

1 UNITED STATES DISTRICT COURT
2 NORTHERN DISTRICT OF CALIFORNIA
3 OAKLAND DIVISION
4
5 EPIC GAMES, INC.,
6 Plaintiff,
7 Counter-defendant,

△ DEFENDANT △
United States District Court
Northern District of California
Case No. 4:20-cv-05640-YGR
Case Title Epic Games, Inc. v. Apple, Inc.
Exhibit No. DX-3030
Date Entered _____
By: _____, Deputy Clerk
Susan Y. Soong, Clerk
_____, Deputy Clerk

8 vs. Case No. 4:20-cv-05640
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10 APPLE INC.,
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12 Defendant,
13 Counterclaimant.
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11 IN RE APPLE IPHONE Case No. 4:11-cv-06714
12 ANTITRUST LITIGATION YGR
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25 (caption cont'd)

Page 1

1 DONALD R. CAMERON, et al.,
2 Plaintiffs,
3 vs. Case No. 4:19-cv-03074
YGR
4 APPLE INC.,
5 Defendant.

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12 ZOOM DEPOSITION OF NICHOLAS PENWARDEN & EPIC GAMES,
13 INC'S 30(b) (6) CORPORATE REPRESENTATIVE
14 (Reported Remotely via Video & Web Videoconference)
15 Chapel Hill, North Carolina (Deponent's location)
16 Tuesday, January 26, 2021
17 Volume I
18
19
20

21 STENOGRAPHICALLY REPORTED BY:
REBECCA L. ROMANO, RPR, CSR, CCR
22 California CSR No. 12546
Nevada CCR No. 827
Oregon CSR No. 20-0466
Washington CCR No. 3491
JOB NO. 4430767
23 PAGES 1 - 248

24 Page 2

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THE COURT REPORTER: You do solemnly
state under penalty of perjury that the testimony
you are about to give in this deposition shall be
the truth, the whole truth, and nothing but the
truth?

09:13:38

THE DEPONENT: I do.

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Q. And when did you start your job at
Epic Games?

09:16:16

A. I started in 2011, April -- April 2011, I
believe.

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4 Q. And what are your current
5 responsibilities as the vice president of 09:16:59
6 engineering?
7 A. I am responsible for the engineering team
8 that -- that create Unreal Engine. I'm responsible
9 for the engineering team that work on Fortnite.
10 And then, more generally, I'm responsible for the 09:17:15
11 sort of engineering processes and practices that we
12 have at Epic on those teams.
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1 And do you know how the -- how Epic 09:31:54
2 monetizes the Unreal Engine?
3 A. I do.
4 After the first million dollars of gross
5 revenue, licensees who use the engine are -- or pay 09:32:05
6 5 percent of their revenue as a royalty to Epic.
7 Q. And is that -- is that in perpetuity?
8 A. As far as I'm aware, yes.
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8 Q. Sure. I'm speaking colloquially, but the
9 point that I'm getting at is Unreal Engine is a
10 business? 09:37:40

11 A. That's right. Unreal Engine is a
12 business.

13 Q. And in order to continue to provide that
14 service, Epic seeks to make a profit on Unreal
15 Engine through the monetization model that we 09:37:53
16 discussed earlier?

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19 THE DEPONENT: Similar answer. I believe
20 that Epic does seek to make a profit. But, again, 09:38:02
21 how much profit we receive from Unreal Engine
22 versus other products, I don't know.

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16 Q. Okay. And can you describe for me a
17 little bit the cross-platform capabilities in
18 Fortnite?

19 A. Sure. Fortnite is -- so Fortnite,
20 utilizing the Unreal Engine, we create -- we've 09:43:08
21 basically created a single game where the same game
22 logic runs on each of the consoles that we support:
23 PC, Mac, the mobile platforms that we support.

24 And by utilizing the tools in Unreal
25 Engine, artists are able to author the content once 09:43:34

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1 and then the engine handles a lot of the 09:43:37
2 platform-specific differences related to, for
3 instance, graphics techniques or how to play audio
4 on individual devices.

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14 For all of the platforms on which
15 Fortnite is available, are there differences 09:44:22
16 between the user experience on each of those
17 different platforms between consoles, mobile,
18 tablets, and whatnot?

19 A. In terms of the game play experience
20 itself, we do our best to -- it's -- let me 09:44:35
21 rephrase that.

22 It's fundamentally the same game. So it
23 is the same game mechanics. Players on different
24 platforms can participate in the same game at the
25 same time all playing by the same rules. The 09:44:49

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1 differences are primarily visual or related to 09:44:55
2 input.

3 So some players will use a keyboard and
4 mouse; some players, a controller; some players, a
5 touchscreen interface, of course, particularly on 09:45:06
6 mobile devices. And, again, in terms of the visual
7 quality, depending on the performance
8 characteristics of the hardware, some platforms
9 will use lower polygon models or lower resolution
10 textures or different rendering techniques that are 09:45:29
11 more apt for the particular platform.

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18 Q. And what about -- are all of the same
19 features in the games in terms of purchases, skins,
20 dances, and whatnot the same across all of the 09:46:01
21 platforms?

22 A. I believe that they are.

23 Q. And so if somebody has Fortnite on a
24 PlayStation 4 and they log in and -- to -- to
25 access the app on their iPhone, they have access to 09:46:16

1 the same -- the same content that they have 09:46:20

2 purchased, for example?

3 A. I believe that you have access to all the
4 same content across -- all the content that you own
5 across platforms. 09:46:33

6 Q. And is it also true for -- you will have
7 to forgive my ignorance here, but I don't know if
8 there are levels in Fortnite or if there's some way
9 of tracking your progress on the game. Is that
10 maintained across the different platforms? 09:46:46

11 A. Yes. We call it cross-progression, but
12 your progression through the game is -- is
13 maintained across platforms.

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15 And we don't need to get into the 09:55:13
16 details, but essentially Epic enters into certain
17 license agreements with Apple for the ability to
18 use Apple's proprietary software; is that right?
19 A. Yes, I believe that to be true.
20 Q. And without entering into those license 09:55:28
21 agreements with Apple, Epic would have no right to
22 use any of that proprietary software; is that
23 right?
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25 THE DEPONENT: I expect that is true. 09:55:39

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It looks like we have Exhibit 18 up.

And for the record, I'll note that we

have marked as Defendant's Exhibit 18 a document

10:12:22

Bates-stamped EPIC_01920438.

And feel free to take a moment to look at

this, Mr. Penwarden. But, when you finish, can you

let me know if you recognize this document?

A. Yes. I see the document and recognize

10:13:09

it.

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Q. Okay. So the third paragraph down in
that email, it says, "Nick had mentioned to me some 10:14:17
of your positive experiences regarding the Fortnite
development effort and the role Metal and our iOS
GPU HW/SW played in that effort and, in general and
in particular, in comparison to your experience
with other platforms." 10:14:37

Did I read that correctly?

A. You did.

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9 Q. (By Ms. Yang) Sure. But just focusing
10 on the iPhone iOS platform right now, the -- 10:18:41
11 comparing Apple's Metal API to the Android OpenGL
12 API, Epic had a positive experience in terms of
13 developing Fortnite for iOS compared to Android;
14 is that correct?
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17 THE DEPONENT: We had a -- we had a much
18 more positive experience developing Fortnite on --
19 on iOS using Metal. But I -- I guess I want to
20 also clarify that I'm talking about the entire 10:19:20
21 graphics stack here. So it's not specifically
22 Metal versus OpenGL; it is -- it's Metal, it's the
23 graphics driver, and the -- the hardware itself.
24 Again, it gets back to the breadth of
25 hardware on Android versus the smaller sample set 10:19:37

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1 on Apple. 10:19:41

2 Q. (By Ms. Yang) Sure.

3 But you would agree that Metal -- Apple's

4 proprietary Metal software was part of the reason

5 why the development experience on the iOS 10:19:50

6 platform was better in this case than for

7 developing for Android?

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9 THE DEPONENT: To be honest, I'm not

10 sure. I think the -- specifically to your question 10:20:08

11 that Metal is -- I take your question to be asking

12 whether Metal was the reason or the predominant

13 reason or a significant factor. I'm not sure.

14 OpenGL could also perform similarly well or be made

15 to perform similarly well, I believe. 10:20:34

16 However, I would also say that getting

17 Fortnite running on iOS using Metal was a very

18 positive experience and, again, easier than the

19 experience we had on Android platforms.

20 Q. (By Ms. Yang) All right. And we can 10:20:59

21 actually, then, look at the top of the page here in

22 the email from Mr. Sweeney responding. At the top

23 of the page, he says, "Yes, we'd be happy to share

24 some quotes on Metal, which had been a dream to

25 work with compared to other things. And we're 10:21:11

1 happy to either share or support Apple in sharing 10:21:14
2 any technical details about Fortnite performance,
3 optimization, and feature usage on iOS and Mac."
4 Do you see that?
5 A. I do. 10:21:27
6 Q. Do you agree with Mr. Sweeney that Metal
7 had been a dream to work with compared to other
8 things?
9 A. I would refer to my previous testimony.
10 But, again, I agree that working -- I would agree 10:21:41
11 with working with Metal has been a dream -- or, in
12 this case, was a dream compared with working with
13 OpenGL on Android.
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21 MS. YANG: And for the record, I'll note
22 that we have marked as Defendant's Exhibit 19 a
23 document Bates-labeled EPIC_000011599.
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1 But my first question will just be the same thing. 10:22:35

2 Do you recognize the document?

3 A. Yes, I recognize the document.

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2 Q. Okay. And then the next part of that
3 email says, "Here is a starting point: The
4 performance and features of Metal allowed us to
5 bring the full Fortnite Battle Royale experience 10:25:17
6 to iOS quickly and at higher quality than is
7 possible with OpenGL."
8 Did I read that correctly?
9 A. You did.
10 Q. And is that a sentence that you wrote in 10:25:29
11 this email?
12 A. I believe it is, yes.
13 Q. And do you still agree with that sentence
14 today?
15 A. I do, with the same context that I gave 10:25:39
16 above. Actually, I think the -- the line above
17 that states it pretty well that the performance
18 gain over OpenGL, I later qualify that as Android
19 was the -- was, I say here, "the number one
20 differentiator that allowed us to get Battle Royale 10:26:01
21 running on iOS faster than on Android."
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9 Q. And it says, "We have been making use of
10 Metal on iOS to great effect since its release in 10:26:42
11 2014. A fast, agile, feature-rich API like Metal
12 is exactly what we need to bring a game designed
13 for modern consoles and desktops to the
14 battery-powered iPhone and iPad."
15 Do you see that? 10:27:00
16 A. I do.
17 Q. And what does it mean when -- first of
18 all, do you agree with that statement?
19 A. I broadly agree with the statement the --
20 yeah, I broadly agree with the statement. 10:27:39
21 Q. And what does it mean when the statement
22 is -- when -- when -- "a fast, agile, feature-rich
23 API like Metal," what does that phrase mean in the
24 context of software development?
25 A. In the context of software development, 10:28:04

1 "fast" here is referring to performance, "agile" is 10:28:06
2 referring to changing of features -- so addition of
3 new functionality -- and "feature-rich" is the
4 extent of features supported by the API.

5 Q. And according to this statement, these 10:28:32
6 are all characteristics that Apple's Metal software
7 has?

8 A. Yes. I think that's right.

9 Q. And why is that useful -- why are --
10 those features in the Metal API, why are those 10:28:46
11 useful to help bring a game designed for consoles
12 and desktops to a mobile device like an iPhone or
13 iPad?

14 A. In the context of Metal, one of the
15 goals, as I understand it, that the engineering 10:29:03
16 team had was to reduce the CPU cost at the driver
17 level. So reducing CPU cost gets back to the
18 performance differences that I was referring to
19 earlier. In addition, reducing CPU costs reduces
20 battery consumption, which -- which gets to the 10:29:28
21 part of battery-powered iPhone and iPad.

22 Q. And so having a fast, agile, feature-rich
23 API like Metal will actually improve the
24 performance of apps on battery-powered devices; is
25 that right? 10:29:47

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4 THE DEPONENT: I think, again, it -- it
5 allows for applications to perform better and use 10:29:56
6 less power consumption than they otherwise would on
7 Apple's platforms.
8 Q. (By Ms. Yang) And then the next sentence
9 of this statement says, "As a developer, it blows
10 OpenGL in every way." 10:30:11
11 Do you agree with that?
12 A. I do. I would qualify it as, clearly,
13 the OpenGL implementations that were available to
14 us at the time on iOS and on Android.
15 Q. And then finally the last sentence says 10:30:33
16 that -- of that first paragraph says, "We were able
17 to get Fortnite ship-ready on iOS in a handful of
18 months as we weren't hindered by graphics."
19 Do you see that?
20 A. I do. 10:30:46
21 Q. And how was Metal able to speed up the
22 process of getting Fortnite ship-ready on iOS?
23 A. In this case, it was primarily related to
24 performance. So, again, the performance of the
25 graphics stack on -- on iOS was such that we 10:31:04

1 didn't have to spend as much time optimizing for 10:31:09
2 iOS to get it ready for ship.

3 Q. So, as a result, Epic was label to launch
4 Fortnite on iOS faster?

5 A. Yes, we were able to launch Fortnite on 10:31:27
6 iOS than we would have been able to had -- had --
7 iOS's graphics stack had the same performance
8 characteristics that it did prior to Metal. That's
9 an accurate statement.

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4 Does Epic compensate Apple or pay Apple
5 for any of the engineering know-how for Apple's 11:03:14
6 contributions to the collaboration?
7 A. To my knowledge, no, we do not pay Apple
8 money for -- for the collaboration -- or for
9 participating in the collaboration. I mean, the
10 nature of the collaboration is we both believe it's 11:03:38
11 mutually beneficial to participate.
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14 Q. Okay. And the next sentence says, "Epic
15 and Apple held weekly conference calls to discuss 11:17:13
16 existing engineering issues as well as anticipated
17 issues with Apple's prerelease software (e.g., beta
18 OS and/or Xcode) that was made available to Epic
19 through the Apple Developer Program."
20 Do you see that? 11:17:30
21 A. Yes, I see that.
22 Q. Is that consistent with your experience
23 that Epic and Apple would have weekly conference,
24 calls on engineering issues?
25 A. Yes. I recall we had weekly conference 11:17:44

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1 calls set up between our engineering team and the 11:17:47
2 GPU software team at Apple.

3 Q. Did you participate in those weekly
4 conference calls?

5 A. I used to participate in them. I don't 11:17:57
6 recall specifically what years or time frame, but
7 from time to time.

8 Q. Sure. But some engineering team at Epic
9 has weekly conference calls with an engineering
10 team at Apple; is that right? 11:18:14

11 A. Yes, that's my understanding.

12 Q. Okay. About how many Apple engineers
13 would participate in those calls?

14 A. I don't recall an exact number. I would
15 say on the order of two to four in most cases. 11:18:34

16 Q. And how long would those calls last?

17 A. I'm not sure. I would say most of the
18 calls would take somewhere between 30 minutes and
19 an hour. I'm trying to remember as well -- I
20 believe on the Epic side, we would typically have 11:18:58
21 anywhere between three and six engineers
22 participate in those conference calls.

23 Q. All right. The next sentence of the
24 response says, "These calls covered the following
25 Fortnite-related topics: discovery and 11:19:11

1 resolution of the graphic driver bugs in iOS and 11:19:14
2 macOS; memory usage and bugs affecting Epic's
3 ability to implement and support iOS and macOS
4 features; investigation into rendering issues in
5 Fortnite caused by Apple's Metal software; and 11:19:28
6 Epic's testing and providing feedback on Apple
7 developer tools."

8 Do you see that?

9 A. I do.

10 Q. And is that accurate to the best of your 11:19:37
11 knowledge?

12

13 THE DEPONENT: I believe that is -- that
14 is an accurate statement. During the -- during our
15 development of Fortnite Unreal Engine on Apple 11:19:56
16 platforms, we frequently find driver bugs that
17 cause either graphics glitches or instability in
18 our products.

19 Sorry. The -- the instability noted is
20 most often in the drivers for macOS or iOS. They 11:20:15
21 manifest as bugs in Fortnite or in Unreal Engine.
22 So we use these conference calls as a way to raise
23 these issues with the engineering team at Apple so
24 that they can go and investigate the issues
25 themselves and hopefully fix the -- the issues 11:20:34

1 in -- in Metal or in -- in drivers so that when -- 11:20:38
2 so that in the next release of either iOS or
3 macOS, as it were, those bugs are not present.
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What is your understanding of how Epic

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pays Apple for any services or tools provided by

Apple to -- for Epic to create, develop, or

maintain iOS Fortnite?

A. My understanding with respect to the

developer tools and SDKs is that, like most

11:26:31

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1 platforms, Apple provides those SDKs and tools for 11:26:37
2 a nominal fee, similar to -- to other platforms in
3 order to encourage -- I expect in order to
4 encourage developers to create software for the
5 platforms. 11:26:54

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16 Q. (By Ms. Yang) And for the record we've
17 marked as Exhibit 23 a document that begins with
18 Bates Number EPIC 00578585.

19 And I'll ask you, Mr. Penwarden, to take
20 a look at this and let me know if you recognize
21 this document. 11:44:46

22 A. Okay. I recognize the document.

23 Q. All right. And this is an email exchange
24 between a few people at Epic Games, including
25 yourself, from around November 2017; is that right? 11:45:39

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A. That's right.

11:45:44

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10 MS. YANG: And, for the record, we've 11:54:34

11 marked as Defense Exhibit 24 a document that has
12 been Bates-stamped EPIC_00433495.

13 Q. (By Ms. Yang) And after you've had a
14 chance to take a look at it, can you let me know if
15 you recognize this document. 11:54:49

16 A. Okay. I recognize the document.

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4 Q. Was that a frequent type of communication
5 that Epic would have with Apple in terms of Apple 11:57:38
6 previewing new features that it was working on?
7 A. That would happen time -- from time to
8 time. I'm trying to -- I'm struggling with the
9 word "frequent" that you used.
10 We would, from time to time, be 11:57:57
11 informed by Apple of new functionality coming on
12 Apple's platforms.
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Bates Number 495. And there's an email sent from

Robert Partington on May 12, 2020, at 2:37 p.m.

Do you see that?

12:01:23

A. I do.

Q. And the first paragraph says, "Checking

in to see how things are going with ARKit 3.5 and

if there are any use cases that emerged for the

LiDAR scanner in enterprise or virtual sets."

12:01:34

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1 Do you see that? 12:01:40
2 A. I see that, yes.
3 Q. Can you explain what the context for that
4 discussion is?
5 A. My understanding is that Rob is asking 12:01:46
6 whether or not we have customers with a use case
7 for the LiDAR scanner that Apple would be able to
8 highlight to other developers at Worldwide
9 Developer Conference, presumably for the purpose of
10 showing off the features and work that they've 12:02:10
11 developed.
12 Q. And then the next sentence says, "We are
13 ramping up for virtual WWDC, and I want to get UE
14 in the best position for any opportunities that
15 start to pop up." 12:02:27
16 Do you see that?
17 A. I do.
18 Q. And just to be clear, WWDC is referring
19 to Apple's Worldwide Developer Conference; is that
20 correct? 12:02:37
21 A. I believe that's so.
22 Q. And then UE in that context is referring
23 to the Unreal Engine?
24 A. I understand that to be the case, yes.
25 Q. What types of opportunities would pop up 12:02:48

1 for the Unreal Engine at the Worldwide Developer 12:02:51
2 Conference?
3 A. I'm not sure I -- I entirely agree with
4 the premise of the question. The -- I think the --
5 my understanding is the opportunities that Rob is 12:03:17
6 referring to would be opportunities to show
7 features and functionality at Worldwide Developer
8 Conference that use the Apple SDK in question
9 here -- or in this case, the -- the hardware, the
10 LiDAR scanner on the iPad. 12:03:43
11 Q. Well, specifically, I'm asking about the
12 Unreal Engine. He says, "I want to get Unreal
13 Engine in the best position for any opportunities
14 that start to pop up."
15 Is that correct? That's what it says? 12:03:53
16 A. That is what Robert's email says, yes.
17 Q. Yup.
18 So Unreal Engine, as we discussed
19 earlier, is a product that Epic makes available to
20 third-party developers; is that correct? 12:04:10
21 A. That's correct.
22 Q. Were there ever any instances in which
23 Unreal Engine or other Epic products were, for
24 example, featured at Apple's Worldwide Developer
25 Conferences? 12:04:23

1 A. In the past we have participated in 12:04:27
2 Apple's Worldwide Developer Conference and shown
3 technical demonstrations that were developed using
4 Unreal Engine.

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21 Q. (By Ms. Yang) Okay. And what are the
22 benefits to Epic of allowing cross-platform play in
23 Fortnite, for example?

24 A. I will speak primarily to the -- to the
25 engine and technology side of things as the games

01:03:45

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1 and business side of things, again, is not really 01:03:49
2 my role at Epic.

3 But on the technology side one of the
4 benefits is that it -- it aids us in proving out
5 the technology of Unreal Engine, again running the 01:04:03
6 same content -- or substantially similar content
7 and same game across multiple platforms.

8 Q. And so Epic can develop the game once,
9 and then it can be used in a variety of different
10 platforms; is that correct? With some adjustments 01:04:23
11 with each platform, I understand.

12 A. There's some additional work and
13 engineering that goes into each -- each platform
14 that we support, but we substantively support the
15 same game across -- across multiple platforms. 01:04:38

16 Q. And then end users have the choice of
17 which platform or platforms that they would like to
18 choose to be able to play Epic -- Epic games like
19 Fortnite; is that correct?

20 A. Yeah. Players are allowed to choose 01:04:56
21 which -- which platforms they want to play Fortnite
22 on.

23 Q. Including some players -- players have
24 the option to choose more than one platform to play
25 Fortnite? 01:05:08

1 A. That's right. Players may play Fortnite 01:05:09
2 on several different platforms.

3 Q. And that includes different platforms in
4 terms of you can have the option of playing on a
5 console versus playing on a mobile versus playing 01:05:19
6 on tablet?

7 A. Yes. A Fortnite player can choose to
8 play on their phone in the morning and on a console
9 in the evening if that's what they so choose.

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14 MS. YANG: All right. For the record,
15 this is Defense Exhibit 29, which is the document 01:44:59
16 Bates-stamped EPIC_00033947.
17 Q. (By Ms. Yang) And once you've had a
18 chance to take a look, if you could confirm whether
19 you recognize this document.
20 A. I see the email, and I have skimmed 01:46:49
21 through it.
22 Q. Okay. So this is another email between a
23 lot of people at Epic around August of 2018; is
24 that correct?
25 A. That's correct. 01:47:00

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1 Q. So looking at the second page of the -- 01:47:04

2 the second page of the email, the page that ends

3 with Bates Number 948, in the middle of the page

4 there's an email from Arjan Brussee on August 8th,

5 2018, at 4:59 p.m. 01:47:15

6 Do you see that?

7 A. I do.

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2 Q. When was Metal first released?
3 A. I believe it was June 2014 when the first
4 version of Metal was released.
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10 Q. (By Mr. Even) At the time was Metal a 04:42:18
11 developers' dream come true?
12 A. No.
13 .
14 Q. (By Mr. Even) Back in 2014, did Apple 04:42:30
15 reach out to Epic and ask to collaborate on Metal?
16 A. Apple approached Epic in early 2014 to --
17 to disclose that they were working on Metal and to
18 get our feedback on the API and what they were
19 doing and to help get -- or to get Unreal Engine
20 running on Metal so that they could understand how 04:42:57
21 the API works and performs with a -- with a AAA
22 console-style graphics workload.
23 Q. What, if anything, has Epic done from
24 2014 through 2018 that contributed to Metal
25 becoming such a good platform by 2018? 04:43:23

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3 THE DEPONENT: Throughout the years
4 between -- from 2014 to 2018, Epic and Apple
5 collaborated to -- so on our side, we continued to 04:43:41
6 invest time and -- and engineering into supporting
7 new features on Metal to -- to improving and
8 optimizing the engine on Metal and investigating
9 bugs that we found that were unique to Metal that
10 were typically in the driver or in the 04:44:05
11 implementation of Metal, and then working with
12 Apple to be able to provide the GPU software team
13 with repro cases and information about -- about
14 those issues so that they could fix those issues in
15 Metal. 04:44:28
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