1   UNITED STATES PATENT AND TRADEMARK OFFICE

2   BEFORE THE PATENT TRIAL AND APPEAL BOARD

3   --x

4   META PLATFORMS, INC.,

5   Petitioner,

6   vs.

7   THALES VISIONIX, INC.,

8   Patent Owner.

9   --x

             U.S. PATENT NO. 6,922,632

10   IPR2022-01304

     --x

11   U.S. PATENT NO. 7,725,253

                 IPR2022-01308

12   --x

             U.S. PATENT NO. 6,922,632

13   IPR2022-01305

     --x

14

15

16   REMOTE VIDEOTAPED DEPOSITION BY VIRTUAL ZOOM OF

17   ULRICH NEUMANN, Ph.D.

18   Friday, October 20, 2023

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23   Stenographically Reported By: Lynne Ledanois

24   License No. 6811

25   Job No. 6153681

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13             IPR2022-01305
     ---------------------------------------------------x
14
15        Videotaped deposition of ULRICH NEUMANN,
16   taken in Los Angeles, California, commencing at
17   9:16 a.m., on Friday, October 20, 2023 before
18   LYNNE M. LEDANOIS, Certified Shorthand Reporter
19   No. 6811
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1   Friday, October 20, 2023
2   9:16 a.m.
3   ---
4   EXAMINATION
5   BY MR. GHOSH:
6   Q   Good morning, Dr. Neumann.
7   A   Good morning.
8   Q   I understand that you've been deposed
9   several times before?
10   A   Yes.
11   Q   I won't go through the basic deposition
12 ground rules again, but have you ever been deposed
13 virtually before?
14   A   This is the first time where everyone has
15 been virtual.
16   Q   So just given the vagaries of the Zoom
17 format, please just be careful to wait until I've
18 finished asking a question before starting your
19 answer.
20   Does that make sense?
21   A   Yes, it does.
22   Q   And if you ever have any trouble, given
23 the format, hearing any of my questions, please feel
24 free to ask me to repeat.
25   Does that make sense?

1   A   Absolutely.
2   Q   If you do give an answer, I will assume
3   that you've heard and understood my question.
4   Is that fair?
5   A   I missed the last phrase, could you say it
6   again?
7   Q   That was a test. I'm saying that if you
8   do give an answer, I'll assume that you have heard
9   and understood my question.
10   Is that fair?
11   A   Yes, that's fair.
12   Q   Is there any reason you cannot give
13 truthful or accurate testimony today?
14   A   No.
15   Q   I'm adding to the Exhibit Share what has
16 been previously marked as Exhibit 1003, 1003.
17   Please let me know when you see that.
18   A   I have not logged into the Exhibit Share
19 yet. So let me just do that.
20   Q   Okay.
21   A   This I have not used before.
22   MR. GHOSH: If you want, we can go off the
23 record while you get that set up. Is that okay?
24   THE WITNESS: I'm doing it as we speak.
25 Okay. So I see Exhibit 1003. Is that the one?

1   BY MR. GHOSH:
2   Q   Yes. You're familiar with this exhibit?
3   A   Yes.
4   Q   So and this is the -- if I refer to this
5   as the '253 patent, do you understand what I mean?
6   A   Yes.
7   Q   Can you please scroll down to Column 16 of
8   the patent. Please let me know when you're there.
9   Column 16, Line 20.
10   A   Okay. I see it.
11   Q   Do you see the paragraph starting with,
12 "The PSE drivers 120 provide interfaces to PSE
13 devices 105"?
14   A   I do see that.
15   Q   Can you please read that paragraph to
16 yourself and let me know when you're done.
17   A   Okay.
18   Q   This paragraph is describing an embodiment
19 of the invention of the '253 patent; correct?
20   A   I assume that's correct, yes.
21   Q   And PSE in this paragraph refers to pose
22 sensing elements; is that right?
23   A   I'll take your word for that. I haven't
24 gone back to the definition, but I think that's right.
25   Q   We can go back to the definition quickly.

1   It's in Column 12, Line 50.
2   A   Okay. I'll take your word for it.
3   Q   PSE in the specification of the '253
4   patent also includes sensors; is that right?
5   A   PSE includes sensors; is that the question?
6   Q   Yes.
7   MR. GLUCOFT: Objection, scope.
8   THE WITNESS: I recall that sensors are
9   the topic of this patent and the discussions. I
10 haven't reviewed this patent for this particular
11 session. So I'm trying to do this from memory.
12 BY MR. GHOSH:
13   Q   I assume you reviewed this patent when
14 putting together your supplemental declaration,
15 Exhibit 1038?
16   A   When I put the declaration together, I was
17 addressing specific questions that were put to me.
18 And so I was making opinions about those.
19   Q   Okay. In the process of putting together
20 those opinions, did you refer to the patent at all?
21   A   I don't recall referring specifically to the
22 text of the patent, no.
23   Q   So you did not need to consider the patent
24 in putting together the opinions?
25   A   I had the specific questions as outlined in

1 my declaration and those questions were posed to me.
2   And I used the references that I cited in
3 the declaration. I did not -- excuse me. I didn't
4 review the patents themselves.
5   Q   And I assume you didn't review the patents
6 in putting together your supplemental declaration
7 because you didn't think it was necessary?
8   A   I recall the information sufficiently to
9 form my opinions. I did not need to go back to the
10 patent to read them in detail.
11   Q   So going back to the patent then, I
12 recognize that it may have been awhile, but if you
13 look at -- go back to Column 16, Line 20.
14   A   Mm-hmm.
15   Q   That paragraph there that we were looking
16 at before. The second line in that paragraph,
17 Line 21, says that PSE drivers in this embodiment
18 are software modules; correct?
19   A   Mm-hmm.
20   Q   And then in Line 28, there is a long
21 sentence starting on Line 26 and it says that PSE
22 drivers include, among other things, "data and code
23 needed for computation of the linearized observation
24 matrices, observation noise covariance matrices, and
25 expected sensor measurements and/or innovations as

1 described above."
2   Do you see that?
3   A   I see that, yes.
4   Q   "Code" here refers to software; correct?
5   A   Yes, in this context, that's what it would
6 refer to.
7   Q   And so the computations here that are
8 described in this paragraph are implemented in
9 software; is that correct?
10   (Reporter clarification.)
11   THE WITNESS: I think in the context this
12 is written in, that's the assumption, yes.
13 BY MR. GHOSH:
14   Q   And similarly, if you go back up to
15 Line 21 and 22, it says that "PSE drivers are
16 software modules," and I'm reading again, "which may
17 be written by manufacturers of PSE devices." I'll
18 stop there.
19   Do you see that?
20   A   Yes.
21   Q   And where the patent says "written by
22 manufacturers of PSE devices," the patent is
23 referring to writing these drivers or these software
24 modules in a computer programming language; is that
25 right?

1   A   I would have to assume that that's a
2 possibility, yes.
3   Q   Can you think of any other possibility for
4 how they would be written?
5   A   Software can come in a variety of forms.
6 Manufacturers write software for their devices that
7 are embedded in the devices, sometimes they are not
8 embedded in the devices.
9   I'm just hedging here because this doesn't
10 really tell me much about at what level and it
11 doesn't exclude any particular level, so I'm
12 hesitant to suggest there is only one possible
13 interpretation of this.
14   Q   I appreciate you're being careful. Okay.
15 Yes, I think that's fair then.
16   If you go down a couple more pages to
17 Column 21, the paragraph starting at Line 7, could
18 you please read that paragraph and let me know when
19 you're done.
20   MR. GLUCOFT: You said Column 21 Line 7,
21 Shayon?
22   MR. GHOSH: Yes.
23   THE WITNESS: Okay. Yes.
24 BY MR. GHOSH:
25   Q   I know there is a lot of math --

1   A   There is a lot in there to digest on the fly
2 but okay. Go ahead.
3   Q   So the PSE driver that's referred to here
4 is the same one we were discussing earlier; right?
5   A   I would have to assume so. If they are
6 using the same term, I would have to assume that's
7 what they were referring to.
8   Q   And they are using the same term as well
9 as Number 120 in both instances; right?
10   A   Yes, so that narrows it down even more.
11 Okay.
12   Q   And at Line 16, there is a sentence that
13 starts -- let me just read it, actually.
14   "The PSE driver 120 estimates the
15 predicted measurement z-hat sub st" -- let me stop
16 there.
17   Do you see that?
18   A   Yes.
19   Q   And the z-hat represents the predicted
20 measurement; right?
21   A   Well, that's what it says, yes.
22   Q   And if you go back to Column 16 where we
23 were, that paragraph at Line 31 refers to expected
24 sensor measurements.
25   Do you see that?

1   A   Column 16. Which line are you referring to?
2   Q   Line 30 and 31.
3   A   Okay.
4   Q   And again, so the question is that so the
5 z-hat expected measurement that we were discussing
6 earlier is the same as the -- sorry, the z-hat
7 predicted measurement that we were discussing
8 earlier is the same as the expected sensor
9 measurement described here; is that right?
10   MR. GLUCOFT: Objection, scope.
11   THE WITNESS: You know, I've not reviewed
12 this. This is dense material. I have not reviewed
13 it, as I said, in detail.
14   I hesitate to make absolute statements
15 about something I'm not really prepared to do that
16 for. Sorry, but I would need to read this in more
17 detail to give you a more definitive answer.
18 BY MR. GHOSH:
19   Q   That's fair. I think I can hopefully
20 point you to the relevant portions and we can get
21 there and --
22   A   The document is -- sorry, but the document
23 is large and there is information spread through it.
24 I don't think I can cherry pick components of it and
25 decide on some interpretation without reading the

1 whole thing.
2   Q   Let's try and then --
3   A   Okay.
4   Q   If you go up to Column 15, this is on the
5 same page as Column 16.
6   A   Fifteen, yes. Okay.
7   Q   And starting at Line 18, there is a
8 paragraph starting, "In operation, it is useful to
9 liearize the observation model."
10   Do you see that?
11   A   I do.
12   Q   Let me direct your attention to the
13 next-to-last sentence in that paragraph starting at
14 Line 22.
15   It says, "It is also useful to compute the
16 difference."
17   Do you see that?
18   A   Yes, I see that.
19   Q   In that sentence it refers to the expected
20 measurement based on the estimated pose as z-hat
21 sub IJ.
22   Do you see that?
23   A   I do.
24   Q   And z-hat is the same variable that was
25 used in Column 21 and referred to as a predicted

1 measurement; correct?
2   MR. GLUCOFT: Objection, scope.
3   THE WITNESS: You know, it appears to be
4 the same variable, but again, without reading the
5 document, I hesitate to make definitive statements
6 about this.
7 BY MR. GHOSH:
8   Q   When was the last time you read the
9 specification of the '632 and '253 patents?
10   A   Probably around the time where I made my
11 first declaration and depositions about it. I haven't
12 looked at it since.
13   Q   That's fair.
14   A   Or at least not in detail.
15   (Discussion off the record.)
16 BY MR. GHOSH:
17   Q   Let me turn to your declaration. This is
18 Exhibit 1038.
19   I understand you have a copy in front of
20 you, but for completeness, I'll add it to the
21 Exhibit Share as well.
22   A   Okay.
23   Q   To be clear, this is the supplemental
24 declaration?
25   A   The supplemental declaration, yes, I have

1 that in front of me.
2   Q   Could you please turn to Paragraph 21
3 starting on Page 9.
4   A   Yes.
5   Q   In the last sentence on the bottom of
6 Page 9, you've written, quote, "This selection
7 process is a sequence whose timing needs to be
8 synchronized to the A/D converter."
9   Do you see that?
10   A   Yes.
11   Q   When you say the timing needs to be
12 synchronized, could a clock signal be used for that
13 synchronization?
14   A   I'm sorry, could you repeat that? Could a
15 what signal?
16   Q   A clock signal.
17   A   A "clock signal" is a very generic term.
18 I'm not sure what -- by itself, a clock signal is just
19 a waveform. It doesn't select anything.
20   Q   Right. I'm asking if a clock signal could
21 be used specifically for synchronizing the timing
22 between the multiplexor and the A/D converter?
23   A   As part of a larger -- or as part of a
24 system that does this sequencing and synchronization,
25 yes, a clock signal could be used as part of it. By

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