

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

SONY INTERACTIVE ENTERTAINMENT LLC,)
)
 PETITIONER,) CASE NO.
) IPR2021-00237
 v.)
)
 INTELLECTUAL PIXELS LIMITED,)
) US PATENT NO.
 PATENT OWNER.) 10,681,109
)

VIDEOTAPED DEPOSITION OF HENRY FUCHS, PH.D.
TAKEN REMOTELY VIA ZOOM VIDEOCONFERENCE
TUESDAY, AUGUST 17, 2021

Reported by Audra E. Cramer, CSR No. 9901

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1 VIDEOTAPED DEPOSITION OF HENRY FUCHS, PHD,
2 TAKEN REMOTELY VIA ZOOM ON BEHALF OF THE PATENT OWNER
3 AT 10:06 A.M. EDT, TUESDAY, AUGUST 17, 2021, BEFORE
4 AUDRA E. CRAMER, CSR NO. 9901, PURSUANT TO NOTICE.

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21

22

1 I N D E X

2 WITNESS

3 HENRY FUCHS, PHD

4

5 EXAMINATION PAGE

6 BY MR. WILSON 6

7

8 E X H I B I T S

9 NO. PAGE DESCRIPTION

10 Exhibit 2007 21 EXCERPTS FROM TEXTBOOK

11 DISCOVERING COMPUTERS IPL

12 EX2007

13 Exhibit 2008 60 ARTICLE "FRAMELESS

14 RENDERING: DOUBLE BUFFERING

15 CONSIDERED HARMFUL" IPL

16 EX2008

17

18

19 REPORTER'S NOTE: All quotations from exhibits are
20 reflected in the manner in which they were read into the
21 record and do not necessarily indicate an exact quote
22 from the document.

1 REMOTELY VIA ZOOM VIDEOCONFERENCE

2 TUESDAY, AUGUST 17, 2021, 10:06 A.M. EDT

3

4 THE VIDEOGRAPHER: This is the -- this

5 is Tape No. 1 of the videotaped deposition of

6 Dr. Henry Fuchs in the matter of Intellectual

7 Pixels Limited versus Sony Interactive

8 Entertainment, pending in the United States

9 Patent and Trademark Office before the Patent

10 Trial and Appeal Board, Case No. IPR2021-00237.

11 This deposition is being held by Zoom

12 video remote conferencing, physical recording in

13 Fredericksburg, Virginia, on August 17, 2021.

14 The time on the video screen is 10:06 a.m.

15 Eastern Time.

16 My name is DeShawn White. I am the

17 legal videographer from Digital Evidence Group.

18 The court reporter is Audra Cramer in

19 association with Digital Evidence Group.

20 Will counsel please introduce

21 themselves for the record.

22 MR. WILSON: Douglas Wilson of Armond

1 Wilson, representing the patent owner,
2 Intellectual Pixels.

3 MR. WANG: Dennis Wang from WilmerHale
4 on behalf of Petitioner Sony Interactive
5 Entertainment, LLC.

6 THE VIDEOGRAPHER: Will the court
7 reporter please swear in the witness.

8
9 HENRY FUCHS, PHD,
10 having been first duly sworn, was
11 examined and testified as follows:

12

13 EXAMINATION

14 BY MR. WILSON:

15 Q. Good morning, Dr. Fuchs.

16 A. Good morning, Mr. Wilson.

17 Q. Can you please state your full name.

18 A. Henry Fuchs.

19 Q. And where are you currently for this
20 deposition?

21 A. I'm in my home in Chapel Hill,
22 North Carolina.

1 Q. All right. So since this is now our
2 third meeting, I know that you've been deposed
3 before. So you understand the rules. If you
4 need a break, ask for a break, and we'll try not
5 to talk over each other.

6 And we've been through this before, but
7 do you have any other windows up on your
8 computer other than the deposition and perhaps
9 exhibits?

10 A. No. I only have the Zoom window up on
11 my screen, and I have no other applications
12 running, no other images on my screens.

13 Q. Okay. You have what looks like a
14 collection of exhibits there behind you.

15 A. Yes, I do. These are clean printed
16 copies that the attorneys WilmerHale sent me. I
17 could list them for you if you want.

18 Q. That's okay. If you have one that
19 happens to be one I ask for, you know, feel free
20 to refer to it.

21 They do not have any comments or notes
22 or annotations on them; correct?

1 A. That's correct. As far as I know, they
2 are clean copies with no notes or annotations on
3 them.

4 Q. Okay. Is there any reason as you sit
5 here today why you cannot testify fully and
6 truthfully and accurately?

7 A. No.

8 Q. Okay. Now, you have a copy of your
9 declaration submitted in this IPR. It's
10 Exhibit 1002.

11 A. Yes, I have a copy of it.

12 Q. Okay. So if you have a copy, we don't
13 need to post one, but we can if you would like
14 an electronic copy.

15 A. Oh, that would be great. Can you send
16 me an electronic copy so I could refer to both
17 of them?

18 Q. Yeah, so you should be able to get one
19 via the exhibit window here.

20 Do you have access to the exhibit
21 window?

22 A. Hold on. I don't know exactly what

1 that is, but --

2 Q. It's a box.com --

3 A. -- if you could walk me through. I'm
4 used to Zoom, but I'm not used to anything with
5 an exhibit window.

6 So I just have Zoom here. Can somebody
7 tell me what to do?

8 Q. Yeah, so we have a link here for the
9 exhibits, and you should --

10 A. Oh, here, hold on. Somebody just put
11 something in chat.

12 (Discussion held off the record.)

13 THE WITNESS: So what I have up,
14 Mr. Wilson, just so you know is I have three
15 windows that I'm seeing. I'm seeing you and the
16 other people. I'm seeing the shared screen that
17 has a title page that says "Declaration of Henry
18 Fuchs." And I have a window open in my Mac
19 preview -- that's just what I downloaded -- that
20 says "2 - Ex 1002 Fuchs Declaration." Those are
21 the three windows I have open.

22

1 BY MR. WILSON:

2 Q. Okay. So can you just confirm that one
3 of those, either the paper copy or the
4 electronic copy or whatever, is your declaration
5 that was submitted in this case.

6 A. Yes. All three of these appear to be
7 my declaration.

8 Q. Okay. And so if you scroll back to
9 page 104, which is PDF page 105, that's your
10 signature?

11 A. Yes, it is.

12 Q. Okay. Now, Exhibit 1002 is a complete
13 statement of your opinions that you're offering
14 in this IPR; correct?

15 A. This was a complete statement as of the
16 date that I prepared this, which was December 4,
17 2020. But I said in the end of my declaration,
18 "I reserve the right to supplement my opinions
19 in the future to respond to any arguments that
20 the patent owner raises and to take into account
21 new information as it becomes available to me."

22 Q. Okay. As of the date you submitted

1 this declaration, it was a complete statement of
2 your opinions; correct?

3 A. Yes, it was, as relates to the task
4 before me of analyzing the claims in dispute.

5 Q. Okay. Now, did you review your
6 declaration, Exhibit 1002, before your
7 deposition today?

8 A. Yes, I did.

9 Q. Okay. Did you find any mistakes or
10 errors that you thought needed to be corrected?

11 A. I think I found one typo. I'm sorry.
12 I don't remember where it is. I think it was
13 one letter or something.

14 Q. Okay. So other than the typo, you
15 don't know of any mistakes or errors in your
16 declaration, Exhibit 1002; correct?

17 A. That's correct.

18 Q. Okay. You're confident in all the
19 opinions that are expressed in your declaration
20 in Exhibit 1002; correct?

21 A. Yes.

22 Q. All right. Did you work with

1 WilmerHale or attorneys from WilmerHale in
2 preparing the declaration?

3 A. Yes.

4 Q. Did you work with anyone outside of
5 WilmerHale in preparing your declaration?

6 A. No.

7 Q. Did you work with anyone at Sony in
8 preparing your declaration?

9 A. No.

10 Q. Okay. Let's look at page 6 -- well,
11 it's page 5, PDF page 6, and paragraph 10.

12 A. PDF page 6.

13 I'm there.

14 Q. Okay. Do you see paragraph 10?

15 A. Yes, I do.

16 Q. So you say in the second sentence there
17 you're being compensated at your normal
18 consulting rate.

19 Do you see that?

20 A. Yes.

21 Q. What is your normal consulting rate?

22 A. For this work it's \$800 an hour.

1 Q. Okay. Do you have there in your stack
2 of exhibits a copy of Wiltshire Exhibit 1004?

3 A. Yes, I do.

4 Would it be possible for me to -- for
5 you to send me a copy an electronic copy of
6 that?

7 Q. Sure. We can give you one.

8 A. Thank you very much.

9 Q. So I think if you hit refresh in the
10 Box window, it's there now.

11 A. Thank you. I just started downloading
12 it. Looks like it's -- it's downloading, it
13 looks like.

14 Q. Okay. While we're waiting on that to
15 download, I want to look at something in your
16 declaration.

17 A. Sure.

18 Q. Specifically, let's look at
19 paragraph 224. And paragraph 224 is on PDF
20 page 100, numbered page 99.

21 A. So I'm at paragraph 224 of my
22 declaration.

1 Q. Okay. Do you see the second sentence
2 there that reads, "Wiltshire's stated bandwidth
3 requirement may be as low as 100 KB/sec" --
4 kilobytes per second?

5 A. Yes.

6 Q. Okay. Now you don't have a cite to
7 Wiltshire there for that sentence; correct?

8 A. I do not see a citation of that
9 sentence.

10 Q. Okay. Do you have a copy of Wiltshire
11 now?

12 A. It's only about halfway. It says it's
13 2.3 out of 4.7 megabytes downloaded.

14 Q. Okay. So you can probably answer this
15 question with your paper copy, but if you want
16 to wait for the electronic copy, that's fine.

17 But my question is, for that reference
18 to Wiltshire's 100-kilobytes-per-second rate,
19 were you referring to Wiltshire at Column 7,
20 lines 62 through 64?

21 A. Sitting here today, I am not certain of
22 that, but it may well be that this is a typo;

1 that I should have put a 100 rather than 10.

2 But still, that statement is true that
3 the "Wiltshire's stated bandwidth requirements
4 be as low as 100 kilobytes per second," which is
5 a correct one -- okay? -- which is well under
6 the 11-megabits-per-second wireless data rate,
7 because -- and you see there's a missing zero --
8 100 kilobytes per second is much lower.

9 So you see I put 100 kilobytes here in
10 the third line, and I think I just missed a zero
11 on that fifth line of that paragraph. But in
12 any case, Wiltshire's bandwidth requirements are
13 well under the iBooks' wireless data rate.

14 Q. Okay. So let me back up for a second
15 and see if I can parse that out.

16 So the -- are you not sure if the
17 reference at Column 7, lines 62 through 64 of
18 Wiltshire, is where you got the
19 100-kilobyte-per-second rate?

20 A. That statement in Wiltshire Column 7,
21 lines 63, 64, 65 -- 62, 63, 64, is one of
22 multiple places, possibly, where Wiltshire

1 states that, using compression techniques, the
2 bandwidth requirements can go down to about
3 100 kilobytes per second. And that is exactly
4 what I say in this paragraph 224, "100 KB per
5 second."

6 There may be other places that I may
7 have read this. I don't know without spending
8 some time going through the rest of Wiltshire.

9 Q. Okay. But the passage at line 7 --
10 sorry.

11 The passage in Wiltshire at Column 7
12 lines 62 through 64 matches the rate you're
13 quoting in paragraph 224; correct?

14 A. The 100 KB per second matches the
15 100 KB per second that I mention in my
16 declaration, paragraph 224.

17 Q. Right. Okay.

18 Now, the second part of what you were
19 referring to, you believe now in the fifth line
20 of paragraph 224, that when you referred to a
21 data rate of 10 kilobytes -- sorry.

22 When you referred to 10 kilobytes, you

1 should have been referring to 100 kilobytes; is
2 that correct?

3 A. Yes, that is correct. Because I say,
4 "Wiltshire's stated bandwidth requirements may
5 be as low as 100 KB per second" -- kilobytes per
6 second -- "which is well under the iBooks'
7 11-megabits-per-second wireless data rate
8 because" -- I think I should have said --
9 "100 kilobytes per second is equivalent to" --
10 then whatever the fraction is.

11 Q. So -- but there right now you say
12 10 kilobytes is equivalent to .08 megabits;
13 correct?

14 MR. WANG: Object to form.

15 THE WITNESS: As I've said, I think
16 that I should have just put the 100 KB per
17 second as I put in the earlier part of this
18 sentence, and then the equivalent amount I would
19 have to calculate.

20 BY MR. WILSON:

21 Q. Okay. But right now you say
22 10 kilobytes is equivalent to .08 megabits;

1 correct?

2 MR. WANG: Object to form.

3 THE WITNESS: You are right that what I

4 have typed here at the end of this sentence is

5 10 kilobytes, KB, which is equivalent to

6 .08 megabits. Okay? But --

7 BY MR. WILSON:

8 Q. Okay --

9 A. -- .08 megabits roughly is almost .1,
10 about a tenth -- okay? -- of a megabit.

11 These are all minor issues, in my
12 opinion, because the statement is still true,
13 namely, that "Wiltshire's stated bandwidth
14 requirement is well under the iBooks'
15 11-megabit-per-second wireless data rate. Thus
16 a POSITA would have fully expected the iBooks
17 wireless connectivity to work with the system in
18 Wiltshire."

19 Q. So do you think the equivalence that's
20 shown there is a mistake?

21 In other words, do you think the
22 10 kilobytes is not equivalent to .08 megabits?

1 A. May I use a piece of paper?

2 Q. Sure.

3 A. Hold on. I just need to go find...

4 Can you ask your question again,
5 please, Mr. Wilson.

6 Q. So do you think, as you sit here right
7 now, that 10 kilobytes is not equivalent to
8 .08 megabits?

9 A. If I do my math correctly as I sit here
10 today, 10 kilobytes per second is 10,000 bytes
11 per second, which is 80,000 bits per second,
12 which is 0.08 megabits per second.

13 Q. Right.

14 A. I believe that I made a factor of 10
15 error in typing -- not typing that zero for the
16 second time in the 10 kilobytes per second. It
17 should have been 100 kilobytes per second, and
18 therefore I think it should have been equivalent
19 to 0.8 megabits per second rather than .08.

20 But again, I believe that my statement
21 is still true, namely that "Wiltshire's stated
22 bandwidth requirement may be as low as

1 100 kilobytes per second, which is well under
2 the iBooks' 11-megabit-per-second. Thus a
3 POSITA would have fully expected that the
4 iBooks' wireless connectivity to work with the
5 system in Wilshire."

6 Q. Okay. So just to confirm and to sum
7 up, the conversion that you've stated there
8 10 kilobytes is equivalent to .08 megabits, is
9 correct; correct?

10 A. I believe so.

11 Q. Okay. You're just saying you should
12 have said 100 kilobytes is equivalent to
13 .8 megabits; correct?

14 A. I believe so.

15 Q. Okay.

16 A. By the way, Mr. Wilson, the download of
17 the digital copy that you sent here of 1004
18 looks like it is complete and would open this
19 up.

20 Yes, it looks like it's all here. So I
21 can open this -- you know, I can answer
22 questions both from the digital and the paper

1 copy.

2 Q. Okay. I think you've answered my
3 question. So you can at least set it aside
4 temporarily.

5 A. Okay. I will do that.

6 Q. Okay. Now, let's see.

7 Now, I want to show you what's been
8 marked as Exhibit 2007.

9 And this is a new exhibit marked for
10 this deposition, at least some excerpts from it.

11 (Whereupon, Exhibit 2007 was
12 marked for identification.)

13 BY MR. WILSON:

14 Q. So you should be able to get an
15 electronic copy of this as well.

16 A. Okay. I will go back to that --

17 Q. You'll have to because, yeah, you don't
18 have a paper copy.

19 A. You said I should refresh Box.

20 Q. Yeah.

21 THE VIDEOGRAPHER: It's uploading right
22 now. Give it about ten more seconds. Probably

1 not even that. Probably five seconds.

2 Okay. It's in there. Thank you.

3 THE WITNESS: Okay. So I will begin

4 the download.

5 BY MR. WILSON:

6 Q. Yeah, this may take you a bit to
7 download. It looks like it's 34 megabytes.

8 A. Yes, 34.4 megabytes.

9 Q. Okay. Have you started the download?

10 A. Yes, I have started the download. It's
11 going slowly.

12 Would you allow me to open speed test.

13 I Google Fiber, so I should have a good
14 connectivity.

15 Q. Sure.

16 A. I just wanted to check if there's
17 something wrong here.

18 (Discussion held off the record.)

19 BY MR. WILSON:

20 Q. So can you look at the exhibit just
21 there on Box without downloading it.

22 A. One second, please.

1 Yes, what I see is Discovering

2 Computers.

3 MR. WANG: In the past we've also had
4 it send through the Zoom chat. I don't know if
5 that might work as well.

6 THE WITNESS: That might be faster.

7 MR. WANG: I don't know if that's a
8 possibility, but...

9 THE WITNESS: Thank you. That would be
10 great if you can do that.

11 THE VIDEOGRAPHER: I can do that. Give
12 me one moment.

13 (Discussion held off the record.)

14 BY MR. WILSON:

15 Q. It's going. It should show up in the
16 chat here momentarily.

17 A. Mr. Wilson, did you send this to
18 everybody.

19 Q. Yeah. It's just in the chat window to
20 everyone.

21 A. Oh, yes. I see it. I see it.

22 Aha. I think I have it. Wow, that's

1 just amazing difference. Thank you, Mr. Wilson.

2 Q. Sure.

3 A. Let me just see what I have.

4 What I have is 37 pages?

5 Q. Yes. So what you have, Exhibit 2007,
6 are excerpts from a textbook called Discovering
7 Computers, Fundamentals, Fourth Edition. And
8 feel free to skim through and look at it, but
9 I'm going to direct your attention to -- let me
10 find it -- yeah, to page -- so the page numbers
11 at the bottom, 23 of 37?

12 A. 23, did you say?

13 Q. Yes, 23 of 37.

14 A. 23 of 37.

15 Q. Yeah. So my first question is have you
16 ever seen this textbook before?

17 A. Not to my knowledge.

18 Q. Okay.

19 A. I'm looking at page 23 of 37,
20 Mr. Wilson.

21 Q. Okay. You see in the center of the
22 page there they refer to categories of

1 computers?

2 A. Yes, I see those words.

3 Q. Okay. And in the table you can see
4 underneath there, there's a list of categories
5 of computers.

6 Do you see that?

7 A. Yes, "Categories of Computers." I see
8 that list -- I see the table.

9 Q. Okay. So let's go to the next page,
10 which is page 24 of 37.

11 And you see at the top they start with
12 "Personal Computers."

13 A. Yes.

14 Q. Now you see about the middle of the
15 page they have a heading that says "Mobile
16 Computers and Mobile Devices."?

17 A. I see those words.

18 Q. And do you see right under that it
19 says, "A mobile computer is a personal computer
20 you can carry from place to place."

21 Do you see that?

22 A. Yes.

1 Q. Do you agree with that statement?

2 A. As I've said, I have never seen this
3 document before, but I understand the words
4 here.

5 What I could tell you is that there are
6 different ways of classifying mobile computers
7 and mobile devices for different purposes. What
8 I expect is that you are asking me with respect
9 to my declaration, which is about '109 patent, I
10 applied the common meaning with respect to the
11 '109 patent.

12 Q. Okay. So do you agree with that
13 sentence or not?

14 MR. WANG: Object to form.

15 THE WITNESS: I have not analyzed this
16 document, and so I want to reserve judgment on
17 it.

18 BY MR. WILSON:

19 Q. Okay. The next sentence reads,
20 "Similarly, a mobile device is a computing
21 device small enough to hold in your hand."

22 Do you see that?

1 A. I see that.

2 Q. Do you agree with that sentence?

3 MR. WANG: Objection to form.

4 THE WITNESS: Again, I have not seen
5 this document until you placed it in front of
6 me, and I want to reserve judgment until I've
7 studied this in some comprehensive detail.

8 But I expect that you're asking me with
9 respect to my declaration, which was on the
10 various claims in dispute on the '109 patent,
11 and I made my declaration with the '109 patent
12 in mind.

13 BY MR. WILSON:

14 Q. Okay. But you also made it in the
15 context of a person of ordinary skill in the
16 art; correct?

17 MR. WANG: Objection --

18 THE WITNESS: Yes.

19 BY MR. WILSON:

20 Q. And a person of ordinary skill in the
21 art certainly would know something about
22 computers; correct?

1 A. Yes.

2 Q. And the terminology that's being
3 described here is in a computer textbook;
4 correct?

5 MR. WANG: Objection to form.

6 THE WITNESS: Again, I have not looked
7 at this document, and so I reserve judgment upon
8 its use of various terms.

9 BY MR. WILSON:

10 Q. Okay. You can set that document aside.

11 A. Okay. One second, please. Let me do
12 that.

13 Q. Do you have a copy of the '109 patent?
14 And that is Exhibit --

15 A. I have a paper copy.

16 Would you be so kind again as to send
17 me, maybe in the chat window, a digital copy
18 that I could refer to?

19 Q. Yes.

20 A. Thank you.

21 Q. Let me pull it up here.

22 (Discussion held off the record.)

1 THE WITNESS: Mr. Wilson, I have both
2 the digital copy you sent and a paper copy that
3 the WilmerHale people sent a few days ago.

4 BY MR. WILSON:

5 Q. Okay. And you're familiar with the
6 '109 patent; correct?

7 A. Yes, generally.

8 Q. Okay. I want you to look at Column 2,
9 lines 1 through 14. And just read it to
10 yourself, and let me know when you're done.

11 A. I've read those lines, Mr. Wilson.

12 Q. Okay. What's being described here is
13 what the '109 patent characterizes as "a
14 client-server method based on a hybrid image
15 transmission and geometry transmission
16 approach"; correct?

17 A. That's correct.

18 Q. Okay. In that approach, if you look at
19 lines 3 through 5, the server maintains a low
20 level-of-detail database and a high
21 level-of-detail database; correct?

22 A. I see those words, yes.

1 Q. Okay. And then at lines 5 through 8
2 you can see it says that "For each frame of a
3 real-time image stream, images are generated
4 from both the low level-of-detail and high
5 level-of-detail database"; correct?

6 A. Yes, I see those words.

7 Q. All right. And then it goes on to say
8 that "The difference between the two images is
9 computed."

10 Do you see that?

11 A. "The differences between the two..."

12 Yes, I see those.

13 Q. Okay. At lines 9 through 11 in
14 Column 2 it says, "The client unit contains only
15 a low level-of-detail geometric database and
16 renders this database for each frame"; correct?

17 A. I see those words, yes.

18 Q. Okay. And then finally at lines 11
19 through 14 it says that "the difference image
20 computed on the server is compressed and
21 transmitted to the client in real time, which
22 decompresses and composites it together with the

1 image generated by the client from the low
2 level-of-detail database"; correct?

3 A. I see those words, yes.

4 Q. So this passage discloses a specific
5 example in the description of the related art
6 section where a first portion of the display is
7 produced by a server and combined with a second
8 portion of the display produced by the client;
9 correct?

10 MR. WANG: Objection to form.

11 THE WITNESS: Can you state that again,
12 please, to make sure I understand it.

13 BY MR. WILSON:

14 Q. Sure.

15 This example described in the
16 description of the related art section of the
17 '109 patent discloses an example in which a
18 first portion of the display is produced by a
19 server and combined with a second portion of the
20 display produced by the client; correct?

21 MR. WANG: Objection to form.

22 THE WITNESS: I don't agree with that

1 characterization.

2 What is said here is, "The difference
3 between the two images computed using known
4 methods of image processing."

5 And then, "The client unit contains
6 only a low level-of-detail geometric database
7 and renders this database for each frame, and
8 the difference image computed on the server is
9 compressed and transmitted to the client in real
10 time, which decompresses and composites it
11 together with the image generated by the client
12 from the low level-of-detail database."

13 That's slightly different, I think,
14 than your characterization of this.

15 BY MR. WILSON:

16 Q. Okay. In what way is it different?

17 A. If you state your question again,
18 please, I might be able to precisely answer that
19 question.

20 Q. Okay. So let me see if I can back it
21 up and take it step by step, then.

22 So in this case the server produces an

1 image that is a high level-of-detail image;

2 correct?

3 A. The server in this system creates both
4 the low level-of-detail image and a high
5 level-of-detail image, and it calculates the
6 difference between the two images.

7 Q. Okay. And the difference between the
8 two images is what it sends to the client;
9 correct?

10 A. It's -- the difference image is
11 compressed and transmitted to the client, yes.

12 Q. Okay. The client produces only a low
13 level-of-detail image; correct?

14 A. The client decompresses the difference
15 image sent by the server and composites it
16 together with the image generated by the client
17 from the low level-of-detail database.

18 Q. Okay. So what the client ultimately
19 uses as its display image is a composition of
20 the difference image received from the server
21 and the low level-of-detail image generated at
22 the client; correct?

1 A. Generally, yes.

2 Q. Okay.

3 All right. Let's take a look at

4 Figure 2D -- or, actually, let's --

5 A. Of the patent?

6 Q. Yeah, of the '109 patent?

7 A. Okay.

8 Q. Let's actually start at Figures 2A and
9 2B.

10 A. Okay. Mr. Wilson, is it okay if I put
11 some tabs --

12 Q. Sure.

13 A. -- on the places we're referring?

14 Thank you.

15 Q. Okay. So I want to refer to
16 Figures 2A, 2B, 2C and 2D here.

17 Do you have those in front of you?

18 A. One second, please. Let me...

19 MR. WANG: Counsel, do you want him to
20 look at all those figures at the same time?

21 Because if so, Henry, you might want to
22 look at your paper copy. I don't know if it's

1 possible to view them --

2 MR. WILSON: Yeah, I just want to start
3 with Figure 2B.

4 THE WITNESS: So I have the paper copy
5 on 2B like "beta."

6 BY MR. WILSON:

7 Q. Yes, sure.

8 So -- and I hate to make you jump
9 around, but in Column 5 there's a description of
10 Figure 2B at about line 24, and it says,
11 "Figure 2B is a flowchart illustrating the
12 preferred process executed on the visual server
13 and receiving image-modifying data from the
14 client and then generating and transmitting a
15 modified image to the client."

16 Do you see that?

17 A. Yes, I see those words.

18 Q. Okay. So now let's look at Figure 2B.

19 A. 2B, yes.

20 Q. So Figure 2B describes what's happening
21 on the server; correct?

22 A. It says here in '109 on Column 5 that

1 you just showed me that "2B is a flowchart
2 illustrating the preferred process executed on
3 the visual server."

4 Q. Right.

5 So 2B describes what's happening on the
6 server; correct?

7 A. The preferred process, yes, on the
8 server.

9 Q. Okay. So -- okay. Let's start at
10 Step 62.

11 You can see Step 62 is the fourth step
12 there in Figure 2B, and it reads, "Generate the
13 corresponding image for the image-modifying
14 data."

15 Do you see that?

16 A. I see that.

17 Q. Okay. And then you can see there's a
18 Step 64 that says, "Aggregate modified-image
19 data."

20 Do you see that?

21 A. I see that.

22 Q. Okay. And then you see it proceeds to

1 that circle with a D in it.

2 A. I see that.

3 Q. Okay. Now, if you go to Figure 2D, you
4 can see the circle with a D in it where it
5 continues?

6 A. Yes.

7 Q. Okay. Now, you see Step 66 is,
8 "Compress the image data"; correct?

9 A. I see that.

10 Q. And then Step 68 occurs, which is,
11 "Transmit the compressed image."

12 Do you see that?

13 A. I see that.

14 Q. Okay.

15 All right. Now, let's look at Claim 1
16 in the '109 patent.

17 A. May I ask a question?

18 Q. Sure.

19 A. It is now 11:04 here, my time.

20 Would it be possible on the top of each
21 hour for us to take a short break?

22 Q. Absolutely, yes.

1 A. Okay. Five minutes or something?

2 Q. Sure. Let's make it ten.

3 A. Okay.

4 Q. And just for your planning purposes, I
5 suspect this is not going to be a long
6 deposition today. So --

7 THE WITNESS: Thank you.

8 MR. WILSON: So, you know, probably in
9 the neighborhood of another one to two hours.

10 THE WITNESS: That sounds fine.

11 MR. WILSON: Yeah.

12 (Discussion held off the record.)

13 THE VIDEOGRAPHER: The time is
14 11:05 a.m. We are now off the record.

15 (Recess taken.)

16 THE VIDEOGRAPHER: Okay. The time is
17 11:15 a.m. We are now on the record.

18 BY MR. WILSON:

19 Q. Okay. Dr. Fuchs, right before the
20 break we were going to look at Claim 1 of the
21 '109 patent.

22 A. I'm looking at Claim 1.

1 Q. Okay. You can see the beginning of it
2 in Column 9, line 55?

3 A. Yes, sir.

4 Q. Okay. Let's look at -- so you can see
5 the preamble there, "A method of hosting an
6 interactive software application comprising..."

7 Do you see that?

8 A. Yes, sir.

9 Q. Okay. And then I want to look at the
10 step that's -- I'm going to call it line 62,
11 "generating."

12 Do you see that?

13 A. Yes.

14 Q. So about Column 9, line 62, there's a
15 step that reads, "generating at least one
16 updated image at the server in response to
17 updating the state of the interactive software
18 application."

19 Do you see that?

20 A. Yes.

21 Q. So Claim 1 requires generating an
22 updated image at the server; correct?

1 A. Generating at least one updated image
2 at the server, yes.

3 Q. Okay. Now, the next step there, which
4 is at Column 9, about line 65, says,
5 "compressing the at least one updated image and
6 transmitting the updated image to the client
7 device."

8 Do you see that?

9 A. Yes.

10 (Discussion held off the record.)

11 BY MR. WILSON:

12 Q. Okay. Dr. Fuchs, so Claim 1 requires
13 compressing the generated updated image;
14 correct?

15 A. Compressing the at least one updated
16 image, yes.

17 Q. Okay. And Claim 1 also requires
18 transmitting the compressed updated image;
19 correct?

20 A. And transmitting the compressed updated
21 image, yes.

22 Q. Okay. Now, Claim 1 requires that the

1 compressing step occur after the generating
2 step; correct?

3 MR. WANG: Objection to form.

4 THE WITNESS: [Mumbled reading.]

5 Wiltshire certainly discloses
6 compressing after the generation. I'm not sure
7 that I -- that that's necessarily a requirement
8 for this, but Wiltshire certainly does that.

9 BY MR. WILSON:

10 Q. So how can you compress the at least
11 one updated image if you don't have the at least
12 one updated image yet?

13 A. Since Wiltshire does it in that order,
14 I have to think about other possibilities.

15 But Wiltshire discloses that clearly.
16 He generates the image and then puts it into the
17 compressor.

18 Q. So do you have an opinion on whether
19 Claim 11 requires the compressing be at least
20 one updated image step to occur after generating
21 at least one updated image?

22 MR. WANG: Objection to form.

1 THE WITNESS: Since Wiltshire clearly
2 discloses generating the image and then
3 compressing it, I haven't had to analyze that
4 possibility. And so I would have to think about
5 that and think about that and -- think about
6 that some more before rendering an opinion.

7 BY MR. WILSON:

8 Q. Okay.

9 A. Clearly Wiltshire generates the image
10 first and then compresses it.

11 Q. Okay. So now continuing at Column 9,
12 about line 65 there, the next step is, "and
13 transmitting the compressed image to the client
14 device."

15 Do you have an opinion on whether the
16 transmitting the compressed updated image to the
17 client device must occur after compressing the
18 at least one updated image?

19 MR. WANG: Objection to form.

20 THE WITNESS: Since Wiltshire clearly
21 discloses compressing it and then transmitting
22 the image, which is a disclosure relevant

1 to '109, I haven't had to make a decision as to
2 whether that order is absolutely necessary. But
3 clearly Wiltshire does it in that order.

4 BY MR. WILSON:

5 Q. Okay. So you don't have an opinion on
6 whether the transmitting the compressed updated
7 image step must occur after the compressing the
8 at least one updated image step in Claim 1;
9 correct?

10 MR. WANG: Objection to form.

11 THE WITNESS: Since Wiltshire clearly
12 discloses it in compressing the image and then
13 transmitting it, I have not had to make a
14 determination as to whether that's a requirement
15 of the claim to do it in that order.

16 BY MR. WILSON:

17 Q. Okay. Take a look at Claim 8.

18 A. I'm looking at Claim 8.

19 Q. Okay. You can see Claim 8 begins with
20 "An image display system comprising: a server
21 having a processor and memory configured to
22 execute an interactive software application and

1 further configured for..."

2 Do you see that?

3 A. Yes, I see that.

4 Q. And then you're going to see similar
5 steps after that to the steps that we've just
6 discussed in Claim 1.

7 Do you see that?

8 MR. WANG: Objection to form.

9 THE WITNESS: I see the rest of Claim 8
10 here.

11 BY MR. WILSON:

12 Q. Okay. So you can see at Column 10
13 about line 35 there is a step, "generating at
14 least one updated image at the server."

15 Do you see that?

16 A. Yes, I see those words.

17 Q. And then about line 39 there's another
18 step, "compressing the at least one updated
19 image and transmitting the compressed updated
20 image to the client device."

21 Do you see that?

22 A. I see those words, yes.

1 Q. Okay. So same question here: Do you
2 have any opinion on whether the image display
3 system that has a server that's configured for
4 performing these steps must be configured to
5 perform them first with generating at least one
6 updated image and then with compressing the at
7 least one updated image and then with
8 transmitting the one updated image to the client
9 device?

10 MR. WANG: Objection to form.

11 Compound.

12 THE WITNESS: I'm not sure that I
13 understood the exact scope of your question,
14 Mr. Wilson.

15 BY MR. WILSON:

16 Q. Okay.

17 A. Can you say it again.

18 Q. Sure. Sure. Let me break it down for
19 you.

20 A. Thank you.

21 Q. Do you have an opinion about whether
22 the image display system -- or let me strike

1 that.

2 Do you have an opinion about whether
3 the server in the image display system in
4 Claim 8 must be configured to perform the
5 compressing the at least one updated image step
6 after the generating at least one updated image
7 step?

8 MR. WANG: Objection to form.

9 THE WITNESS: Since Wiltshire clearly
10 discloses generating the at least one updated
11 image at the server and then compressing the at
12 least one updated image, that was sufficient for
13 my analysis. I did not consider prior art or
14 whether it's required to do it in that strict
15 order.

16 BY MR. WILSON:

17 Q. Okay. And so as you sit here today,
18 you don't have any opinion on whether the
19 generating -- the server in Claim 8 must be
20 configured to perform the generating step before
21 the compressing step; correct?

22 MR. WANG: Objection to form. Asked

1 and answered.

2 THE WITNESS: I did not need to
3 consider that question to do my analysis in my
4 declaration.

5 BY MR. WILSON:

6 Q. Okay. So do you also not have an
7 opinion or haven't formed an opinion on whether
8 the server in Claim 8 must be configured to
9 compress -- or to transmit the compressed
10 updated image after compressing the at least one
11 updated image?

12 MR. WANG: Objection to form.

13 THE WITNESS: Wiltshire discloses
14 compressing and then transmitting, and therefore
15 that was sufficient for my analysis relating to
16 my declaration. I did not have to consider the
17 question of whether there are other mechanisms
18 that could be used with respect to the
19 relationship of compressing and transmitting.

20 BY MR. WILSON:

21 Q. Okay. And so you do not have an
22 opinion as you sit here today regarding whether

1 the server in Claim 8 must perform the
2 transmitting step after the compressing step;
3 correct?

4 MR. WANG: Objection. Asked and
5 answered.

6 THE WITNESS: I have not done the
7 analysis to answer that question, because
8 Wiltshire clearly discloses compressing and then
9 transmitting.

10 BY MR. WILSON:

11 Q. Okay. You can set the '109 patent
12 aside.

13 A. Okay.

14 Q. Let's go back to your declaration,
15 Exhibit 1002, and I want to look at PDF page 32.

16 A. One second, please.

17 Q. Sure.

18 A. PDF page 32?

19 Q. Yeah. It's paragraph 51 -- or, really,
20 52.

21 A. I see my declaration, paragraphs 51 and
22 52.

1 Q. Okay. So in paragraph 52 for Ground I
2 you say, "In Ground I set forth below, I
3 conclude that Claims 1, 3 through 13, and 15
4 through 18 are obvious in view of Wiltshire and
5 Saha"; correct?

6 A. That's what I say, yes.

7 Q. Okay. So for Ground I you rely on the
8 combination of Wiltshire and Saha; correct?

9 A. I say that it's obvious in view of
10 Wiltshire and Saha, yes.

11 Q. Okay. Take a look at paragraph 55,
12 next page.

13 A. I'm looking at paragraph 55.

14 Q. Okay. You say in paragraph 55, "To the
15 extent the preamble is limiting, Wilshire
16 discloses the preamble"; correct?

17 A. That's what I say: "To the extent the
18 preamble is limiting, Wiltshire discloses the
19 preamble."

20 Q. Okay. Now, let's look at paragraph 57.

21 A. I'm looking at 57, Mr. Wilson.

22 Q. Okay. In the second sentence of

1 paragraph 57 you list some of the games

2 identified in Wiltshire; correct?

3 A. "Gaming programs may include games,"

4 and I list those.

5 I'm sorry. I'm waiting for you.

6 Q. Oh. Yeah, my question was you -- in

7 paragraph 57 you listed some of the games

8 described in Wiltshire; correct?

9 A. Yes, that's correct; I listed some of
10 the games listed in Wiltshire.

11 Q. Okay. And you have a cite there,
12 Exhibit 1004, which is Wiltshire at 1:26 through
13 43; correct?

14 A. That's correct.

15 Q. Okay. So let's take a look at
16 Exhibit 1004 Wiltshire.

17 Which you have; correct?

18 A. Yes.

19 Give me a minute, please.

20 Q. Yeah. We're going to look at PDF
21 page 21.

22 A. Thank you.

1 I see that.

2 Q. Okay. And do you see the paragraph
3 that begins at line 26 of Column 1?

4 A. Yes.

5 Q. Okay. The paragraph begins, "The terms
6 'game' and 'gaming' as used herein include all
7 types of electronic, electromechanical or
8 mechanical gambling and casino game facsimiles
9 as defined in 15 USC 11719(a)(2) or (3), such as
10 faro, monte, roulette, keno, bingo, fan-tan,
11 twenty-one, blackjack, seven-and-a-half, big
12 injun, klondike, craps, poker, chuck-a-luck,
13 Chinese chuck-a-luck (dai shu), wheel of
14 fortune, chemin de fir, baccarat, pai gow, beat
15 the banker" -- and it goes on and on; correct?

16 A. It says, "The terms 'game' and
17 'gaming'" -- [mumbled reading] -- "all types of
18 games, such as" -- so these are just examples of
19 them, but they're not the complete list.

20 Q. The games that we just went through are
21 casino games; correct?

22 MR. WANG: Objection to form.

1 THE WITNESS: The ones that you listed
2 are just a few of the list that Wiltshire gives
3 here. He goes on to list all kinds of other
4 games that are not casino games, such as
5 Monopoly, Scrabble, Doom, Pong, Pac-Man, Myst,
6 that are not at all casino games.

7 BY MR. WILSON:

8 Q. So take a look at Column 12. And I
9 want to look at the paragraph that begins at
10 line 8.

11 Do you see that?

12 A. Yes, I'm at line 8.

13 Q. Okay.

14 A. "Embodiments described above"?

15 Q. Yes. It says, "Embodiments described
16 above illustrate but do not limit the
17 invention"; correct?

18 A. That's correct.

19 Q. It goes on to say, "In particular, the
20 invention is not limited to any particular
21 game"; correct?

22 A. That's what it says.

1 Q. Then it says, "In fact, any casino game
2 or other non-casino games where players play
3 against each other for money with the house
4 taking a percentage of the stake for providing
5 the game."

6 Do you see that?

7 A. I see those words.

8 Q. Do you understand who "the house" is in
9 that sentence?

10 MR. WANG: Objection to form.

11 THE WITNESS: I understand that the
12 house is generally a company. But he goes on
13 in -- to say that there's other possible games
14 and which -- he says that "Other embodiments and
15 varieties are within the scope of the
16 invention," and there are many examples of games
17 that he gives in which the house may not play a
18 role.

19 BY MR. WILSON:

20 Q. So the house as described in Column 12,
21 line 12, is a gambling establishment; correct?

22 MR. WANG: Objection to form.

1 THE WITNESS: Not necessarily.

2 BY MR. WILSON:

3 Q. Okay. It's some company that is taking
4 a percentage of money bet on a game; correct?

5 A. No. It could be some company that
6 makes income in other ways; for example, they
7 could be charging a monthly fee or an hourly
8 fee.

9 Q. So what do you understand the word
10 "stake" to be in Column 12, line 12?

11 A. I think this sentence talks about only
12 a subset of the games that Wiltshire discloses.
13 He talks later in this paragraph and in many
14 other places about games that are not casino
15 games, like Pong, like Myst, like Doom. These
16 are not casino games, and a person reading this
17 would understand that those are not played for
18 money in the sense of betting.

19 There may be ways in which the company
20 can make money from providing that service, but
21 this is just one of multiple possibilities that
22 he describes in this sentence.

1 Q. Okay. What do you understand the term

2 "stake" to be in Column 12, line 12?

3 MR. WANG: Objection to form.

4 THE WITNESS: The term in -- the term

5 "stake" in this sentence may well be read as a

6 variety of ways in which the company can make

7 money. But again I repeat that this is just one

8 sentence in a variety of disclosures that

9 Wiltshire makes, and multiple disclosures

10 indicate disclosures of many games that are not

11 betting games.

12 BY MR. WILSON:

13 Q. So do you understand the term "stake"

14 in Column 12, line 12, to be the amount that is

15 bet or wagered on a game?

16 MR. WANG: Objection to form. Lacks

17 foundation.

18 THE WITNESS: The term "stake" in this

19 one sentence is one of many different

20 disclosures that Wiltshire makes and wasn't

21 particularly relevant to my analysis of the

22 '109 patent, because Wiltshire discloses many,

1 many games that are not betting games that could
2 be played over the Internet in homes and in many
3 establishments other than in casinos.

4 Therefore, this one sentence and the
5 meaning of the term "stake" is irrelevant to my
6 analysis of the '109 patent.

7 BY MR. WILSON:

8 Q. So are you saying that you don't know
9 what the word "stake" means in Column 12,
10 line 12, of Wiltshire?

11 MR. WANG: Objection to form.
12 Mischaracterizes testimony.

13 THE WITNESS: The term "stake" in this
14 one line was not relevant to my declaration
15 because Wiltshire discloses many, many games
16 that are not casino games that could be played
17 over the Internet at home. Therefore, his
18 description of casino games and stakes was not
19 particularly relevant to my declaration.

20 BY MR. WILSON:

21 Q. Okay. Dr. Fuchs, have you ever been to
22 a casino?

1 A. Yes.

2 Q. How many times?

3 A. Over the years, multiple times.

4 Q. Okay. Have you ever played any
5 gambling games at a casino?

6 A. Yes, sir, I have.

7 Q. Have you played any that occur on a
8 machine, like a slot machine?

9 A. Yes, Mr. Wilson, I have.

10 Q. Were any of them computerized?

11 MR. WANG: Objection to form.

12 THE WITNESS: Yes, sir.

13 BY MR. WILSON:

14 Q. What specifically?

15 A. I think I have played computerized slot
16 machines, all in legal places.

17 Q. Have you ever played video poker at a
18 casino?

19 A. I may have watched one of my friends
20 play video poker.

21 Q. Okay --

22 A. I don't think I've played it myself

1 directly.

2 Q. So you've seen a video poker machine at
3 a casino?

4 A. I believe so.

5 Q. And you've also seen a video slot
6 machine at a casino; correct?

7 A. Yes.

8 Q. And approximately what years were
9 these?

10 A. Approximately they were in years
11 between -- in 19- -- late 1970s and 2019.

12 Q. So perhaps multiple occasions over that
13 time period?

14 A. Yes, sir.

15 Q. Okay. When was the most recent time?

16 A. I think 2019.

17 Q. Okay. In 2019 which of these machines
18 did you see, or did you see both of them?

19 A. To the best of my recollection, I think
20 it was a video slot machine.

21 Q. Okay. Can you describe for me about
22 how by big the video slot machine you played on

1 was?

2 A. I think it was as big as a traditional
3 slot machine. Bigger than a breadbox.

4 Q. Okay. When was the last time -- well,
5 let me back up for a second.

6 When you say as big as a traditional
7 slot machine, what do you mean? You know, about
8 how big?

9 Maybe a foot and a half tall?

10 A. Physically, it looked like an
11 old-fashioned mechanical slot machine, but I
12 suspect the innards were very small.

13 Q. Right.

14 A. I think that it was, you know, a video
15 display made to look like a slot machine with
16 touchscreen buttons. So I couldn't say what the
17 innards were, because it was in a package that
18 was floor-mounted and came up to four feet tall
19 or something like that.

20 Q. Okay. When was the last time you think
21 you saw a video poker machine?

22 A. I may have seen a video poker machine

1 in 2019, but I don't think I played it.

2 Q. Okay.

3 A. I think it was similar in size.

4 Q. Okay. Similar in size.

5 A. Yeah, similar in size in that I
6 think -- it was in a container which was on the
7 floor, but I suspect that since it had a
8 touchscreen, it may have been very compact
9 inside.

10 Q. Okay. So let's take a look -- and I'm
11 going to pass you this exhibit via the chat
12 window.

13 So this is a new exhibit. It's
14 Exhibit 2008.

15 (Whereupon, Exhibit 2008 was
16 marked for identification.)

17 THE WITNESS: I see it.

18 BY MR. WILSON:

19 Q. It's pretty small.

20 A. 2008.

21 Q. Yes.

22 A. "Frameless Rendering."

1 Q. So Exhibit 2008 is an article entitled
2 "Frameless Rendering: Double Buffering
3 Considered Harmful," and it is authored in part
4 by Henry Fuchs.

5 Do you see that?

6 A. Yes.

7 Q. Okay. Have you seen Exhibit 2008
8 before?

9 A. Yes, I'm a co-author.

10 Q. Okay. So you're familiar with
11 Exhibit 2008; correct?

12 A. I have not read it in many years,
13 probably ten or something.

14 Q. Okay. Do you know if this article was
15 published?

16 A. Yes, it was published.

17 Q. Do you know where it was published?

18 A. You probably know more recently.

19 Q. I don't know actually.

20 A. I think it was in an ACM publication.

21 Q. Okay.

22 A. Do you want me to look it up?

1 Oh, you know what? Wait. I think my
2 list of publication is in my declaration. Hold
3 one second.

4 I don't offhand remember. I think it
5 was in an ACM publication.

6 Q. Okay.

7 A. I can look it up. It should be
8 available online.

9 Q. Okay. I did not see this in your list
10 of publications.

11 Did you see it in your list of
12 publications?

13 A. No. It may be an oversight. I'm so
14 sorry.

15 Q. Yeah.

16 A. I'm proud of this paper. I could tell
17 you that I received more comments on the
18 subtitle than almost any paper I have written.

19 This is a humorous homage to a very
20 famous letter that was entitled "Go-To
21 Statements Considered Harmful." And that
22 letter, published by one of the leading computer

1 scientists in the world at the time, Edsger
2 Dijkstra, was the first shot at eliminating the
3 go-to statements in modern languages. He said
4 "Go-To Statements Considered Harmful."

5 So this was an homage to that. It was
6 an oversight that I will try to correct and put
7 into my list of publications. My mother would
8 say I have too many of them to keep track. I'm
9 sorry that I missed that.

10 Q. That's okay.

11 A. But I could tell you more about this
12 paper if you like and what I recall.

13 Q. So -- well, we're going to walk through
14 it a bit.

15 Yeah, I was never a fan of go-to
16 statements either, but I'm not familiar with
17 that article.

18 Okay. So you're familiar with the
19 concept of a double-buffer display in computer
20 graphics; correct?

21 A. Yes.

22 Q. Okay. Double buffering is a display

1 technique that uses two buffers; correct?

2 A. That's correct.

3 Q. In a double-buffered system, when video
4 is displayed on screen, the data on one buffer
5 is being filled while the data in the other
6 buffer is being displayed; correct?

7 A. That's right.

8 Q. Okay. In a double-buffered system the
9 previous image is displayed until the next image
10 is complete; correct?

11 A. That's correct.

12 Q. That's because a double-buffered
13 display updates only after all pixels are
14 computed; correct?

15 A. Generally correct. Not in every case,
16 like in ours, but in general.

17 Q. Right.

18 In a double-buffered display system
19 that's the way it works; correct?

20 A. Yes.

21 Q. Okay. The double-buffered display only
22 switches to the new image after all pixels have

1 been updated; correct?

2 A. In general rule, yes, but not in --

3 Q. In effect -- sorry.

4 A. In general, yes, but not in every case.

5 Q. Okay. In effect, the double-buffer

6 display jumps from frame to frame?

7 A. Again, in general, yes, but not in

8 every case.

9 Q. Okay. Do you see the first page there,
10 the second paragraph of the abstract?

11 A. "We have demonstrated"?

12 Q. Yes.

13 A. Yes.

14 Q. About halfway through that paragraph do
15 you see the sentence that begins "the frameless
16 rendering"?

17 A. Uh-huh.

18 Q. That sentence says, "The frameless
19 rendering display exhibits fluid motion, while
20 the double-buffered display jumps from frame to
21 frame"; correct?

22 A. I see those words, yes.

1 Q. And that's true; correct?

2 A. Yes, I agree with that.

3 Q. All right, now you're also familiar
4 with the concept of frameless rendering in
5 computer graphics; correct?

6 A. Yes.

7 Q. Now, unlike a double-buffered display,
8 which jumps from frame to frame, a frameless
9 rendering display exhibits fluid motion;
10 correct?

11 A. That is certainly the goal.

12 Q. Okay. That's because a frameless
13 rendering display updates pixels as they are
14 computed; correct?

15 A. That's right.

16 Q. A frameless rendering system does not
17 update the display a frame at a time; correct?

18 A. That's correct.

19 Q. All right. So it's the top of the
20 hour. I have one more section here. We can
21 either keep going or take a short break.

22 A. If you only have one more section, I'm

1 okay to keep going if you remember.

2 Q. Okay.

3 A. Sure.

4 Q. All right. Do you have the Chen
5 reference, Exhibit 1006?

6 Do you have a copy of that there?

7 A. Yes, I do.

8 Can you send me a digital copy, please.

9 Q. I certainly can.

10 A. Thank you. Those have been very
11 helpful.

12 Before we get going, Mr. Wilson, I have
13 both the digital copy you sent me and the paper
14 copy that WilmerHale sent me in front of me.

15 Q. Okay. So the actual Chen article
16 begins on page 4 of 8 of Exhibit 1006.

17 Do you see that?

18 A. Yes, I do.

19 Q. And Chen describes asymmetric digital
20 subscriber lines, or ADSL; correct?

21 A. Yes.

22 Q. So Chen discloses that "ADSL is

1 provided on a pair of copper wires over which
2 plain old telephone service is provided";
3 correct?

4 A. Can you say your sentence again,
5 please.

6 Q. Yeah.

7 Chen discloses that "ADSL is provided
8 on a pair of copper wires over which plain old
9 telephone service is provided"; correct?

10 A. I disagree.

11 ADSL is a standard that can have lots
12 of different physical layers. One of them is
13 twisted-pair, but there are many others that are
14 possible.

15 Q. Okay. Take a look at page 5 of
16 Exhibit 1006.

17 And in the left-hand column do you see
18 the paragraph that begins, midway down,
19 "researchers realized"?

20 A. I see those words.

21 Q. Okay. It says, "Researchers realized
22 that for residential applications, a POTS

1 service, where the traditional telephone service
2 can be provided whether the ADSL is on or off,
3 was more practical than ISDN service"; correct?

4 A. I see those words.

5 Q. "POTS" in that sentence refers to
6 "plain old telephone service"; correct?

7 A. That's right.

8 Q. Okay. And Chen also discloses at the
9 very beginning -- go back to page 4.

10 The very first sentence below the
11 abstract says, "Asymmetrical digital subscriber
12 line (ADSL) is one of a variety of digital
13 subscriber line (DSL) systems built upon the
14 existing twisted-pair telephone subscriber loop
15 plan"; correct?

16 A. That's right.

17 Q. Okay. And the twisted-pair telephone
18 subscriber loop plan are copper wires; correct?

19 A. That's right; twisted-pair is.

20 Q. All right. Now, Chen discloses that
21 ADSL provides a downstream bandwidth of 1.44 --
22 sorry. Let me strike that.

1 Chen discloses that ADSL provides a
2 downstream bandwidth of 1.544 megabits per
3 second; correct?

4 A. That's correct.

5 Q. Okay. According to Chen, a single pair
6 of copper wires using ADSL can provide 1.5,
7 roughly, megabits per second of downstream
8 bandwidth; correct?

9 A. That's correct.

10 Q. Okay. In your opinion -- and I'm -- so
11 I'll give you the reference here. The reference
12 I'm looking at is in paragraph 200 of your
13 declaration, if you want to go look at it.

14 A. One second, please.

15 Yeah, so I have in paragraph 200 of my
16 declaration.

17 Q. Okay. So I'm looking at about midway
18 down -- just over midway down through the
19 paragraph 200 on page 88 of your declaration.

20 Do you see that? "As mentioned in
21 Chen."

22 A. "As mentioned in Chen," yes.

1 Q. It says, "A POSITA would understand
2 that an MPEG stream may require rates of at
3 least 1.3 megabits per second (a megabit is
4 approximately a million bits), which is many
5 times greater than the typical 8 or 16 bits per
6 second required for transmitting a user input
7 command"; correct?

8 A. I see those words.

9 Q. All right. And that's a true statement
10 of your opinion; correct?

11 A. Yes. And I said "may require."

12 Q. Yes.

13 Okay. And you cite --

14 A. [Overspoken] "does require."

15 Q. You cite Chen for that proposition.

16 Do you see that?

17 A. I'm sorry. What was your question,
18 please? Do I see what?

19 Q. There in paragraph 200 for that
20 sentence you cite Chen.

21 Do you see that?

22 A. Yes, I see that.

1 Q. Okay. And if we look back at Chen at
2 page 5 of 8, the first full paragraph on that
3 page that begins "the capabilities of ADSL."

4 Do you see that?

5 A. Yes, I see that.

6 Q. Okay. The second sentence in that
7 paragraph is the one you quote.

8 Do you see that?

9 A. I see that. "1.3 megabits per second."

10 Q. Okay. So Chen says, "The CCITT H.261
11 recommendation and the ISO Moving Picture
12 Experts Group (MPEG) recommendation both provide
13 full-motion video at rates of around
14 1.3 megabits per second"; correct?

15 A. That's what the sentence says.

16 Q. Okay. So Chen's ADSL provides enough
17 downstream bandwidth on a single pair of copper
18 wires to transmit a single MPEG compressed video
19 stream; correct?

20 MR. WANG: Objection to form.

21 THE WITNESS: Not exactly. The
22 quotation in this sentence of 1.3 megabits is

1 for full-motion video rates. That is not a
2 requirement for MPEG. MPEG can use all kinds of
3 bandwidth depending on how the source and --
4 source is configured.

5 BY MR. WILSON:

6 Q. Okay. So if the bandwidth requirement
7 is 1.3 megabits per second, then Chen discloses
8 that ADSL can only provide a single MPEG video
9 stream on a single pair of copper wires;
10 correct?

11 A. No. The MPEG sentence that I quote of
12 1.3 megabits per second, explicitly says
13 "provide full-motion video rates," but MPEG is
14 possible and is used many, many times at a small
15 fraction of that. For example, Wiltshire talks
16 about much lower rates and much greater degrees
17 of compression.

18 Q. Okay. The rate that we discussed
19 previously today in Wiltshire is 100 kilobytes
20 per second; correct?

21 And if you're looking for the
22 reference, it's Exhibit 1004, Column 7, lines 62

1 through 64.

2 A. I'm sorry. Say again?

3 The reference -- this is Exhibit 1002.

4 Q. I'm looking at 1004.

5 A. 1004?

6 Q. Yes. The Wiltshire reference,
7 Column 7, lines 62 through 64.

8 A. Can you ask your question again,
9 please, so I can give you my best answer.

10 Q. Sure.

11 Wiltshire discloses that you can reduce
12 a video stream using data compression techniques
13 to about 100 kilobytes per second; correct?

14 A. That's correct. Wiltshire here on
15 Column 7, line 62, says, "This bandwidth
16 requirement can be further reduced using data
17 compression techniques to about 100 kilobytes
18 per second." Exactly right.

19 Q. And 100 kilobytes per second is .8, or
20 eight-tenths, of a megabit per second; correct?

21 A. Yes.

22 Q. Okay. So you can only fit one of

1 Wiltshire's compressed video streams into the
2 downstream bandwidth on an ADSL line for a
3 single pair of copper wires; correct?

4 MR. WANG: Objection to form.

5 THE WITNESS: I disagree.

6 Again, Wiltshire discloses MPEG, and
7 MPEG can be set to all kinds of different
8 bandwidths. This is just one example that he
9 gives.

10 A POSITA would well understand that you
11 could set MPEG to a variety of different rates.

12 BY MR. WILSON:

13 Q. Okay. Are you aware of Wiltshire
14 disclosing any lower rate for a video stream
15 than 100 kilobytes per second?

16 A. I don't remember, sitting here today,
17 whether Wiltshire gives any other numbers than
18 the 100 kilobytes per second, but a POSITA
19 reading this would understand that MPEG could be
20 set to a variety of rates in almost any system.

21 Q. Okay. Let's take a look at
22 paragraph 224 of Exhibit 1002, your declaration.

1 A. I'm sorry. What paragraph, Mr. Wilson?

2 Q. 224.

3 Now, in paragraph 224, the second
4 sentence, you say, "Wiltshire's stated bandwidth
5 requirement may be as low as 100 kilobytes per
6 second"; correct?

7 A. Yes, I see those words.

8 Q. Okay. So if that requirement is what
9 Wiltshire discloses, then you can only fit a
10 single one of those video streams in a single
11 pair of copper wires using ADSL; correct?

12 MR. WANG: Objection to form.

13 THE WITNESS: A person reading
14 Wiltshire and reading his disclosure of MPEGs
15 would understand that his 100 kilobytes per
16 second is a suggestion which could be easily
17 adjusted by adjusting the MPEG and coding
18 parameters.

19 MR. WILSON: Okay. I don't have any
20 further questions.

21 THE WITNESS: Does that mean I can go
22 to lunch?

1 MR. WANG: Actually, can we take a
2 quick break and just make sure I don't have any
3 follow-up questions? Just five minutes?

4 MR. WILSON: Sure.

5 THE WITNESS: Absolutely. That sounds
6 fine. I'll come back in five minutes.

7 MR. WILSON: Yeah, let's go off the
8 record first.

9 THE VIDEOGRAPHER: Okay. The time is
10 12:23 p.m. We are now off the record.

11 (Recess taken.)

12 THE VIDEOGRAPHER: Okay. The time is
13 12:32 p.m. We are now on the record.

14 MR. WANG: So I also have no further
15 questions. I just request that the witness can
16 read and sign the transcript.

17 And thank you for your time, Dr. Fuchs.

18 THE WITNESS: Thank you.

19 MR. WILSON: Thanks, Dr. Fuchs.

20 THE WITNESS: Nice to see you again,
21 Mr. Wilson.

22 MR. WILSON: Nice to see you again.

1 (Discussion held off the record.)

2 THE VIDEOGRAPHER: This concludes
3 today's deposition. The date is August 17,
4 2021. The time is 12:33 p.m. we are now off the
5 record.

6 (At 12:33 p.m. EDT the
7 deposition of HENRY FUCHS, PHD,
8 was adjourned.)

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1 STATE OF CALIFORNIA)
2 COUNTY OF LOS ANGELES) SS.
3

4 I, AUDRA E. CRAMER, CSR No. 9901, in and for the
State of California, do hereby certify:

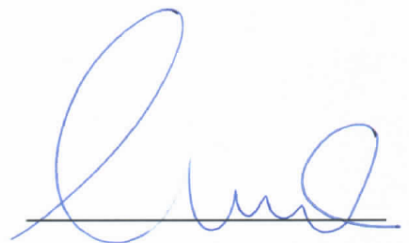
5 That, prior to being examined, the witness named
in the foregoing deposition was by me duly sworn to
6 testify the truth, the whole truth and nothing but the
truth;

7 That said deposition was taken down by me in
shorthand at the time and place therein named, and
8 thereafter reduced to typewriting under my direction,
and the same is a true, correct and complete transcript
9 of said proceedings;

10 I further certify that I am not interested in the
event of the action.

11 Witness my hand this 17th day of August,
12 2021.
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Certified Shorthand
Reporter for the
State of California

1 Henry Fuchs, Ph.D., c/o
WilmerHale, LLP

2 2600 El Camino Real, Suite 400
Palo Alto, California 94306

3

4 Case: Sony Interactive Entertainment, LLC v. Intellectual Pixels Limited
Date of deposition: August 17, 2021

5 Deponent: Henry Fuchs, Ph.D.

6

7 Please be advised that the transcript in the above
8 referenced matter is now complete and ready for signature.
9 The deponent may come to this office to sign the transcript,
10 a copy may be purchased for the witness to review and sign,
11 or the deponent and/or counsel may waive the option of
12 signing. Please advise us of the option selected.

13 Please forward the errata sheet and the original signed
14 signature page to counsel noticing the deposition, noting the
15 applicable time period allowed for such by the governing
16 Rules of Procedure. If you have any questions, please do
17 not hesitate to call our office at (202)-232-0646.

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4 SIGNATURE PAGE

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5 Witness Name: Henry Fuchs, Ph.D.

Deposition Date: August 17, 2021

6

7 I do hereby acknowledge that I have read
and examined the foregoing pages
8 of the transcript of my deposition and that:

9

10 (Check appropriate box):

() The same is a true, correct and
11 complete transcription of the answers given by
me to the questions therein recorded.

12 () Except for the changes noted in the
attached Errata Sheet, the same is a true,
13 correct and complete transcription of the
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6 ERRATA SHEET

7

8 Case: Sony Interactive Entertainment, LLC v. Intellectual Pixels Limited

9 Witness Name: Henry Fuchs, Ph.D.

10 Deposition Date: August 17, 2021

11 Page No. Line No. Change

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