518:15 556:15  <b>prohibit</b> <sup>[5]</sup> 449:13 481:17,18 482:3 540:14  <b>prohibition</b> <sup>[4]</sup> 469:4 478:20 513:14,14  <b>prohibitions</b> <sup>[3]</sup> 452:11,12 518:24  <b>project</b> <sup>[5]</sup> 436:17 444:2 465:19,20 532:13  <b>projects</b> <sup>[5]</sup> 436:13 437:11 448:24 461:10 465:1  <b>promote</b> <sup>[1]</sup> 580:1  <b>proof</b> <sup>[1]</sup> 490:9  <b>proper</b> <sup>[1]</sup> 516:2</p>	<p><b>properly</b> <sup>[3]</sup> 510:21 522:23 536:4  <b>Property</b> <sup>[2]</sup> 525:13,16  <b>proponents</b> <sup>[33]</sup> 439:2,9 446:21 453:16,23 454:12 460:17 464:24 466:13 467:12 468:4,16,19,25 475:4 479:5 487:22 488:2 491:4 492:23 509:12 510:23 513:19 522:7 526:7 534:14 546:5,10 549:2 551:19 559:21 567:23 572:5  <b>proponents'</b> <sup>[5]</sup> 467:3 468:21 473:25 480:7 490:20  <b>proposal</b> <sup>[7]</sup> 467:18 498:15 513:25 515:7 521:3 570:17 572:1  <b>proposals</b> <sup>[1]</sup> 466:19  <b>Proposed</b> <sup>[10]</sup> 431:7 434:10 446:20 482:13 524:12 529:5 540:7,20 553:5 570:1  <b>prosecute</b> <sup>[1]</sup> 494:6  <b>prosecution</b> <sup>[1]</sup> 494:2  <b>protect</b> <sup>[4]</sup> 508:11 520:7 540:22 576:6  <b>protected</b> <sup>[3]</sup> 470:17 471:14 504:16  <b>protecting</b> <sup>[1]</sup> 556:21  <b>protection</b> <sup>[1]</sup> 509:7  <b>protocols</b> <sup>[1]</sup> 448:12  <b>prove</b> <sup>[3]</sup> 446:7,16 466:1  <b>proven</b> <sup>[1]</sup> 439:17  <b>provide</b> <sup>[21]</sup> 431:20 454:8 458:15 459:11 461:2,21 464:25 479:24 526:11 532:2 542:25 551:2 558:1 560:1,5,6,19 563:21,22 570:9 578:17  <b>provided</b> <sup>[9]</sup> 432:8 439:3 451:11 460:23 472:5 497:8 550:25 558:25 562:2  <b>providence</b> <sup>[1]</sup> 562:3  <b>provider</b> <sup>[3]</sup> 550:14,17 551:3  <b>provides</b> <sup>[5]</sup> 440:25 456:23,25 500:18 576:20  <b>providing</b> <sup>[5]</sup> 459:13 503:3 530:1 564:6 565:22  <b>proving</b> <sup>[1]</sup> 466:20  <b>provision</b> <sup>[7]</sup> 442:16 443:25 480:22 494:20 503:15 508:8 574:18  <b>provisions</b> <sup>[5]</sup> 446:1 569:10,24 570:11 579:16  <b>public</b> <sup>[8]</sup> 448:9,16,20 450:14,22 481:4,6 573:14  <b>publication</b> <sup>[3]</sup> 448:25 457:18 480:3  <b>publications</b> <sup>[1]</sup> 515:11  <b>publicizing</b> <sup>[1]</sup> 450:19  <b>publicly</b> <sup>[2]</sup> 578:11,12  <b>publish</b> <sup>[2]</sup> 451:4 472:7  <b>pull</b> <sup>[5]</sup> 529:13 530:13 538:23 575:13,18  <b>pulled</b> <sup>[3]</sup> 550:22 556:6 575:10  <b>pump</b> <sup>[3]</sup> 538:19 566:3 578:13  <b>pumps</b> <sup>[3]</sup> 556:5,7 575:14  <b>purchased</b> <sup>[1]</sup> 481:15  <b>purpose</b> <sup>[13]</sup> 449:9 453:13 454:8</p>	<p>463:1,13 476:17 498:4 511:14 513:13 516:10 521:19 553:17 557:2  <b>purposes</b> <sup>[5]</sup> 456:3 553:4,9 556:15 570:4  <b>pursue</b> <sup>[3]</sup> 456:10 528:19 560:15  <b>pursuing</b> <sup>[1]</sup> 452:1  <b>purveyors</b> <sup>[1]</sup> 502:22  <b>push</b> <sup>[1]</sup> 529:13  <b>pushing</b> <sup>[2]</sup> 558:19 561:9  <b>put</b> <sup>[20]</sup> 446:10,11 468:20 469:23 485:14 489:25 495:25 496:23 501:1 511:12 517:24 528:12 529:20 535:7 555:10 559:17 571:21 575:15 576:3 578:12  <b>puts</b> <sup>[7]</sup> 469:18 530:2,9 534:11 536:8,9 571:23  <b>putting</b> <sup>[4]</sup> 496:13 530:22 538:8 571:12</p> <hr/> <p style="text-align: center;"><b>Q</b></p> <p><b>qualification</b> <sup>[1]</sup> 573:11  <b>qualifications</b> <sup>[1]</sup> 457:13  <b>qualify</b> <sup>[1]</sup> 457:14  <b>quality</b> <sup>[2]</sup> 526:1 543:1  <b>queries</b> <sup>[1]</sup> 480:21  <b>question</b> <sup>[70]</sup> 431:22 435:9 436:11 439:1 446:2,6 447:25 449:10,16,24 453:15 454:24 455:9 457:5 464:23 466:11 468:14 472:14 476:7 479:4,4 481:1 482:10,14 483:14,22 484:12 488:20 494:19 495:2 498:13 499:6 500:17 503:10 504:11 505:11 509:9,22 510:6,20 516:6 526:7 530:9 531:12 533:11 534:11 536:4,12,25 537:2,12 540:2,25 541:9 542:13 543:5 546:21 549:22 550:13 551:17 552:17 559:11 563:12,18 565:14 568:5 570:16 577:14 578:2,15  <b>questioning</b> <sup>[1]</sup> 436:21  <b>questions</b> <sup>[22]</sup> 431:13,21 438:17,18 458:14 459:1 464:22 503:4 507:12 514:7 524:15 531:16 541:9 542:1 543:21 546:6,7,10 561:5 568:21 577:9,11  <b>quick</b> <sup>[9]</sup> 442:12 462:13 463:8 469:8 480:13,14 513:10 516:5 522:13  <b>quicker</b> <sup>[1]</sup> 533:21  <b>quickly</b> <sup>[10]</sup> 446:17 464:5 467:8 500:16 508:3 512:18 513:2 524:8 566:13 568:1  <b>quietly</b> <sup>[1]</sup> 458:25  <b>quite</b> <sup>[19]</sup> 435:22 473:24 474:8,9 481:16 484:19,20,20,21,21,23,23,23 485:1 498:20 511:8,13 528:4 557:8  <b>quote</b> <sup>[2]</sup> 454:7 472:9</p> <hr/> <p style="text-align: center;"><b>R</b></p> <p><b>rabbit</b> <sup>[1]</sup> 462:18  <b>race</b> <sup>[4]</sup> 539:12,13,15,18  <b>Raise</b> <sup>[10]</sup> 431:15,17 439:1 440:13</p>
---	--	---	---

<p>473:4,10 501:22 507:11 524:15 528:23 raised [14] 435:20,21 438:5,13 440: 5 455:1 485:22 490:13 498:24 503:17 551:13,13 554:6 570:25 raises [6] 480:21 496:3 521:9 528: 16 542:22 549:22 raising [1] 503:20 ramifications [1] 445:12 Ramos [20] 433:5,6,7 447:24 483: 14,20,21 484:10 525:1,2,3 536:24 537:1 566:12,16,17 577:11,12,13 579:1 range [3] 503:4 507:24 510:18 ranging [1] 437:20 Rapid [2] 517:9 522:15 Rapid-7 [1] 514:12 rarely [1] 445:7 rather [4] 439:17 442:17 492:10 500:23 rationale [1] 516:13 raw [4] 558:3 560:6 561:2,5 re-alter [1] 575:14 reach [2] 492:6 562:8 reached [1] 495:17 reaches [1] 562:4 read [16] 431:24 446:23 455:11 472:22 486:1,2 487:10,18 492:4, 16 497:25 506:10,22,25 552:9,13 readable [1] 556:6 readily [1] 485:1 reading [5] 475:11 477:11,14 546: 25 560:8 ready [1] 557:20 real [20] 442:25 451:19 462:13 480: 13,14 481:19 487:1 502:24,25 503:2 505:19 513:10 529:12 530: 2 558:13 561:3,11,16 571:8 578: 14 real-time [2] 558:8 560:9 realistic [3] 487:16 494:5 575:4 reality [3] 494:8 542:9 560:16 realize [1] 555:10 realized [1] 549:17 really [56] 437:9 440:24 441:20 456:18,23 461:25 464:5,23 470:1 471:15 472:18,21 485:19,20 486: 5,11 487:16,17,21 490:8 493:5 494:20 497:14,25 505:5,25 512: 12 513:1 514:2,4 516:17 517:2,24 527:19 530:16 531:15 533:1 534: 11,14 535:20 536:8 541:17 557: 13 561:4 562:6,11,12 566:20,24 568:13,17 571:18 576:14 577:25 578:1 579:9 reason [9] 431:16 439:4 450:14 473:8 513:18 562:5 563:14 569: 15 578:14 reasonable [3] 518:17 540:21 558: 25 reasons [1] 491:2 recall [6] 440:1 466:11 495:2 522:</p>	<p>19 538:18 575:14 recalling [1] 520:18 receive [2] 532:5 580:2 received [1] 438:9 receiver [1] 547:7 recent [2] 447:15 533:18 recently [2] 467:10 538:14 recessed [1] 523:10 recognition [1] 471:16 recognize [4] 498:11 515:24 516: 17 517:1 recognized [3] 444:20 473:3 498: 5 recognizing [1] 493:12 recommendation [17] 449:22 479:18,24 484:15 486:1,15 487: 23 494:10 495:3,5,12 497:7 516: 24 517:1 528:10 573:5,10 recommendations [5] 446:19 449:11 475:9 485:14 514:20 recommended [1] 522:20 recommending [3] 462:19 496: 24 510:1 reconvene [1] 523:10 record [30] 431:23 438:21 439:13 445:1 450:10,17 452:20 455:12 465:8 468:17 470:3 472:22 473:6 477:15 482:18 484:15 486:23 487: 21,24 488:13 490:6,17 513:17 517:24 523:7 525:19 551:3 554:4 558:2 572:14 recorded [2] 432:17 519:25 records [3] 528:15 534:4 535:5 recourse [4] 530:8 537:20,21 565: 16 redundant [1] 572:20 Reed [77] 434:11,25,25 458:3,7 460:12 461:6 469:23 473:15 503: 20 520:9,10,11 521:21 524:6 525: 18,20,20 527:7,17 529:2,7,12 531: 11 533:6,14 534:17,21 535:13,16, 22,25 536:13 537:2,11 539:4,8,12 540:10,13,18 541:14 542:2,6,9 545:20,23 546:3 548:24 549:5 551:7,9 553:22 555:8,13 557:3 558:14 559:23 560:12,21,23 561: 4 563:18 565:4 566:19 567:6 568: 16 570:14,19 571:3 573:16,17 575:5,8 576:16 577:14,24 Reed's [1] 557:23 refer [1] 468:22 reference [4] 453:23 491:9 497:19 546:14 referenced [1] 489:16 references [1] 447:4 referencing [1] 454:3 referred [3] 465:11 519:8 549:8 referring [4] 452:18 482:13 491: 16 549:20 refers [1] 556:12 refine [1] 431:23 reflect [2] 521:12 570:1</p>	<p>Regan [2] 431:4 524:9 regard [5] 439:8 462:16 463:6 505: 22 507:14 regarding [11] 431:7 461:6 468:6 493:6 506:3 509:14 514:7 569:7 570:18 572:7,24 regardless [4] 494:24 518:8 526: 24 576:11 regards [1] 530:18 regime [3] 496:17 520:15 521:12 register [6] 446:19 449:12 475:9 484:16 510:1 541:19 register's [4] 449:11,22 476:17 514:20 regularly [2] 458:14 575:9 regulate [5] 537:23 538:2 544:25 550:3 568:8 regulated [3] 571:22,23 574:7 regulates [2] 537:23 538:2 regulation [3] 491:14 495:25 496: 11 regulations [10] 544:24 545:2,4,7, 9 568:12 572:22,23 574:4,5 regulator [1] 543:4 regulators [3] 536:9 538:21 566:7 regulatory [9] 431:8 435:11 480:1 495:4,12 502:18 514:20 528:4 537:13 Reid [64] 433:19,21,21 436:23 437: 2,3,25 439:18,18,19,20 441:9 450: 2,4 451:25 454:21,22 456:6 457:7 458:9 463:18,19 466:16 467:13 469:4,6 471:24 475:17,19 476:22 483:17,22 484:10 487:5 488:14, 16,17,18 489:1 490:12 498:10 499:9 500:25 501:2,4 502:1,14,25 503:16,23 504:6,18 505:25 506: 10 510:3,4,4,10 512:13,18,19 520: 10 522:9,12 Reid's [2] 458:23 499:8 reigns [1] 485:19 related [6] 439:5 447:6 449:10 457: 19 508:17,23 relationship [2] 500:18 509:6 relative [1] 512:6 relatively [1] 503:17 release [2] 562:24 579:13 relevance [1] 512:9 relevant [6] 508:9,12 509:17,24 516:18 529:10 reliance [2] 541:17,22 relied [1] 461:25 reluctant [2] 479:22 572:15 rely [1] 448:22 relying [5] 461:15 486:2,3,3 512: 23 remains [1] 513:3 remarks [1] 506:11 remediation [1] 463:23 remediations [1] 516:21 remedies [1] 447:14 remedy [1] 507:8</p>	<p>remember [8] 471:3 498:2 535:5 537:21 539:16 542:11 549:12 564: 2 remind [1] 549:8 reminder [2] 470:15 580:12 reminding [1] 434:20 reminiscent [1] 538:13 removal [3] 459:19 490:18 546:1 546:12 464:2 479:12 495:4 510:8 513:18 518:6 526:8 572:2,12,19 removed [2] 438:22 440:18 removes [1] 459:20 removing [10] 437:17 457:7 461:2 462:23 476:19 478:18 491:1 517: 6 531:2 576:19 renewal [6] 465:15 467:4 510:15 522:20 531:6 534:20 renewed [1] 467:6 repair [3] 554:3 569:11 570:2 repeat [1] 532:7 repeated [1] 440:10 repeatedly [3] 446:15 465:24 474: 5 repeating [1] 557:24 repetitive [1] 451:16 reply [12] 439:2 454:1 468:21 472: 22 486:24 513:24 514:2 518:2 519:9,9 546:13 560:4 report [3] 450:10 468:5 499:7 reporter [4] 432:18 480:15 490:6 524:17 Reports [1] 514:16 represent [3] 435:7 462:3 515:23 representing [3] 434:7 466:4 525: 17 represents [1] 515:21 request [28] 514:5 516:6 528:2,7 529:18,25 530:11,18,24 537:22 543:8,11,12,13,14,16 547:7,10 549:9 550:15,24 558:3,18 559:2,4 564:2 575:17 578:2 requested [5] 435:18 438:22 517: 7 538:5 557:16 requesting [6] 520:25 538:20 552: 14 558:8,12 563:24 requests [4] 461:24 542:10 553: 19 569:6 require [5] 444:13 462:20 529:20 547:11 552:10 required [4] 544:16 547:3,3 558: 25 requirements [3] 530:3 533:10 544:2 requires [4] 445:16 515:8 537:7 574:11 requiring [3] 509:2 561:8 573:11 resale [3] 481:19,23 482:4 research [98] 431:9 435:12 436:4, 6,10 439:24 440:2,4 443:8 446:11, 12 447:5,7,11,19 448:2,3,5,18 449: 15 450:12 451:18 452:21 453:3,</p>
---	---	--	---

<p>13,17,18,20 454:4,5,6,11,18 455:16 457:11,13 458:1 459:19 460:4 463:14,15,16,18,20,23 465:9,14 469:15 470:12 471:5 472:7,18,25 474:19 475:6,16 477:20,24 478:17 480:3 481:2,7,24 482:17 484:2 485:3 486:8 487:14 489:18 493:13 498:22 499:24 500:12 502:9,12 503:5 506:4,15,21 512:2 513:5 514:10,12,14,14,23,25 515:8,11,23 517:9,11 519:10 521:18,19 556:17 572:4 573:1</p> <p><b>researcher</b> [8] 441:25 443:4 450:9 451:3,5 462:21 469:20 475:7</p> <p><b>researchers</b> [44] 437:10,17,23 440:19,23 441:20 442:22 443:19 447:10,18 448:11,16 449:17 450:11 455:2 460:1,18 468:8 472:17 475:5,12,14 477:22 478:1 484:3,7,9 485:5,6,20 486:7 488:5 491:18 499:20 500:15 504:12 515:12 516:23 519:19,19 521:1 525:10 572:24,25</p> <p><b>researching</b> [3] 515:12 518:18 522:17</p> <p><b>resemblance</b> [1] 511:22</p> <p><b>resold</b> [2] 477:21 481:15</p> <p><b>resolve</b> [3] 452:16 453:6 517:4</p> <p><b>resources</b> [1] 443:2</p> <p><b>respect</b> [8] 489:14 493:18 511:25,25 539:3,10 557:2 564:16</p> <p><b>respectfully</b> [1] 542:17</p> <p><b>respects</b> [1] 510:18</p> <p><b>respond</b> [14] 446:17 447:1 455:9 487:5 488:15 489:2 500:16 512:12 543:18,24 548:25 559:21 560:22 568:1</p> <p><b>responding</b> [1] 519:23</p> <p><b>responds</b> [1] 519:21</p> <p><b>response</b> [10] 441:11 451:1 454:25 469:8 490:22 495:24 499:14,15 504:21 560:25</p> <p><b>responses</b> [1] 438:25</p> <p><b>responsibility</b> [3] 469:19 494:11 567:23</p> <p><b>responsible</b> [1] 472:16</p> <p><b>responsibly</b> [1] 472:19</p> <p><b>rest</b> [1] 438:13</p> <p><b>restraints</b> [1] 478:2</p> <p><b>restricting</b> [1] 567:18</p> <p><b>restrictions</b> [1] 559:1</p> <p><b>restrictive</b> [2] 453:16 480:5</p> <p><b>restricts</b> [1] 469:14</p> <p><b>restructuring</b> [1] 569:25</p> <p><b>result</b> [1] 522:19</p> <p><b>resulted</b> [2] 440:12 448:24</p> <p><b>resulting</b> [2] 443:7 506:7</p> <p><b>results</b> [7] 447:19 448:3,16 450:19 451:4 472:7 480:3</p> <p><b>retain</b> [1] 572:9</p> <p><b>retaining</b> [2] 493:24 508:14</p> <p><b>retaliation</b> [1] 450:13</p>	<p><b>retract</b> [1] 471:21</p> <p><b>reversal</b> [2] 491:5 564:5</p> <p><b>reverse</b> [3] 481:18 505:8,13</p> <p><b>review</b> [5] 462:20 470:20 511:12 531:25 539:23</p> <p><b>reviewing</b> [1] 488:11</p> <p><b>reviews</b> [1] 471:19</p> <p><b>revisit</b> [1] 557:19</p> <p><b>Richart</b> [1] 579:24</p> <p><b>right-to-hack</b> [1] 542:11</p> <p><b>Rights</b> [2] 550:7,10</p> <p><b>rigor</b> [1] 571:9</p> <p><b>Ringer</b> [2] 433:3 524:23</p> <p><b>rise</b> [2] 505:19 522:24</p> <p><b>risk</b> [18] 437:10,23 438:3 441:3 450:13 481:19,20 501:15 502:4,14 530:22 533:18 535:8 536:8 571:13 573:1 576:3 577:1</p> <p><b>risking</b> [1] 461:18</p> <p><b>risks</b> [5] 476:1 500:2 528:17 532:3 571:23</p> <p><b>risky</b> [1] 504:2</p> <p><b>roadmap</b> [1] 431:20</p> <p><b>role</b> [6] 448:1 463:20 470:23 512:2 525:22 576:8</p> <p><b>room</b> [1] 443:11</p> <p><b>rooted</b> [1] 489:10</p> <p><b>roughly</b> [1] 565:7</p> <p><b>route</b> [1] 547:15</p> <p><b>routinely</b> [1] 507:21</p> <p><b>rule</b> [11] 460:24,25 482:13 484:16 492:1,4 550:5 558:16 562:25 563:7 565:22</p> <p><b>rulemaking</b> [13] 431:6 432:14 452:12,16 456:4 472:21 498:5 512:8 513:14,17 516:14 524:11 541:25</p> <p><b>rulemakings</b> [1] 460:23</p> <p><b>rules</b> [6] 491:8,10 497:17 527:21 540:20,23</p> <p><b>ruling</b> [3] 468:18 473:7,16</p> <p><b>run</b> [7] 458:11 462:8 504:10 538:4 561:19 566:15 577:8</p> <p><b>running</b> [3] 463:8 564:20 569:10</p> <p><b>runs</b> [1] 478:7</p> <hr/> <p style="text-align: center;"><b>S</b></p> <hr/> <p><b>safe</b> [9] 442:19 443:13 444:3 486:13 489:23 497:2 512:25 528:6 573:12</p> <p><b>safeguards</b> [1] 540:21</p> <p><b>safety</b> [8] 536:5,8 566:24 567:8,21 568:9 570:24 576:3</p> <p><b>sales</b> [1] 481:17</p> <p><b>salience</b> [3] 470:25 471:2 476:23</p> <p><b>salvage</b> [1] 471:10</p> <p><b>SaMD</b> [4] 531:15,15 557:19 571:20</p> <p><b>same</b> [23] 432:3 439:7 450:14 455:6 459:8,8 467:13 471:16 476:8 477:4 481:22 507:11 509:18 523:11 534:23 535:12 538:9 559:5 560:1,5,6 569:16 572:3</p> <p><b>Samsung</b> [1] 519:21</p> <p><b>Samsung's</b> [1] 520:1</p>	<p><b>Samuelson-Glushko</b> [2] 433:22 434:3</p> <p><b>sat</b> [1] 459:7</p> <p><b>satellite</b> [3] 508:19,21,24</p> <p><b>savvy</b> [1] 435:22</p> <p><b>saw</b> [4] 450:5 496:14 513:23 521:22</p> <p><b>saying</b> [27] 445:10 452:19 456:1,6 480:1 483:7,8 492:17 497:1,2,5 501:25 505:5 513:4 517:10 529:15 532:9 534:4,5 537:10 538:21 541:9 560:18 563:25 574:4 577:24 578:21</p> <p><b>says</b> [11] 458:17 465:8 483:4 486:7 491:14 496:8 501:5 532:14,25 559:12 567:20</p> <p><b>Scarbeary</b> [19] 433:20,25 434:1,1 446:25 447:1 459:25 463:4 477:6,8,9,15,16 486:19 497:11,15,16 511:1 522:12</p> <p><b>scenario</b> [2] 466:7 579:2</p> <p><b>scenes</b> [1] 448:13</p> <p><b>scholarship</b> [4] 447:7 449:14,19 451:25</p> <p><b>science</b> [1] 442:18</p> <p><b>scientific</b> [1] 499:24</p> <p><b>scientist</b> [1] 433:18</p> <p><b>scope</b> [10] 436:3 466:15 482:8 506:13 510:16 517:25 522:19 556:2 558:16 567:11</p> <p><b>score</b> [1] 494:19</p> <p><b>screen</b> [2] 483:17 550:22</p> <p><b>screens</b> [1] 528:24</p> <p><b>scrutiny</b> [3] 471:12 474:21,21</p> <p><b>SD</b> [5] 544:11,12,14 546:15 560:8</p> <p><b>Sec</b> [19] 431:6 437:18 469:10 471:10,11 482:17 494:25 497:20 501:4,6 503:6,11 506:25 507:2 510:14 516:19 524:11 577:16 579:16</p> <p><b>second</b> [7] 443:16 472:20 498:14 502:17 559:18 560:24 568:22</p> <p><b>secondhand</b> [1] 482:3</p> <p><b>secure</b> [6] 463:22 528:6 534:5 535:2,8 536:4</p> <p><b>secured</b> [1] 538:17</p> <p><b>securing</b> [2] 455:4 537:15</p> <p><b>security</b> [106] 431:8 433:17 435:12 436:7,10 437:10,17,23 439:24 440:1,4 441:20,25 442:18,22 443:12,19 447:5,7,9,18 448:2,9 449:17 450:9,11 451:18 452:21 453:13,17,18,19 454:4,5,10,18 457:11,13 459:18 463:13,18,19 465:14 469:15 472:16 474:18 475:6,7,12,16 477:20,21,24,25 478:17 481:2,5,7 482:1,16 484:2,3,7,9 485:5 486:7,8 487:14 488:5 500:12 502:9 503:5 506:4,14 511:25 512:1,2 514:10,13,22 515:8,9,18,23 517:11 519:9,19 521:1,18,18 522:16,19 528:17 532:2,16,17,21,22 540:22 543:2 556:16 561:21,21 572:4,8 575:11</p>	<p><b>security-related</b> [1] 573:2</p> <p><b>sedating</b> [1] 499:23</p> <p><b>sedative</b> [1] 499:25</p> <p><b>see</b> [43] 431:17 435:21 438:1 446:13,21 453:15,22,23 455:20,24 467:7 468:11 475:17 476:3 478:4 480:15 483:15,16,17 488:9 492:19 493:7,15 496:5 499:8 503:20 509:2 517:5 520:11 521:13 522:9 526:7 528:24 529:1 530:23 533:16 543:17 547:23 557:5,18 563:6 564:1 580:15</p> <p><b>seeing</b> [4] 438:5,13 482:15 564:4</p> <p><b>seek</b> [6] 436:10 448:9 450:21 453:19 484:14 501:20</p> <p><b>seeking</b> [7] 526:8,16,22 527:4 530:20 560:2,10</p> <p><b>seem</b> [4] 474:12 479:19 506:6 580:10</p> <p><b>seemed</b> [3] 467:15 531:4 566:25</p> <p><b>seems</b> [16] 446:9 447:17 451:22 452:4 453:1 456:17 457:19 480:5 482:19 487:8 495:24 498:20 535:18 545:23 551:19 553:21</p> <p><b>seen</b> [6] 440:16 446:8 503:11,17 506:3 562:5</p> <p><b>sees</b> [1] 453:9</p> <p><b>selling</b> [1] 519:2</p> <p><b>sending</b> [1] 471:20</p> <p><b>Senior</b> [2] 435:3 442:5</p> <p><b>sense</b> [8] 459:25 461:15 466:25 476:10 498:9 536:1 555:7 562:3</p> <p><b>sent</b> [2] 482:4 520:1</p> <p><b>sentences</b> [1] 442:4</p> <p><b>separate</b> [6] 467:17 496:19 497:8 517:21 521:5 551:25</p> <p><b>September</b> [1] 527:23</p> <p><b>serious</b> [1] 481:20</p> <p><b>seriously</b> [2] 467:14 494:11</p> <p><b>seriousness</b> [1] 506:19</p> <p><b>serve</b> [3] 437:15,16 470:15</p> <p><b>served</b> [1] 484:19</p> <p><b>server</b> [1] 547:15</p> <p><b>serves</b> [1] 476:16</p> <p><b>service</b> [2] 451:8 505:17</p> <p><b>services</b> [2] 448:22 562:19</p> <p><b>Services'</b> [1] 525:24</p> <p><b>session</b> [10] 431:6 432:4,5,10,16 523:5 579:18,19 580:6,13</p> <p><b>sessions</b> [4] 431:11 432:2,12 532:21</p> <p><b>set</b> [8] 438:19 444:20 476:1,1,2,5 485:9 507:12</p> <p><b>sets</b> [3] 549:15,21 578:10</p> <p><b>settled</b> [1] 510:20</p> <p><b>several</b> [5] 458:8 509:13 511:13 514:9 553:8</p> <p><b>several-hundred-page</b> [1] 455:12</p> <p><b>severe</b> [1] 545:6</p> <p><b>severing</b> [2] 499:19 500:13</p> <p><b>shape</b> [2] 474:17 512:22</p>
---	---	--	--

<p><b>share</b> [2] 454:15 468:8  <b>shares</b> [1] 454:17  <b>sharing</b> [6] 448:3 449:17 522:7 540:20 550:23 565:10  <b>shift</b> [2] 474:9 521:11  <b>shocks</b> [1] 555:22  <b>short</b> [3] 431:22 563:17 564:20  <b>shortcomings</b> [1] 510:14  <b>shortcutting</b> [1] 475:22  <b>shorten</b> [1] 532:18  <b>shouldn't</b> [5] 495:18 500:3 509:22 560:16 568:17  <b>show</b> [2] 532:15 537:14  <b>showing</b> [2] 554:4,7  <b>shows</b> [2] 494:10 560:20  <b>shut</b> [3] 456:21 458:1 502:9  <b>SIA</b> [1] 434:24  <b>side</b> [12] 432:21 440:16 445:7 449:25 466:24 467:3 490:20 507:6 521:10 559:18 567:20 571:12  <b>sign</b> [1] 432:7  <b>sign-up</b> [1] 432:9  <b>signal</b> [2] 473:17 556:6  <b>significant</b> [5] 443:9 476:18 477:2 486:22 528:17  <b>significantly</b> [3] 437:22 447:5 506:13  <b>Silberberg</b> [1] 435:6  <b>silent</b> [1] 569:12  <b>similar</b> [8] 439:7 448:18 454:17 497:20 505:10 509:14 553:19 570:1  <b>simple</b> [1] 499:16  <b>simpler</b> [1] 476:7  <b>simplicity</b> [2] 485:19,19  <b>simplify</b> [1] 500:14  <b>simplifying</b> [1] 440:25  <b>simply</b> [12] 442:11 446:23 449:20 462:10 473:1 477:17,20 489:6 498:7 503:5 505:17 514:17  <b>since</b> [15] 435:12 449:8 473:5 475:14 482:17 486:23 502:17 505:25 506:14 507:14 529:24 543:9 557:11 565:8 567:17  <b>single</b> [1] 504:8  <b>sit</b> [1] 566:10  <b>sits</b> [1] 536:15  <b>situation</b> [1] 516:9  <b>situations</b> [1] 480:4  <b>sizes</b> [1] 485:7  <b>skin</b> [1] 536:15  <b>skirting</b> [1] 453:2  <b>slightly</b> [2] 476:6 497:9  <b>slowly</b> [1] 524:17  <b>slows</b> [1] 532:9  <b>small</b> [5] 458:16 464:13 484:20 502:2 528:25  <b>smartphones</b> [1] 440:6  <b>SMITH</b> [60] 431:3,4 433:4,9,14,19 434:5,8,14,16,20 435:8,23 436:12,19,23,25 438:4,12 443:14,15 450:23,24 452:19 457:3 464:25 471:</p>	<p>24 482:9 483:3 502:13,15,16 503:10,22 504:5 505:24 524:3,7,9 525:1,5,18 526:2 535:10,14,17,24 536:11 540:2,11,14 541:5,15 542:3,7 548:13 552:17 553:18 555:8 579:21  <b>Smith's</b> [1] 455:9  <b>society</b> [1] 512:25  <b>Software</b> [46] 434:7 435:4 436:1 440:7 461:8,10 475:8 477:18 505:14 513:23 514:15,24 515:21,22 518:2,7,13 521:10 531:14,18,22 534:24,25 536:3 539:22 544:8,13,17 551:22,25 552:7,11,16,19 553:11 554:10,24 555:1,3,16 556:22 557:2 571:19 574:16 575:15,25  <b>solely</b> [30] 447:4 453:9,12 454:3,14 455:23,25 456:3,11 457:4,8 459:20,21 460:9,16,19 462:25 463:12,12,17,17,23,25 464:2,3,14 469:8 472:20,21 487:11  <b>solicited</b> [1] 522:23  <b>solidify</b> [1] 522:3  <b>solution</b> [2] 518:25 561:12  <b>solve</b> [1] 450:21  <b>somebody</b> [6] 452:22 461:17 489:24 503:1 504:4 539:19  <b>somebody's</b> [1] 458:1  <b>somehow</b> [3] 460:1 498:23 511:7  <b>someone</b> [11] 446:22 449:25 466:3,4 500:24 524:14 553:3 558:11 564:9 575:23 580:1  <b>someone's</b> [1] 444:2  <b>something's</b> [1] 444:19  <b>sometimes</b> [4] 461:22 479:7 485:24 531:15  <b>somewhat</b> [2] 497:18,21  <b>somewhere</b> [3] 486:15 491:21 520:2  <b>soon</b> [1] 442:3  <b>sophisticated</b> [1] 456:13  <b>sophistication</b> [1] 485:7  <b>sorry</b> [18] 437:4 457:3 458:6 459:25 464:17 479:1 480:13 494:16,18 495:22,23 502:15 513:2 533:24 534:17 541:14 545:20 577:18  <b>sort</b> [69] 435:10 438:19 440:12 449:8 450:13,18,25 452:2,10,13 453:2,14,15,20 454:17 457:16 463:20 470:12 472:2 476:7 477:12,13 479:22,25 480:6 484:24 486:4,21 487:17,19 492:18 498:7,14 500:14 501:8 507:15 508:8 511:3,18 515:10 516:20,22,24,25 517:25,25 518:3,18 519:12,18 520:3 526:6 527:15 528:21,24 529:3 545:22 549:2 551:11,17 553:20 554:6,19 555:1 556:19 569:9 570:24,25 579:2  <b>sorts</b> [2] 445:8 455:6  <b>sound</b> [2] 483:19 547:16  <b>sounds</b> [2] 442:6 517:5</p>	<p><b>source</b> [1] 482:5  <b>space</b> [10] 452:10 458:21 489:19 528:5 558:22 562:12 563:11 565:7 566:20,21  <b>space's</b> [1] 562:13  <b>speaker</b> [1] 579:23  <b>speaking</b> [6] 432:20 505:3 522:6 524:18 565:7 577:20  <b>specialist</b> [1] 446:18  <b>specialized</b> [1] 445:10  <b>specific</b> [15] 436:16 438:25 448:12,12 462:23 464:25 466:24 474:18 484:6 515:10 527:15 529:3 546:23 550:23 561:1  <b>specifically</b> [14] 436:6 439:9 453:18 484:6 491:11 517:19 527:10 529:5 530:10 546:13 549:1 552:8 553:8 559:23  <b>specificity</b> [1] 485:15  <b>specifics</b> [3] 465:3 467:2 510:25  <b>speculation</b> [11] 439:3 440:9,10,10 441:2,2 466:10,12,16,23 494:13  <b>speculative</b> [3] 439:10,16 447:17  <b>speech</b> [4] 470:17,22 471:7,14  <b>spelled</b> [1] 516:11  <b>spend</b> [2] 446:9 476:14  <b>spending</b> [4] 442:17 443:9,12 462:14  <b>spent</b> [1] 568:11  <b>spirit</b> [1] 553:19  <b>spoken</b> [1] 458:6  <b>spot</b> [1] 555:11  <b>square</b> [1] 567:4  <b>stack</b> [1] 538:17  <b>stake</b> [1] 470:16  <b>stakes</b> [1] 496:3  <b>Stan</b> [2] 433:12 459:5  <b>stand</b> [3] 543:15 567:20 578:8  <b>standard</b> [7] 457:6 466:12 474:22 486:9 561:15 571:9 576:4  <b>standardized</b> [4] 561:17,18 562:6,7  <b>standing</b> [3] 507:19,20 542:18  <b>standpoint</b> [3] 464:11 480:7 534:15  <b>stands</b> [3] 530:24 531:25 543:16  <b>star</b> [1] 441:25  <b>start</b> [14] 438:18 461:1 463:8 468:13 469:4 488:2 491:3,5 498:18 499:9 515:3 526:6 533:16 559:21  <b>started</b> [3] 442:1,24 567:13  <b>starting</b> [3] 438:25 497:10 533:15  <b>state</b> [3] 437:20 502:10 503:12  <b>stated</b> [4] 544:3 556:10 557:6 562:15  <b>statement</b> [1] 471:25  <b>statements</b> [3] 444:25 465:10 541:18  <b>States</b> [2] 491:13 495:9  <b>stating</b> [1] 573:11  <b>status</b> [1] 551:4</p>	<p><b>statute</b> [14] 445:13,16 466:2 474:22 485:24 491:13 495:15 496:15 498:4,8,23 505:23 508:20 541:6  <b>statutes</b> [5] 437:20 478:21 507:22 508:10,17  <b>statutory</b> [16] 435:13 465:23 478:20 491:9 496:16 497:13,17 501:21 502:18 509:17 512:5 513:12,19 516:18 572:7,9  <b>stay</b> [2] 432:4 580:7  <b>steeped</b> [1] 485:25  <b>step</b> [4] 464:13 534:14 561:9 563:5  <b>stepping</b> [1] 471:5  <b>stick</b> [1] 431:22  <b>still</b> [34] 449:7 462:20 463:5,9 472:24 473:13 476:16 486:21,25 493:10 494:20,22 496:1 497:4,24 512:15 522:9 528:13 533:9 537:25 540:12 544:24 545:3 547:21 548:8 553:5 555:2 560:9 565:25 568:24 576:23 577:1,1,4  <b>stipulate</b> [1] 460:12  <b>stipulated</b> [1] 510:24  <b>stock</b> [1] 468:19  <b>stoked</b> [1] 494:13  <b>stop</b> [2] 487:21 545:18  <b>stopping</b> [1] 498:22  <b>stops</b> [1] 499:25  <b>stores</b> [1] 544:14  <b>straddles</b> [1] 452:10  <b>straightforward</b> [1] 529:19  <b>stream</b> [3] 519:25 530:17 573:23  <b>stressed</b> [1] 474:5  <b>stretch</b> [1] 473:15  <b>stretched</b> [1] 456:10  <b>strikes</b> [1] 479:7  <b>strong</b> [5] 470:15 537:6 539:2 556:8 562:20  <b>stronger</b> [1] 537:18  <b>strongly</b> [2] 551:1 575:17  <b>struck</b> [2] 497:9 522:15  <b>structure</b> [1] 437:11  <b>student</b> [2] 433:24 434:2  <b>students</b> [3] 442:24 525:7,10  <b>study</b> [2] 445:12 482:6  <b>stuff</b> [2] 558:13 561:16  <b>subject</b> [3] 507:25 571:4,9  <b>submission</b> [1] 491:8  <b>submissions</b> [4] 435:18 453:23 468:10 559:24  <b>submitted</b> [4] 450:10 463:6 468:6 488:10  <b>subsequent</b> [1] 516:11  <b>subset</b> [2] 475:25 476:5  <b>substance</b> [2] 514:1,8  <b>substantive</b> [2] 465:16 532:5  <b>succeed</b> [1] 457:21  <b>successfully</b> [2] 527:13 534:8  <b>sue</b> [1] 575:24  <b>sued</b> [2] 489:12 574:2  <b>sufficient</b> [3] 466:13 490:16 520:7</p>
---	---	---	--

<p><b>sufficiently</b> <sup>[3]</sup> 451:23 487:7 504:1</p> <p><b>suggest</b> <sup>[8]</sup> 463:25 473:10,15 479:15 510:19 522:22 564:11 565:22</p> <p><b>suggested</b> <sup>[4]</sup> 501:8 514:3 518:5 530:4</p> <p><b>suggesting</b> <sup>[6]</sup> 452:23 460:1 540:3 563:16 569:9 579:2</p> <p><b>suggestion</b> <sup>[2]</sup> 496:6 551:19</p> <p><b>suggests</b> <sup>[3]</sup> 492:7 544:7 545:1</p> <p><b>suing</b> <sup>[1]</sup> 501:17</p> <p><b>Sullivan</b> <sup>[3]</sup> 474:2,10,16</p> <p><b>summarize</b> <sup>[2]</sup> 524:8 526:10</p> <p><b>summary</b> <sup>[2]</sup> 468:22 490:25</p> <p><b>supplement</b> <sup>[1]</sup> 488:13</p> <p><b>supplemental</b> <sup>[2]</sup> 498:12 509:19</p> <p><b>supply</b> <sup>[1]</sup> 455:4</p> <p><b>support</b> <sup>[12]</sup> 433:10 467:4 475:10 476:19 491:1 492:22,24 493:24 514:17,24 517:6 521:15</p> <p><b>supported</b> <sup>[1]</sup> 561:13</p> <p><b>supportive</b> <sup>[2]</sup> 458:22 517:20</p> <p><b>supposed</b> <sup>[3]</sup> 444:23 513:16,17</p> <p><b>supreme</b> <sup>[1]</sup> 485:19</p> <p><b>surprised</b> <sup>[1]</sup> 519:23</p> <p><b>surround</b> <sup>[1]</sup> 444:12</p> <p><b>SurveyMonkey</b> <sup>[1]</sup> 432:7</p> <p><b>survive</b> <sup>[1]</sup> 474:23</p> <p><b>swallow</b> <sup>[1]</sup> 459:4</p> <p><b>swath</b> <sup>[1]</sup> 477:1</p> <p><b>sweep</b> <sup>[2]</sup> 491:17 507:15</p> <p><b>sweeping</b> <sup>[1]</sup> 493:2</p> <p><b>sweeps</b> <sup>[1]</sup> 505:10</p> <p><b>switch</b> <sup>[1]</sup> 491:4</p> <p><b>sympathetic</b> <sup>[1]</sup> 459:18</p> <p><b>System</b> <sup>[3]</sup> 434:19 554:3,14</p> <p><b>systems</b> <sup>[8]</sup> 440:22,22 442:3 463:22 478:1 554:14,17,18</p>	<p><b>tends</b> <sup>[1]</sup> 519:18</p> <p><b>tensions</b> <sup>[1]</sup> 485:12</p> <p><b>term</b> <sup>[2]</sup> 522:19,22</p> <p><b>terms</b> <sup>[19]</sup> 444:22 453:3 466:19 469:1 472:10 475:6 480:5 482:7,18 485:13 486:23 496:3 505:16 506:20 507:18 510:7 512:21,21 520:6</p> <p><b>test</b> <sup>[2]</sup> 465:25 557:17</p> <p><b>tested</b> <sup>[1]</sup> 465:22</p> <p><b>testified</b> <sup>[1]</sup> 467:12</p> <p><b>testing</b> <sup>[1]</sup> 572:8</p> <p><b>text</b> <sup>[3]</sup> 445:8 480:1 520:12</p> <p><b>Thanks</b> <sup>[16]</sup> 437:3,23 438:4,12 439:20,22 441:7 450:20 451:14 469:6 471:23 475:19 484:10 522:25 568:19 579:1</p> <p><b>theme</b> <sup>[1]</sup> 484:17</p> <p><b>themes</b> <sup>[1]</sup> 484:13</p> <p><b>themselves</b> <sup>[3]</sup> 446:23 525:7,11</p> <p><b>theoretically</b> <sup>[1]</sup> 445:20</p> <p><b>there's</b> <sup>[50]</sup> 444:5 454:3 460:21,22 462:22,25 465:9,25,25 466:1,7,17 467:1,2,20 469:13 470:3 485:23 486:18 487:1 488:12,21 491:18 494:2 497:24 500:20 504:23 508:21 509:4 519:24 522:8 526:25 527:3 533:1 534:5,9 535:14,17 541:5,6 543:13 549:6 553:21 554:13,14 562:16 567:14,22 569:15 574:12</p> <p><b>they'll</b> <sup>[1]</sup> 465:21</p> <p><b>they've</b> <sup>[8]</sup> 448:24 449:18 481:10 489:22 503:4 518:5,19 532:12</p> <p><b>thinking</b> <sup>[6]</sup> 441:1 469:23 489:13 501:10 553:20 567:10</p> <p><b>third</b> <sup>[15]</sup> 435:10 549:10,14,19 559:12 568:25 569:12 570:20 571:4,8,21 574:6 576:21 577:2 578:22</p> <p><b>third-party</b> <sup>[16]</sup> 469:19 549:21 551:16 559:8,17 561:11 564:21 566:5,13 568:22 569:7 571:16 578:3,9 579:8,10</p> <p><b>though</b> <sup>[9]</sup> 449:21 456:7 494:9 507:9 513:3 538:19 553:16 555:13 576:10</p> <p><b>thoughtful</b> <sup>[1]</sup> 567:16</p> <p><b>thoughts</b> <sup>[5]</sup> 450:3,4 499:10 515:4 517:18</p> <p><b>thread</b> <sup>[1]</sup> 489:3</p> <p><b>threat</b> <sup>[2]</sup> 494:2 506:16</p> <p><b>threatened</b> <sup>[2]</sup> 488:25 502:19</p> <p><b>threats</b> <sup>[5]</sup> 488:4,22 489:3 512:1,21</p> <p><b>three</b> <sup>[11]</sup> 432:2,13 468:10 475:13 527:6 547:23 549:6 557:18 563:1,4,8</p> <p><b>threshold</b> <sup>[1]</sup> 470:11</p> <p><b>throughout</b> <sup>[2]</sup> 439:21 489:4</p> <p><b>thrown</b> <sup>[1]</sup> 456:8</p> <p><b>Thursday</b> <sup>[1]</sup> 523:11</p> <p><b>thwarted</b> <sup>[1]</sup> 445:2</p>	<p><b>tie</b> <sup>[9]</sup> 437:17 484:12 492:17,20 494:24 500:13 502:4 564:7 576:12</p> <p><b>tied</b> <sup>[2]</sup> 499:16 529:4</p> <p><b>ties</b> <sup>[3]</sup> 438:2 470:8 496:1</p> <p><b>tight</b> <sup>[1]</sup> 438:25</p> <p><b>tighter</b> <sup>[1]</sup> 538:22</p> <p><b>tightknit</b> <sup>[1]</sup> 484:20</p> <p><b>timely</b> <sup>[2]</sup> 559:1 562:24</p> <p><b>tinker</b> <sup>[1]</sup> 500:8</p> <p><b>today</b> <sup>[16]</sup> 432:2,9 434:15 435:9 437:7 462:17 472:3 479:19 482:2 489:4 495:11 512:3,21 525:22 536:19 580:11</p> <p><b>today's</b> <sup>[1]</sup> 432:1</p> <p><b>toes</b> <sup>[1]</sup> 471:6</p> <p><b>together</b> <sup>[2]</sup> 559:5 567:5</p> <p><b>tomorrow</b> <sup>[1]</sup> 482:5</p> <p><b>ton</b> <sup>[1]</sup> 462:17</p> <p><b>took</b> <sup>[2]</sup> 467:14 569:8</p> <p><b>tool</b> <sup>[7]</sup> 437:5 549:15,21 578:9,10,13 579:14</p> <p><b>tools</b> <sup>[7]</sup> 448:12 521:4 559:8 577:19 578:3,22 579:8</p> <p><b>top</b> <sup>[1]</sup> 441:9</p> <p><b>topic</b> <sup>[4]</sup> 545:22 568:2 571:25 572:1</p> <p><b>topics</b> <sup>[1]</sup> 432:13</p> <p><b>totally</b> <sup>[1]</sup> 477:19</p> <p><b>touch</b> <sup>[2]</sup> 442:6,15</p> <p><b>touched</b> <sup>[2]</sup> 473:23 509:11</p> <p><b>touches</b> <sup>[1]</sup> 544:13</p> <p><b>touching</b> <sup>[2]</sup> 552:16,18</p> <p><b>tougher</b> <sup>[1]</sup> 502:14</p> <p><b>TPM</b> <sup>[3]</sup> 530:21,22 547:12</p> <p><b>TPMs</b> <sup>[12]</sup> 529:16,20,22 537:18 538:7 539:1,24 540:4 544:5,16 556:21 560:11</p> <p><b>track</b> <sup>[4]</sup> 483:18 509:16 568:21 572:6</p> <p><b>tracking</b> <sup>[1]</sup> 509:24</p> <p><b>trade</b> <sup>[6]</sup> 458:11,20 461:8,13 520:20 574:14</p> <p><b>traditional</b> <sup>[1]</sup> 539:15</p> <p><b>trafficking</b> <sup>[9]</sup> 452:12 455:21,24 456:4,5 468:2 489:17 578:4,15</p> <p><b>transcribed</b> <sup>[1]</sup> 432:18</p> <p><b>transforms</b> <sup>[1]</sup> 437:9</p> <p><b>transparency</b> <sup>[2]</sup> 448:2,8</p> <p><b>treadmill</b> <sup>[1]</sup> 563:19</p> <p><b>treat</b> <sup>[1]</sup> 471:20</p> <p><b>treatment</b> <sup>[1]</sup> 551:4</p> <p><b>tremendous</b> <sup>[1]</sup> 444:13</p> <p><b>trial</b> <sup>[1]</sup> 465:22</p> <p><b>triangle</b> <sup>[1]</sup> 533:18</p> <p><b>tried</b> <sup>[2]</sup> 478:8 572:9</p> <p><b>triennial</b> <sup>[4]</sup> 470:20 471:19 511:12 516:14</p> <p><b>trigger</b> <sup>[3]</sup> 501:4 539:17,22</p> <p><b>triggers</b> <sup>[1]</sup> 500:19</p> <p><b>Tripathi</b> <sup>[1]</sup> 558:16</p> <p><b>Troncoso</b> <sup>[19]</sup> 434:12 435:3,3 451:</p>	<p>13,14 452:17,23 453:1,11 478:5,6 483:16 486:19 487:3,20 517:18,22 521:22,25</p> <p><b>Troncoso's</b> <sup>[2]</sup> 454:25 507:23</p> <p><b>trouble</b> <sup>[1]</sup> 548:3</p> <p><b>true</b> <sup>[1]</sup> 533:12</p> <p><b>try</b> <sup>[13]</sup> 431:20,21 432:18 437:5 438:24 439:20 447:10 452:4 456:21 464:20 477:25 524:17 548:14</p> <p><b>trying</b> <sup>[19]</sup> 437:10 442:1,18 443:18,20 447:19 451:9 456:12 461:2 481:25 485:13 500:7 508:6 531:7 541:24 565:6 568:12 570:5 579:10</p> <p><b>tuned</b> <sup>[1]</sup> 580:7</p> <p><b>turn</b> <sup>[16]</sup> 436:21 438:6 447:19 460:2 472:13 475:2 497:14 522:6 524:5 527:8 545:23 548:10 559:17 566:13 568:20 579:22</p> <p><b>turning</b> <sup>[1]</sup> 473:1</p> <p><b>two</b> <sup>[19]</sup> 441:23 442:4 448:10 459:7 460:23 461:12 467:8,25 482:14 496:19 507:20 525:10 535:10,13 541:5 542:24 549:5,10 558:20</p> <p><b>twofold</b> <sup>[1]</sup> 506:11</p> <p><b>tying</b> <sup>[1]</sup> 499:22</p> <p><b>type</b> <sup>[9]</sup> 445:22 451:21,25 489:15 492:9 506:21 514:14 517:9 560:1</p> <p><b>types</b> <sup>[3]</sup> 487:13 546:21 554:16</p> <p><b>typical</b> <sup>[1]</sup> 555:9</p> <hr/> <p style="text-align: center;"><b>U</b></p> <p><b>U.S</b> <sup>[3]</sup> 491:22,23 519:12</p> <p><b>ultimate</b> <sup>[2]</sup> 483:10 494:10</p> <p><b>ultimately</b> <sup>[3]</sup> 448:25 485:14 561:16</p> <p><b>unable</b> <sup>[2]</sup> 482:16 579:24</p> <p><b>uncertainty</b> <sup>[9]</sup> 441:20 443:9 446:22 453:5 464:8,14 476:2 481:19 543:10</p> <p><b>unclear</b> <sup>[1]</sup> 452:3</p> <p><b>under</b> <sup>[41]</sup> 469:10 471:11 472:24 474:20,21 483:1 485:24 488:8 494:25 497:4 500:22 501:24 505:15 508:23 516:13,14 520:19 527:21 528:15 529:11 533:12,12,19,20 537:20,21 541:6 544:24 545:7,8,11,11,12 548:21 558:23 565:7 569:23 572:23 573:13,15 574:14</p> <p><b>undergoing</b> <sup>[1]</sup> 538:9</p> <p><b>underlies</b> <sup>[1]</sup> 568:13</p> <p><b>underlying</b> <sup>[5]</sup> 534:24,25 535:8 568:7 571:19</p> <p><b>underpinning</b> <sup>[2]</sup> 535:2 550:15</p> <p><b>underscore</b> <sup>[3]</sup> 437:6 484:18 485:8</p> <p><b>underscores</b> <sup>[1]</sup> 470:14</p> <p><b>understand</b> <sup>[17]</sup> 445:11 465:17 478:15 481:25 500:6 511:15 529:3 531:7 539:24 541:11 559:19 563:10 564:22 565:4 567:5,10 574:25</p> <p><b>understandably</b> <sup>[1]</sup> 569:20</p>
---	--	---	--

<p><b>understanding</b> [6] 459:14,16 465:21 479:11 548:18 565:3  <b>understands</b> [2] 442:9 486:9  <b>understood</b> [1] 514:13  <b>undertake</b> [1] 573:1  <b>undertaken</b> [6] 436:17 453:12 532:12 557:1 569:3 574:2  <b>unequivocally</b> [1] 511:23  <b>Unfair</b> [2] 520:19 574:14  <b>unfortunately</b> [2] 453:5 568:25  <b>United</b> [1] 491:13  <b>universe</b> [2] 502:21,21  <b>University</b> [1] 433:17 442:8,12 449:2 484:8 489:20 504:3,12,16,17,24  <b>unless</b> [3] 464:15 497:6 522:8  <b>unlike</b> [2] 539:18 573:20  <b>unlikely</b> [4] 460:2 552:6 555:18 556:4  <b>unlocking</b> [2] 516:9 554:25  <b>unmuted</b> [1] 444:8  <b>unnecessary</b> [3] 443:6 494:12 572:20  <b>until</b> [2] 438:19 538:24  <b>up</b> [4] 432:7 436:13,23 437:21 440:4 444:20 449:7 450:25 454:20 458:19 460:6,20 462:9,19 463:5 471:18 474:16 478:4 481:2 483:15,16 497:10 498:14 499:6,8 500:3 501:12 508:3,16 512:15 518:21 522:4,9 529:2 536:13 538:10 548:17,19 550:22 551:17 573:25  <b>upcoming</b> [1] 530:4  <b>updates</b> [1] 532:2  <b>urge</b> [3] 489:13 512:8 522:18  <b>urgent</b> [1] 462:1  <b>usable</b> [1] 562:8  <b>USC</b> [3] 525:8,13,16  <b>useful</b> [1] 465:2  <b>user</b> [4] 464:11 485:18 518:9,17  <b>users</b> [4] 489:5,10 515:22 546:12  <b>uses</b> [6] 439:5 446:20 464:1 484:6 514:23 568:7  <b>using</b> [2] 432:7 483:4</p>	<p><b>vested</b> [1] 451:20  <b>via</b> [1] 449:18  <b>viable</b> [1] 528:15  <b>Vice</b> [1] 434:23  <b>video</b> [4] 440:2 524:5 548:10 579:23  <b>view</b> [1] 495:7  <b>viewed</b> [1] 445:16  <b>views</b> [1] 569:15  <b>Village</b> [5] 481:4 482:10,16,22 483:1  <b>violate</b> [5] 495:7,10 499:13 540:15 579:15  <b>violated</b> [6] 494:7 496:17 502:10 505:16 507:9 509:6  <b>violates</b> [1] 474:19  <b>violating</b> [3] 501:15,17 530:21  <b>violation</b> [13] 441:5 474:3 478:12 488:5,6 500:22 501:5,7,19 505:18 560:17 565:21 570:10  <b>violations</b> [3] 496:4 502:2 545:5  <b>violative</b> [1] 515:15  <b>virtually</b> [1] 482:2  <b>vis-a-vis</b> [1] 439:14  <b>vital</b> [2] 528:13 543:8  <b>voice</b> [4] 519:21,24,25 563:2  <b>Voting</b> [8] 481:3,9,17,23 482:1,10,15 511:6  <b>vulnerabilities</b> [3] 442:3 448:11 515:19  <b>vulnerability</b> [3] 436:7 515:9 518:12  <b>vulnerable</b> [1] 440:22</p>	<p>503:24 505:10,14 506:8,10,24 507:10 511:9 515:13 532:16,17 535:6 544:13 545:6,15 547:5,13 553:24 555:2 556:3 559:1 562:1,4,7,25 569:22 571:4 575:2,3 576:2 578:23  <b>ways</b> [15] 435:18 441:3 448:10 518:16 535:1 536:7 537:17 544:4,18 546:24 547:23 559:9 560:19 570:7 578:17  <b>weaponize</b> [1] 477:19  <b>wearable</b> [1] 526:21  <b>wearables</b> [1] 536:18  <b>Web</b> [3] 460:7 547:10 578:11  <b>website</b> [2] 545:13 559:25  <b>weeds</b> [1] 516:3  <b>week</b> [1] 484:13  <b>weekend</b> [1] 481:6  <b>weeks</b> [1] 441:23  <b>weigh</b> [1] 555:9  <b>weighing</b> [1] 567:15  <b>weight</b> [2] 439:15 479:20  <b>Welcome</b> [1] 524:3  <b>welfare</b> [1] 566:9  <b>well-developed</b> [1] 487:24  <b>well-disclosed</b> [1] 520:4  <b>well-equipped</b> [1] 519:17  <b>well-intentioned</b> [1] 492:8  <b>well-resourced</b> [1] 442:22  <b>well-settled</b> [1] 510:23  <b>well-trained</b> [2] 444:16,17  <b>well-versed</b> [1] 505:25  <b>whatever</b> [5] 437:4 473:8 500:23 520:24 563:14  <b>whereas</b> [2] 467:2 476:19  <b>whereby</b> [1] 531:24  <b>Whereupon</b> [2] 523:9 580:17  <b>whether</b> [38] 436:9 437:15 444:2,11,12 445:19 453:3 457:5 463:15,16 465:4 478:11 481:14 482:7,15 483:1 489:20 505:16 510:22 511:19 513:11 515:12 518:9 526:24 531:22 535:18 536:21 549:13 559:19,25 560:25 561:1 568:5,6 569:12,16 572:13 577:20  <b>who's</b> [2] 441:24 489:25  <b>whoa</b> [2] 442:5,6  <b>whole</b> [5] 462:22 471:11 510:17 530:4 550:13  <b>wholeheartedly</b> [1] 462:15  <b>wholly</b> [2] 534:22 536:2  <b>whom</b> [1] 484:24  <b>wide</b> [1] 507:24  <b>widespread</b> [2] 579:7,13  <b>wild</b> [2] 487:17 499:24  <b>will</b> [47] 431:12,13,23 432:9,17,22 433:9 434:15 435:14 436:21 439:20 443:3 449:7,19 465:22 467:8 468:13 474:16 481:17,18,24 493:25 498:17 504:16 505:1 519:14 524:8,14 525:10 527:2 534:7,7 538:6 539:24 540:4 541:10 547:</p>	<p>21 548:15 571:22 574:2 575:23 576:23 579:18,18 580:12,13,15  <b>Williams</b> [23] 434:12 435:5,6 458:4,5 463:3 464:15,18,20 473:21,22 475:2 483:15 493:16,17 495:1 496:10 498:2 504:4 508:14,15 509:8 512:15  <b>Williams'</b> [1] 470:2  <b>Williamson</b> [28] 434:5,6,6 435:21,25 436:1,16 458:4 460:15 461:4,5 463:11 464:12,16,19 489:21 503:2 504:19,21 505:6,7 515:3,6 516:15 517:13 518:22 519:6 521:9  <b>Williamson's</b> [2] 520:12,20  <b>willing</b> [1] 517:14  <b>Wilson</b> [3] 433:25,25 434:1  <b>win</b> [1] 466:7  <b>window</b> [1] 441:10  <b>wireless</b> [2] 547:17,21  <b>wisdom</b> [1] 486:4  <b>wise</b> [5] 495:19 496:18 499:3 511:10,11  <b>wish</b> [1] 431:13  <b>wishes</b> [1] 432:6  <b>within</b> [9] 454:11 469:11 503:6 532:1 537:19 546:15 569:13 570:21 576:14  <b>without</b> [6] 474:14 500:8,9 536:14 554:19 558:10  <b>wolf</b> [2] 499:23 500:3  <b>wonder</b> [7] 479:21 480:10 488:12 517:5 540:6 553:25 556:22  <b>wondering</b> [1] 435:15 436:25 468:18 475:4,13 483:5 517:4 546:16 554:8 569:14 572:11  <b>word</b> [11] 455:23,25 456:11 457:4,4,7 459:19 460:16,19 463:25 464:6  <b>words</b> [6] 459:21 461:2 470:18 476:1 498:21 559:3  <b>work</b> [39] 431:12 438:14 441:21 442:1 446:9 448:8,13 453:10 455:4 456:21 458:21 463:17,19,21 464:3 485:6 486:13 494:20 500:17 506:9 508:8 516:3 521:1 526:1 527:21 528:3 546:22,24 547:6,14 548:13 551:23 556:3,9 559:5,13 560:13 565:19 570:6  <b>worked</b> [2] 446:15 448:24  <b>working</b> [11] 431:16 489:19 491:18 499:25 506:1,5 520:13 524:16 557:25 560:18 568:25  <b>works</b> [6] 431:14 470:6 524:13 553:10 555:5 556:12  <b>world</b> [12] 431:17 500:18 511:3,15,16,21,22 512:3,13,20 531:16 548:16  <b>worn</b> [1] 563:2  <b>worried</b> [2] 501:16 553:23  <b>worrisome</b> [1] 550:1  <b>worry</b> [3] 481:24 486:10 501:18  <b>worrying</b> [2] 500:9 535:20</p>
<p><b>W</b></p>			
<p><b>valid</b> [1] 528:13  <b>value</b> [5] 453:9 459:20 460:4,22 462:23  <b>values</b> [1] 454:18  <b>various</b> [4] 443:23 485:6,7 556:15  <b>variously</b> [1] 440:5  <b>vast</b> [1] 448:23  <b>vastly</b> [1] 474:23  <b>vehicle</b> [1] 550:20  <b>vendors</b> [2] 450:13 534:3  <b>venue</b> [1] 540:19  <b>venues</b> [1] 541:2  <b>verbally</b> [1] 488:13  <b>verdict</b> [1] 462:11  <b>verifying</b> [1] 481:14  <b>versus</b> [5] 483:25 484:8,15 536:11 543:20</p>	<p><b>wait</b> [5] 442:6 464:17 532:9 545:21 576:21  <b>waiting</b> [2] 558:11 580:5  <b>waive</b> [1] 524:16  <b>wake</b> [1] 500:3  <b>walk</b> [2] 435:14 519:1  <b>wanted</b> [23] 436:20 438:1 439:1,12 447:23 450:5 464:16 469:7 474:13 475:21 476:7 480:25 483:14 491:3 500:16 505:22 509:12 522:11 526:6 546:11 568:3 572:1 579:6  <b>wanting</b> [1] 572:12  <b>wants</b> [6] 449:25 454:20 469:22 503:23 568:8,10  <b>warn</b> [1] 490:5  <b>warning</b> [1] 471:9  <b>warranted</b> [1] 528:18  <b>watch</b> [1] 573:23  <b>watched</b> [1] 431:11  <b>watching</b> [2] 432:3 444:4  <b>water's</b> [1] 578:21  <b>wave</b> [2] 435:24 528:25  <b>waving</b> [2] 437:5 574:13  <b>way</b> [52] 437:21 444:22 451:24 455:25 457:8,8,11 466:7 471:4,13,17 473:17 477:19 481:13 486:7,16 492:16 497:24 498:23,24 499:21</p>	<p>503:24 505:10,14 506:8,10,24 507:10 511:9 515:13 532:16,17 535:6 544:13 545:6,15 547:5,13 553:24 555:2 556:3 559:1 562:1,4,7,25 569:22 571:4 575:2,3 576:2 578:23  <b>ways</b> [15] 435:18 441:3 448:10 518:16 535:1 536:7 537:17 544:4,18 546:24 547:23 559:9 560:19 570:7 578:17  <b>weaponize</b> [1] 477:19  <b>wearable</b> [1] 526:21  <b>wearables</b> [1] 536:18  <b>Web</b> [3] 460:7 547:10 578:11  <b>website</b> [2] 545:13 559:25  <b>weeds</b> [1] 516:3  <b>week</b> [1] 484:13  <b>weekend</b> [1] 481:6  <b>weeks</b> [1] 441:23  <b>weigh</b> [1] 555:9  <b>weighing</b> [1] 567:15  <b>weight</b> [2] 439:15 479:20  <b>Welcome</b> [1] 524:3  <b>welfare</b> [1] 566:9  <b>well-developed</b> [1] 487:24  <b>well-disclosed</b> [1] 520:4  <b>well-equipped</b> [1] 519:17  <b>well-intentioned</b> [1] 492:8  <b>well-resourced</b> [1] 442:22  <b>well-settled</b> [1] 510:23  <b>well-trained</b> [2] 444:16,17  <b>well-versed</b> [1] 505:25  <b>whatever</b> [5] 437:4 473:8 500:23 520:24 563:14  <b>whereas</b> [2] 467:2 476:19  <b>whereby</b> [1] 531:24  <b>Whereupon</b> [2] 523:9 580:17  <b>whether</b> [38] 436:9 437:15 444:2,11,12 445:19 453:3 457:5 463:15,16 465:4 478:11 481:14 482:7,15 483:1 489:20 505:16 510:22 511:19 513:11 515:12 518:9 526:24 531:22 535:18 536:21 549:13 559:19,25 560:25 561:1 568:5,6 569:12,16 572:13 577:20  <b>who's</b> [2] 441:24 489:25  <b>whoa</b> [2] 442:5,6  <b>whole</b> [5] 462:22 471:11 510:17 530:4 550:13  <b>wholeheartedly</b> [1] 462:15  <b>wholly</b> [2] 534:22 536:2  <b>whom</b> [1] 484:24  <b>wide</b> [1] 507:24  <b>widespread</b> [2] 579:7,13  <b>wild</b> [2] 487:17 499:24  <b>will</b> [47] 431:12,13,23 432:9,17,22 433:9 434:15 435:14 436:21 439:20 443:3 449:7,19 465:22 467:8 468:13 474:16 481:17,18,24 493:25 498:17 504:16 505:1 519:14 524:8,14 525:10 527:2 534:7,7 538:6 539:24 540:4 541:10 547:</p>	<p>21 548:15 571:22 574:2 575:23 576:23 579:18,18 580:12,13,15  <b>Williams</b> [23] 434:12 435:5,6 458:4,5 463:3 464:15,18,20 473:21,22 475:2 483:15 493:16,17 495:1 496:10 498:2 504:4 508:14,15 509:8 512:15  <b>Williams'</b> [1] 470:2  <b>Williamson</b> [28] 434:5,6,6 435:21,25 436:1,16 458:4 460:15 461:4,5 463:11 464:12,16,19 489:21 503:2 504:19,21 505:6,7 515:3,6 516:15 517:13 518:22 519:6 521:9  <b>Williamson's</b> [2] 520:12,20  <b>willing</b> [1] 517:14  <b>Wilson</b> [3] 433:25,25 434:1  <b>win</b> [1] 466:7  <b>window</b> [1] 441:10  <b>wireless</b> [2] 547:17,21  <b>wisdom</b> [1] 486:4  <b>wise</b> [5] 495:19 496:18 499:3 511:10,11  <b>wish</b> [1] 431:13  <b>wishes</b> [1] 432:6  <b>within</b> [9] 454:11 469:11 503:6 532:1 537:19 546:15 569:13 570:21 576:14  <b>without</b> [6] 474:14 500:8,9 536:14 554:19 558:10  <b>wolf</b> [2] 499:23 500:3  <b>wonder</b> [7] 479:21 480:10 488:12 517:5 540:6 553:25 556:22  <b>wondering</b> [1] 435:15 436:25 468:18 475:4,13 483:5 517:4 546:16 554:8 569:14 572:11  <b>word</b> [11] 455:23,25 456:11 457:4,4,7 459:19 460:16,19 463:25 464:6  <b>words</b> [6] 459:21 461:2 470:18 476:1 498:21 559:3  <b>work</b> [39] 431:12 438:14 441:21 442:1 446:9 448:8,13 453:10 455:4 456:21 458:21 463:17,19,21 464:3 485:6 486:13 494:20 500:17 506:9 508:8 516:3 521:1 526:1 527:21 528:3 546:22,24 547:6,14 548:13 551:23 556:3,9 559:5,13 560:13 565:19 570:6  <b>worked</b> [2] 446:15 448:24  <b>working</b> [11] 431:16 489:19 491:18 499:25 506:1,5 520:13 524:16 557:25 560:18 568:25  <b>works</b> [6] 431:14 470:6 524:13 553:10 555:5 556:12  <b>world</b> [12] 431:17 500:18 511:3,15,16,21,22 512:3,13,20 531:16 548:16  <b>worn</b> [1] 563:2  <b>worried</b> [2] 501:16 553:23  <b>worrisome</b> [1] 550:1  <b>worry</b> [3] 481:24 486:10 501:18  <b>worrying</b> [2] 500:9 535:20</p>

**worse** <sup>[1]</sup> 452:13  
**worth** <sup>[4]</sup> 520:18 530:20 535:20  
563:24  
**wrap** <sup>[2]</sup> 498:14 551:17  
**write** <sup>[1]</sup> 569:21  
**writing** <sup>[1]</sup> 448:3  
**written** <sup>[1]</sup> 558:5

---

**Y**

---

**year** <sup>[4]</sup> 450:11,17,17 481:4  
**years** <sup>[15]</sup> 440:17 466:18,19 475:  
13 481:3 503:11 506:2,3,20 510:  
11,13 512:7 527:6 557:18 569:6  
**yourself** <sup>[3]</sup> 433:15 525:6,19

---

**Z**

---

**Zambrano** <sup>[19]</sup> 433:4,6,7 447:24  
483:14,20,21 525:1,2,3 536:24  
537:1 566:12,15,17 577:11,11,13  
579:1  
**ZEMOUDEH** <sup>[14]</sup> 525:12,12 543:  
17,22,23 544:23 546:20 548:23  
552:5,21,23 567:25 568:3 572:18  
**Zemoudeh's** <sup>[1]</sup> 555:18  
**Zoom** <sup>[3]</sup> 431:15 524:16 548:18