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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Case No. IPR2024-00543

U.S. Patent No. 10,882,399 B2

TESLA, INC.,

Petitioner,

-v-

iQAR INC.,

Patent Owner.

REMOTE TESTIMONY OF DR. VASSILIOS MORELLAS

OCTOBER 28, 2024 - 11:00 A.M. ET

JOB NO. 2024-961865

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OCTOBER 28, 2024

11:00 A.M. ET

DEPOSITION of DR. VASSILIOS MORELLAS,
before S. Arielle Santos, Certified Court
Reporter, Certified LiveNote Reporter and Notary
Public.

REMOTE APPEARANCES:

COUNSEL FOR PETITIONER:

BY - RYAN CHOWDHURY

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COUNSEL FOR PATENT OWNER:

BY - K. PATRICK HERMAN

ORRICK, HERRINGTON & SUTCLIFFE LLP

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ALSO PRESENT:

AYDALINE GARCIA, Monitor.

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1 DR. VASSILOS MORELLAS, Affirmed, Testifies

2 as Follows:

3 THE WITNESS: I do.

4

5 EXAMINATION

6 BY PATRICK HERMAN:

7 Q Good morning, Doctor.

8 Do you mind stating your name

9 for the record?

10 A My name is Vassilios Morellas.

11 MR. HERMAN: And just to be

12 clear, we are here today in

13 connection with IPR 2024-00543,

14 which is in caption Tesla, Inc.

15 versus iQar, Inc.

16 And this is Patrick Hermann

17 from Orrick Herrington & Sutcliffe

18 here on behalf of patent owner.

19 Counsel for Petitioner, would

20 you like to introduce yourself.

21 RYAN CHOWDHURY: Thank you,

22 Patrick.

1 This is Ryan Chowdhury on
2 behalf of Petitioner Tesla and I
3 am with Fish & Richardson.

4 BY PATRICK HERMAN:

5 Q So good morning again, Doctor.

6 Have you ever been deposed
7 before?

8 A Yes, I have.

9 Q Approximately how many times
10 would you say?

11 A One time in the past.

12 Q So even though you have been
13 deposed one time before, I am going to go
14 through a few basic ground rules just to
15 make sure we are on the same page today
16 and to ensure hopefully that everything
17 goes smoothly.

18 The first, as you can see,
19 there's a court reporter here so it's
20 important because of that, that you
21 respond to my questions verbally so that
22 they can record your testimony as opposed

1 to making hand gestures or nodding. Is
2 that okay?

3 A That's fine.

4 Q It's also important that we try
5 not to talk over each other so that
6 there's a clear record. So I will do my
7 best to wait until you finish answering
8 before asking another question. I also
9 ask you wait until I am done with my
10 question before answering. Is that okay?

11 A That's fine.

12 Q You're also entitled to a
13 question you understand. So if anything
14 I ask today is unclear, please let me
15 know and I will do my best to try to
16 clarify. Otherwise, I will assume we are
17 on the same page. Is that okay?

18 A That's okay.

19 Q Next, I ask you not look at
20 anything during the deposition besides
21 documents that I give to you and if you
22 do look at anything, I ask that you tell

1 me. Is that okay?

2 A That's fine.

3 Q Now do you have anything with
4 you today?

5 A I don't.

6 Q Okay.

7 Next, I ask that you not have
8 any side conversations or use any
9 technology to chat or communicate with
10 anyone during the deposition, unless, of
11 course, there's a family emergency or
12 something like that. Is that okay?

13 A That's okay.

14 Q Now is there anything that would
15 prevent or interfere with your testimony
16 today?

17 A No, there's nothing.

18 Q Okay. So I am going to put in
19 the chat -- maybe just give me a moment a
20 document -- what's been previously marked
21 Exhibit 1003 in IPR 2024-00543.

22 (Previously Marked Exhibit

1 1003 Shown to the Witness.)

2 BY MR. HERMAN:

3 Q If you could obtain and open
4 that for me.

5 A Yes.

6 Q Do you recognize Exhibit 1003?

7 A Yes, this is my declaration.

8 Q And this declaration relates to
9 US Patent No. 10,882,399; is that right?

10 A That is right.

11 Q Now is it okay if I refer to
12 that patent today as the '399 patent?

13 A Yeah, that is fine.

14 Q Now looking at this declaration,
15 sitting here today, is there anything in
16 the declaration that you believe is
17 inaccurate?

18 A No, I don't think so.

19 Q Is there anything in the
20 declaration that you need to, correct?

21 A No.

22 Q If you could turn to me -- if

1 you could turn for me to paragraph 41 of
2 your declaration. I believe that's on
3 labeled page 26, which is also page 26 of
4 the PDF that you have?

5 A 26 of the PDF.

6 Yes, okay, I am here.

7 Q So in paragraph 41, this is part
8 of your declaration discussing the
9 features and operation of a prior art
10 reference to Hongo; is that right?

11 A That is right.

12 Q And Hongo is one of the prior
13 art references that you reviewed,
14 assessed, and discussed in your
15 declaration, correct?

16 A Correct.

17 Q And one of the references that
18 you lined up with the claims of the '399
19 patent, correct?

20 A That is correct.

21 Q In fact, it's the primary
22 reference that you start your analysis

1 with, correct?

2 A Yes.

3 Q Okay.

4 And in this paragraph 41, you're
5 discussing what Hongo's means 140 does;
6 is that right?

7 A Yes.

8 Q And starting at about the second
9 sentence of paragraph 41, you note that,
10 "in a 'trace mode,' means 140 generates
11 data for storage in a driving block DB
12 20," and you have got a parenthetical
13 there that says DB 20 and then there is a
14 cite to Hongo.

15 Do you see that?

16 A Yes, I do.

17 Q Then the paragraph goes on to
18 say, "This is 'accomplished by acquiring
19 position information (current position
20 coordinates r) from GPS 170' and
21 'dividing it into sections approximately
22 every 20 meters in the driving direction

1 on the road being driven...'"

2 Do you see that?

3 A Yes.

4 Q And then the paragraph goes on
5 to say, "The information is stored in
6 driving block DB 20, which 'specifies the
7 block number BKN of a driving block,'
8 along with associated information, such
9 as "block range coordinates (r1, r2) of
10 each driving block'... and other
11 information.

12 Do you see that?

13 A Yes.

14 Q So let's walk through that, one
15 point at a time.

16 As you're expressing here, you
17 read Hongo as having a means 40 [sic]
18 which is generating data for storage in
19 database 20; is that right?

20 A (Reviewing.) Yes.

21 Q And next you note the means 140
22 is acquiring the vehicle's position from

1 GPS 170, correct?

2 A Yes.

3 Q And then, as you put it here in
4 paragraph 41, that that collected
5 position information is divided into
6 sections of approximately 20 meters of
7 roadway.

8 That's what you say here,
9 correct?

10 A Yes.

11 Q And that then, that divided
12 sections of roadway is stored in database
13 20 by the means 140, correct?

14 A Correct.

15 Q So as you read Hongo, some
16 amount of position information is
17 collected via GPS. This collected
18 position information is divided up into
19 20-meter sections, and then it's stored
20 in database 20, correct?

21 A Correct.

22 Q Does that understanding of

1 Hongo's operation underlie your opinions
2 relating to Hongo's teachings with
3 respect to the claims of the '399 patent?

4 A Let me just put a few more
5 words. There are two modes in the Hongo
6 teachings; the trace mode and the play
7 mode. The trace mode work as a training
8 for collecting the data associated with
9 particular blocks of the road. And in
10 the play mode, this information is
11 retrieved so that it can be used by the
12 vehicle being driving on the particular
13 road segment.

14 Q The mode we are talking about
15 here in paragraph 41 is the trace mode,
16 the first mode you referred to, correct?

17 A Correct.

18 Q Okay.

19 And you refer to the trace mode
20 when comparing Hongo to the limitation in
21 the '399 patent's claims that require
22 determining a segment of a vehicle route,

1 correct?

2 A In the '399 patent, the
3 definition of a route is one or more
4 segments. So in this case, a block -- a
5 block of road on the Hongo means also
6 route.

7 Q So this discussion, this
8 operation of Hongo that you described in
9 paragraph 41, this is important for, in
10 your view, teaching at least some of what
11 the '399 patent's claim required, just
12 not all of it; is that correct?

13 RYAN CHOWDHURY: Objection.
14 Mischaracterizes his testimony.

15 You can go ahead and answer.

16 THE WITNESS: So the
17 importance of this block is that
18 it works as a historical database,
19 and this information is pulled by
20 keying the current location of the
21 vehicle on the road so that this
22 information can be used to

1 optimize the power that is given
2 to the vehicle to drive on the
3 road, given the particular
4 location and some other
5 environmental conditions and so
6 on.

7 BY PATRICK HERMAN:

8 Q In your understanding of Hongo,
9 Hongo is collecting GPS positions, then
10 dividing those collected GPS positions up
11 into 20-meter sections, and those
12 sections are stored as historical data,
13 correct?

14 A Yeah. I mean, there's a block
15 that is for every block there is an
16 associated location information. Is that
17 what you mean?

18 Q Yes. And that location
19 information came from the GPS in Hongo,
20 correct?

21 A Correct.

22 Q Now, can we turn down to

1 paragraph 96. That's on page 57 of the
2 PDF?

3 A Yes, I am here.

4 Q And it continues on to page 58.

5 A Yes.

6 Q So this portion of your
7 declaration, you're discussing why, in
8 your view, Hongo teaches, "determining a
9 segment of a vehicle route" as Claim 1 of
10 the '399 patent requires; is that right?

11 A Yep.

12 Q And in the paragraphs starting
13 at 96 and down to about paragraph 98,
14 you're pointing to operations performed
15 by Hongo's means 140 again; is that
16 right?

17 A Yeah. This is part of the trace
18 mode.

19 Q And means 140 is the component
20 in Hongo that performs the trace mode,
21 correct?

22 A Yeah. Like I said, earlier, the

1 trace mode is the process by which
2 historical information is extracted to be
3 used later on in the play mode.

4 Q But in this particular section
5 of your report that spans paragraphs 96
6 through 98, the component whose
7 operations you're discussing is means
8 140, correct?

9 A No, that's not correct. What I
10 am saying is that both trace mode and
11 play mode are needed in order to the
12 Hongo vehicle to operate. So both trace
13 mode and play mode are required by Hongo.

14 Q So my question is not whether
15 both are required by Hongo.

16 My question is, in paragraphs 96
17 through 98, this section of your report,
18 you discuss operation of means 140,
19 correct?

20 A (Reviewing.) Yeah. On 96
21 paragraph, I am saying that the block 140
22 is used to acquire positioning

1 information from the GPS system.

2 Q Now starting at about -- so also
3 in paragraph 96, you note the means 140
4 divides the position information it
5 collects into blocks approximately every
6 20 meters in the driving direction of the
7 road.

8 Do you see that?

9 A Yes, I do.

10 Q And that's what you're
11 identifying as the segments that Claim 1
12 of the '399 patent requires, correct?

13 A That is correct.

14 Q So the blocks of 20 meters of
15 position information that are generated
16 by dividing what the GPS 170 is collected
17 into sections, correct?

18 A The blocks that are defined by
19 Hongo, yeah, I map them as the segments
20 that you are referring to in the '399
21 patent.

22 Q So essentially, the division of

1 the GPS 170 collected information into
2 20-meter long sections, correct?

3 A That's what the Hongo patent
4 says.

5 Q Now, in arriving at your
6 opinions regarding Hongo, did you
7 consider that the knowledge and
8 perspective of a person having ordinary
9 skill in the art as of '399 patent's
10 filing date?

11 A Could you repeat your question
12 again, please.

13 Q Sure.

14 So in arriving at your opinions
15 regarding what Hongo teaches, did you
16 consider the knowledge and perspective
17 possessed by one of ordinary skill in the
18 art as of the '399 patent's filing?

19 A Yes, I did.

20 Q And you employed November 2005
21 for purposes of your opinions, as the
22 patent's filing date, correct?

1 A That is correct.

2 Q Now in 2005, what sort of
3 positional accuracy was possible with a
4 car-based GPS system?

5 A Since I have used GPS way before
6 that date, I could verify that the
7 accuracy from GPS system that I was
8 getting by using the differential GPS
9 could be in the order of a few
10 centimeters.

11 Q So a typical commercial GPS
12 system, would it be that accurate?

13 A Would be accurate to the 1-meter
14 range, maybe 2-meter range.

15 Q So best case scenario of a
16 commercial GPS system would be accurate,
17 in your view, to the 1- to 2-meter range
18 system?

19 A If I -- if my recollection is
20 correct. Yes, about 1 meter, I would
21 say.

22 Q Now in 2005, what was the

1 typical sampling frequency of a car-based
2 GPS system?

3 RYAN CHOWDHURY: Objection.
4 Scope.

5 THE WITNESS: The pulling of
6 data, it's available. It would be
7 basically adapted according to the
8 needs of the application.

9 BY PATRICK HERMAN:

10 Q Would a typical sampling
11 frequency be on the order of 1 hertz in
12 the 2005 time period.

13 A I cannot accept or deny it. I
14 -- I do not recollect about the
15 frequency.

16 Q So that's not something that you
17 considered in advance when arriving at
18 your opinions; is that correct?

19 A I think that for the purposes of
20 this patent, the frequency which GPS
21 information is gathered, would be
22 consistent with the 20-meter block --

1 blocks that the -- Hongo basically puts
2 forward.

3 Q But in arriving at your
4 opinions, you did not specifically gather
5 papers or patents discussing the typical
6 sampling frequency available in 2005; is
7 that correct?

8 A Given my experience working with
9 GPS data, I don't think this was a factor
10 in my investigation.

11 Q Let's turn back to paragraph 96,
12 again.

13 This is a portion of your
14 declaration discussing operation of
15 Hongo's means 140; is that right?

16 A Yes, I am here.

17 Q And if you turn to pages 58 and
18 59 which include paragraphs 57 -- sorry,
19 97.

20 A Hm-hm.

21 Q You reproduced Figure 2 from the
22 translation of Hongo as part of your

1 discussion; is that right?

2 A That is right.

3 Q And again, the figure that's
4 shown here is the figure from an English
5 language translation of Hongo, correct?

6 A Correct.

7 Q And it's a translation because
8 Hongo actually published in Japanese
9 because it's a Japanese patent
10 publication; is that right?

11 A That is right.

12 Q Okay.

13 So I am going to put in the
14 chat both Exhibit 1005, which is
15 the translation of Hongo, and
16 1007, which is the Japanese
17 publication of Hongo.

18 Let me know when you've got
19 both of those.

20 A Okay.

21 (Previously Marked Exhibits
22 1005 and 1007 Shown to the

1 Witness.)

2 BY MR. HERMAN:

3 Q Now 1005, is the translation of
4 Hongo that you reviewed in connection
5 with your declaration, correct?

6 A Correct.

7 Q And 1007, is the original
8 Japanese publication on which that
9 translation appears to be based; is that
10 right?

11 A I can see it, yeah.

12 Q Now, if you can open up
13 Exhibit 1007, the Japanese language
14 version of it.

15 A Yes.

16 Q Since I don't read Japanese and
17 I don't know if you do -- do you read
18 Japanese?

19 A No, I don't.

20 Q Let's direct our attention to
21 the figures, and in particular, Figure 2
22 which is on page 10 of the PDF.

1 A Yes, I am here.

2 Q So Figure 2 is the Japanese
3 version of the translated version of
4 Figure 2 that appears in your
5 declaration, the untranslated version.

6 I think I got it backwards. Let
7 me -- let me try --

8 A Are you referring to page 10 now
9 or?

10 Q Yes. So if you look at page 10
11 of Exhibit 1007, there's a figure that's
12 labeled 2 in the upper right of the page.

13 Do you see that?

14 A Yes, I can see the 2.

15 Q And that Figure 2 is the
16 Japanese language version of the
17 translated Figure 2 that appears in
18 paragraph 97 of your declaration,
19 correct?

20 A I suppose because -- yeah, this
21 is -- I use the English translation for
22 the figure.

1 Q Now looking at Figure 2 in
2 Exhibit 1007, means 140 in that figure is
3 shown as receiving various inputs,
4 correct?

5 A Yes.

6 Q And we can tell that means 140
7 is receiving various inputs because there
8 are arrows going into means 140, correct?

9 A Yes.

10 Q So there are four arrows that
11 are going into means 140, true?

12 A Yes.

13 Q There's an arrow that comes in
14 from a box that's labeled 170.

15 See that?

16 A I see that, yep.

17 Q 170 is the GPS in Hongo,
18 correct?

19 A Correct.

20 Q It's providing a position
21 coordinate r to means 140, true?

22 A Yes.

1 Q And there's a box 120 that's
2 also providing input to means 140,
3 correct?

4 A Correct.

5 Q And that's a variable X.
6 Do you see that?

7 A I see that, yep.

8 Q That's -- element 120 is what
9 Hongo calls the environmental information
10 acquisition means.

11 Did I get that right?

12 A Yes.

13 Q And essentially, input that's
14 being provided is the current
15 environmental information input, like,
16 whether it's sunny or raining or
17 something like that, correct?

18 A Yes.

19 Q Element 180 is providing an
20 input V to means 140, correct?

21 A Yes.

22 Q And 180, that's Hongo's vehicle

1 speed sensor, true?

2 A Yes.

3 Q So it's providing a speed --
4 speed input to element 140, right?

5 A Yes.

6 Q You could tell all those inputs
7 are being provided to 140 because there
8 are arrows going from boxes 170, 120, and
9 180 into means 140, correct?

10 A Yes.

11 Q Now, the figure in Exhibit 1007
12 also shows the input of r1, r2, and BKN
13 from database 20 to means 140, true?

14 A True.

15 Q So positions r1 and r2 and the
16 BKN that's received by element 140, are
17 not generated by the means 140 itself,
18 correct?

19 A This is the information. These
20 are the keys that are being used in order
21 to search the database to get the
22 relevant data for the block number.

1 Q Those r1, r2 are not coming from
2 GPS 170. Instead, they are coming from
3 database 20, correct?

4 A (Reviewing.) Below there is
5 170 -- you can see 170 below, the same
6 figure that uses the current positional
7 information to query the database to get
8 the respective information about the
9 block number.

10 Do you see that?

11 Q So now you're talking about the
12 bottom part of Figure 2; is that correct?

13 A Yes. That's how, in the play
14 mode, the information is retrieved from
15 the database.

16 Q But still the output of 170,
17 there is just indicated by r, correct?

18 A The output of 170, yeah, is the
19 GPS information, yes.

20 Q And that's indicated in the
21 figure by the variable r, correct?

22 A Yes, which appears in both the

1 trace mode and the play mode.

2 Q Now, the different variables r1
3 and r2, the only place those are
4 indicated as coming from are database 20
5 in Figure 2, correct?

6 A Yes.

7 Q And those r1 and r2 then are
8 not, in fact, generated by GPS 170,
9 correct?

10 A (Reviewing.)

11 Okay. The r1 position is
12 basically the current position of the
13 vehicle, which is matched against the
14 database that the historical information
15 to find matches.

16 Q That's how you think -- that's
17 how you think Hongo is operating, the
18 collected r from 170 is exactly equal
19 from the r1 from database 20?

20 A The way that the system operates
21 is based on the current positional
22 information coming from the GPS, this is

1 used as a key to search the database and
2 find the corresponding information for
3 the particular segment, and this
4 information is pulled and is used for
5 adjusting the hour and the speed.

6 Q So you are saying that that
7 position r collected by the GPS, which is
8 a single point, can be anywhere within
9 the range r1 through r2 that's provided
10 back from database 20?

11 A Yes, there is a matching
12 process.

13 Q So r is a single GPS position
14 collected point, correct?

15 A Yes. GPS is a positional
16 information of the vehicle.

17 Q And then that is then used to
18 query database 20, correct?

19 A It uses the -- yes, the database
20 to retrieve the information.

21 Q And r, the single point, just
22 has to be somewhere within the range, the

1 block range, the coordinates reflected by
2 r1 through r2, correct?

3 A Adjust the current position of
4 the vehicle. It doesn't have to be. It
5 may not be a match. The match -- yes,
6 there is -- there is an attributable
7 information. Otherwise, there are two
8 formulas that Hongo uses to come up with
9 the estimate of the appropriate
10 vehicle -- targets -- target vehicle
11 speed.

12 Q All right. So r is the current
13 position of the vehicle. And that's used
14 then to match whatever data -- whatever
15 data is stored in database 20, correct?

16 A That is correct.

17 Q All right. Now, looking back at
18 Figure 2, Figure 2 shows output coming
19 from means 140; is that right?

20 A Yes.

21 Q And that output is indicated as
22 going from means 140 to database 10,

1 correct?

2 A That is correct.

3 Q So whatever is being output by
4 means 140 is stored in database 10, true?

5 A Yeah, database 10 stores the
6 historical information.

7 Q And for instance, the form of
8 that data may be as shown in Figure 3 of
9 Hongo, correct?

10 A Could you please repeat the
11 question again.

12 Q The form of the information
13 that's stored, the historical information
14 stored in database 10, it's as shown in
15 Figure 3 of Hongo, correct?

16 A (Reviewing.) I cannot see
17 Figure 3 of Hongo. I see 1, 2, 4, and 7.

18 Q 3 is on the next page.

19 A (Reviewing.) Yes, this is a
20 typical record of the blocks that are
21 being recorded.

22 Q Now, one of the things that's

1 stored in that block are the block range
2 coordinates r1, r2.

3 See that?

4 A I see that.

5 Q And we saw that that came from
6 database 20, correct?

7 A This is what is stored in
8 database.

9 Q So not actually collected by the
10 GPS 170, true?

11 A No, this is -- this -- these
12 coordinates are collected by GPS.

13 Q And that's how you understand
14 Hongo r1 through r2 are, in fact,
15 collected by GPS?

16 A That's what Hongo says, yes.
17 And that's how it divides the road into
18 those segments.

19 Q And it's that understanding of
20 Hongo that underlies your opinions in
21 this proceeding, correct?

22 A Like I said, the blocks that are

1 produced by Hongo is the GPS coordinates
2 for the respective -- for the respective
3 block, along with all this other type of
4 information.

5 Q And it's your view that those
6 coordinates, r1 through r2, are collected
7 by Hongo's GPS 170, true?

8 A That's what I believe.

9 Q Now, if we look back at Figure
10 2, Figure 2 does not show any output from
11 means 140 to database 20, correct?

12 A Actually, database 10 and 20 --
13 the database 10 is recording the driving
14 history.

15 Q So Figure 2 does show output
16 from means 140 to database 10, correct?

17 A That's how -- that's how the
18 database 10 is populated, by using
19 information coming from block 140.

20 Q But Figure 2 does not show any
21 output coming from means 140 to database
22 20, correct?

1 A Because the 10 and the 20, they
2 share the same information.

3 Q But they are depicted as
4 separate databases in Figure 2, true?

5 A Could you please repeat that
6 again.

7 Q In Figure 2, databases 10 and 20
8 are depicted as different data bases,
9 correct?

10 A They -- yeah, they have
11 different instances of this.

12 Q And they are both indicated
13 as -- or depicted as receiving different
14 inputs and generating different outputs,
15 correct?

16 A (Reviewing.) No, the database
17 20 is a database that is used to specify
18 the block number of this driving block.

19 Q In Figure 2, database 20 is only
20 shown as generating output. There is no
21 indication that it receives input from
22 anywhere, correct?

1 A (Reviewing.) Okay. Let me just
2 read -- rephrase. The database 10 is the
3 database that is used to collect data and
4 make the development of the -- of the
5 blocks comes into database 20. That's
6 where the block number information is
7 recorded. So the database 10 is just a
8 way of collecting the historical data.

9 Q So my question is, there's no
10 indication in Figure 2 that any input is
11 being provided by any component to
12 database 20; is that true?

13 A No, this -- this share the same
14 -- database 10 and 20 share similar
15 information. That's why they are in the
16 same dotted line level in the figure.

17 Q So is it your understanding of
18 Hongo that database 20 is storing data
19 like that shown in Figure 3 of Hongo?

20 A Yeah. That's why you can see
21 the database 10, it has this block number
22 information that comes down to the play

1 mode, where the GPS information r is used
2 to retrieve information about the
3 particular block.

4 Q So in your view, database 20 is
5 storing the same information that's shown
6 in Figure 3.

7 Is that how you understand
8 Hongo?

9 A (Reviewing.) The way I
10 understand these two different blocks,
11 they share the same information.
12 However, the database block 10 -- the
13 database block 20 is a database that is
14 used to specify the block number of this
15 driving block, which is incorporates the
16 block range coordinates, the r1 and r2
17 for this driving block, the legal speed
18 limits of the driving block, the minimum
19 radius of curvature and so on.

20 So -- and the database 10 is
21 another database that records the driving
22 history.

1 Q Now, in that driving history, is
2 it your view that the vehicle will
3 necessarily have traversed point r1?

4 A Like I said, the current
5 positional information of the vehicle has
6 been used as a key to query the database
7 to find if there is an available block
8 that matches this information. If it
9 does, then you retrieve this information
10 and make the adjustment -- adjustments in
11 the speed. If not, then there are other
12 ways coming up with target speeds for the
13 vehicle.

14 Q So my question was, does the
15 vehicle ever necessarily have to have
16 traversed point r1 or point r2, or can it
17 just be somewhere between r1 and r2?

18 A This is relevant because the
19 matches when you search the database with
20 a key, chances are either are going to
21 have a match. And in this case, for
22 example, if there is a match with a block

1 number and some road environmental
2 parameters, then you retrieve this
3 information.

4 Otherwise, there are other means
5 that are explained in Hongo of how to
6 come up with appropriate target speeds.

7 Q So I think you said that if the
8 block number that corresponds to the
9 vehicle's current position, like its X
10 and Y coordinate in space, matches the
11 block number of a stored position, then
12 you control the speed; is that correct?

13 A If there is a matching record,
14 yes, the information is retrieved.
15 Otherwise, there are different ways of
16 adjusting of getting a target speed for
17 the particular part of the road.

18 Q And how Hongo's doing that map
19 is it's collecting a single coordinate r
20 from GPS 170, true?

21 A Yeah. As you can see in the
22 play mode, there is the r from GPS coming

1 and it's used as key along with key
2 information X.

3 Q So what Hongo is trying to do is
4 determine whether for where the vehicle
5 is at a particular point in time, whether
6 it has stored data for that particular
7 point that matches the conditions at the
8 point that you just collected; is that
9 correct?

10 A Yes, continuously matches those
11 positions, yes.

12 Q Now, does Hongo system ever make
13 a determination about where the vehicle
14 is going?

15 A For Hongo, a segment or a block,
16 has a beginning and an end. So there is
17 this intermediate destination at the end
18 of the block.

19 Q But the position coordinate that
20 170 is collecting is just the single
21 point, true?

22 A The positional information, yes.

1 Q Now, does Hongo ever determine
2 that the vehicle is actually going to the
3 end of the block?

4 A Yes. Because it has the range
5 of the coordinates of the block r1 and
6 r2. r1 is the beginning, r2 is the end
7 of the block.

8 Q Does Hongo's system ever make a
9 determination that the vehicle is
10 actually going to r2?

11 A This is irrelevant because
12 driving on 20-meter segment, this is the
13 destination, the intermediate destination
14 of the driver.

15 Q So the vehicle could turn over
16 the course of 20 meters, correct?

17 A This is relevant because --
18 because this information, the curvature
19 information, would be part of the
20 information that we get from the
21 database, if there is some kind of a
22 curvature.

1 Q Now, if the vehicle's traveling
2 along a 20-meter stretch of roadway, and
3 in the middle of that 20-meter stretch,
4 turns, it wouldn't reach the end in
5 20 meters, correct?

6 A That would possibly be a case.
7 Although very farfetched. But if -- if I
8 am driving on a road segment, and all of
9 a sudden I try to turn my vehicle, then
10 apparently, yeah, this road -- road --
11 block is going to be traversed wholly.

12 Q So let's see if we can give an
13 example that's kind of contextually
14 relevant to where I am.

15 My office is in New York City.
16 So imagine for me that a block stored in
17 database 20 has a range of coordinates
18 spanning 20 meters of roadway going north
19 on Sixth Avenue.

20 You know that New York City has
21 avenues that go north and south and roads
22 that go -- or streets that go east and

1 west.

2 Does that make sense to you?

3 A Yes.

4 Q So imagine a range of
5 coordinates spanning 20 meters of roadway
6 going north on Sixth Avenue. And assume
7 for me that this 20 meters of roadway
8 includes the point where Sixth Avenue
9 crosses West 50th Street.

10 Can you do that for me?

11 RYAN CHOWDHURY: Objection.

12 Calls for speculation.

13 You can go ahead and answer.

14 THE WITNESS: Well, like I
15 said, earlier, if -- if -- if you
16 have not finished the end of the
17 block and you are making a
18 different turn, your current GPS
19 location will be used in order to
20 retrieve another block from the
21 database and then now that you
22 have switched blocks, new

1 information will be retrieved from
2 the database and new target speed
3 will be used. That's what Hongo
4 teaches you.

5 BY PATRICK HERMAN:

6 Q So if the vehicle's traveling
7 north along Sixth Avenue, arrives in the
8 block that I talked about, Hongo's system
9 will say you are in the block going north
10 on Sixth Avenue spanning 50 street,
11 correct?

12 A Go on, yes.

13 Q And it will do so, even if I
14 turned onto West 50th Street in the
15 middle of that block and never make it to
16 the end of the block, correct?

17 A No, that is not correct.
18 Because like I said earlier, once you're
19 changing position that doesn't correspond
20 to the block that you were before, then
21 this new positional information will be
22 used to retrieve a new block from the

1 database and adjust your speed according
2 to the information that exists in this
3 new record that you retrieve.

4 Q So what you are saying is, yes,
5 Hongo will say that I am on the block on
6 Sixth Avenue going north that spans 50th
7 Street; it will say, yes, I am in that
8 block.

9 And then will change to a
10 different block when I turn on to West
11 50th Street, correct?

12 A Yes. The -- Hongo continuously
13 tries to match your GPS location with
14 existing blocks in the database.

15 Q And it will do that -- it will
16 make the determination that I am in that
17 block on Sixth Avenue that spans 50 --
18 50th Street, even though I never make it
19 to the end of the block on Sixth Avenue
20 that spans 50th Street.

21 In the middle it changes to a
22 different block, correct?

1 A Well, the proper -- for the
2 features of having historical information
3 records basically the habits of the
4 driver. And if -- if that's the case,
5 then like I said earlier, there may be
6 other records that will be consistent
7 with a new positional information that
8 you decided to change.

9 Q Because what Hongo is interested
10 in is where the vehicle is, correct?

11 A What Hongo does is that you
12 match your current position information
13 with existing historical information that
14 it can be retrieved from the database and
15 continuously adjust the speed -- target
16 speed requirements based on the
17 historical information that exists in the
18 database.

19 Q And in Hongo, whether the
20 vehicle actually ever reaches the end of
21 the block coordinate range, that r2, is
22 completely irrelevant for Hongo purposes,

1 correct?

2 A It doesn't really matter because
3 it depends on the driving habits of the
4 person that is driving the vehicle.

5 Q So in other words, Hongo does
6 not care whether it reaches the end of
7 the block range coordinates, true?

8 A It doesn't. But given the fact
9 that the blocks are 20-meter blocks, then
10 most of the time the target destination
11 that was associated with a particular
12 block will be at least most of the times.

13 Q So the blocks are just how Hongo
14 has chopped the road up, it has nothing
15 to do with where the vehicle is actually
16 going, correct?

17 A Actually, there are -- are you
18 referring to particular claim of the '399
19 patent? Because now you are routing to a
20 destination that has a much broader
21 interpretation.

22 Q So does Hongo itself ever use

1 the word "destination"?

2 A Like I said earlier, for
3 Hongo's, the destination is the
4 intermediate destination which happened
5 to be the end of a particular block that
6 the vehicle is driving on.

7 Q I think you said Hongo doesn't
8 care if the vehicle ever reaches that
9 particular point. It will switch to a
10 different block if the vehicle changes
11 the path it's traveling on, correct?

12 A This may be the case.

13 Q Now, if you could go back to
14 your declaration, and if we could turn to
15 paragraph 119.

16 A 119 you said?

17 Q Yes, which I believe is on page
18 74 of the PDF of your declaration.

19 A (Reviewing.) Yes, I am here.

20 Q So this portion of your
21 declaration is discussing another
22 different limitation in Claim 1 of the

1 '399 patent; is that right?

2 A Yes.

3 Q And the limitation that you are
4 discussing beginning at paragraph 119, is
5 the one in Claim 1 that requires applying
6 calculated electric power to the vehicle
7 to travel along the segment of the
8 vehicle route at a calculated speed; is
9 that right?

10 A Yes.

11 Q So this is a different step in
12 the method of Claim 1, from the step that
13 requires determining a segment of the
14 vehicle route, correct?

15 A Yeah. This happened after the
16 segment has been selected.

17 Q And the discussion here goes
18 through about paragraph 130, I think.

19 A (Reviewing.) Yeah.

20 Q Now, in paragraph 120, you
21 explain that, "As to calculated speed,
22 the data flow depicted in Hongo's Figure

1 2" -- I am going to skip some words -- at
2 the end of that you say "...means 140 and
3 unit 110 operate in conjunction to
4 calculate 'a target vehicle speed V0.'"

5 Do you see that?

6 A I do.

7 Q Now, you point to means 140 as
8 the portion of Hongo that determines the
9 segment of the vehicle route.

10 I think you talked about that;
11 is that right?

12 A Yes.

13 Q And it's the unit 110 that you
14 reference here that is responsible in
15 Hongo for the power and speed
16 calculations in your view; is that right?

17 A That is correct.

18 Q Now, means 140 operates during
19 what Hongo calls trace mode; is that
20 true?

21 A 140, yes.

22 Q And unit 110 operates during

1 what Hongo calls play mode; is that
2 right?

3 A That is right, yes.

4 Q And if you look back at 1005,
5 that's the translation of Hongo and
6 Figure 2 in particular.

7 A Just a second, this version you
8 mean or the --

9 Q The translated version.

10 A Translated version.

11 (Reviewing.) Yes.

12 Q So in that figure, there's kind
13 of a dotted line that goes through the
14 middle of the figure. And the top part
15 of the figure is labeled trace mode and
16 bottom of the figure below the dotted
17 line is labeled play mode.

18 Do you see that?

19 A Yes.

20 Q And the driving history
21 recording means 140 appears on the side
22 of the figure labeled trace mode.

1 A (Reviewing.) Yes.

2 Q And the unit 110 appears on the
3 side of the figure labeled play mode,
4 correct?

5 A Yes.

6 Q Now, if you could turn back to
7 paragraph 26 of this Exhibit 1005, the
8 translation of Hongo.

9 A Which one?

10 Q Paragraph 26, on about page 6 of
11 the PDF in the upper left corner.

12 A Yep, I am here. Yep.

13 Q About middle of that paragraph,
14 there's a sentence that begins, "The
15 trace mode is..."

16 A (Reviewing.) Yes, I do see
17 that.

18 Q That sentence goes on to say,
19 "The trace mode is a dedicated mode for
20 constructing the driving history DB 10."

21 See that?

22 A Yes.

1 Q And then there's a semicolon
2 kind of in the middle of that sentence.

3 See that?

4 A Yes, I do.

5 Q And after the semicolon, Hongo
6 says, "While this trace mode is being
7 implemented, the target vehicle speed V0
8 is not output and the above mentioned ACC
9 system.

10 Is not used, see that?

11 A I do.

12 Q So what Hongo is expressing here
13 is that when means 140 operates to
14 generate the blocks of historical data,
15 the ACC system is not in operation and is
16 not controlling the vehicle speed,
17 correct?

18 A In the trace mode, no; but in
19 the play mode, yes.

20 Q So the trace mode happens at one
21 time, and the play mode happens at
22 another different time, correct?

1 A Yes.

2 Q So means 140 and means 110 are
3 not operating at the same time.

4 They are operating at different
5 times in different modes, correct?

6 A No, that is not correct.
7 Because you need information to use in
8 the play mode that is coming from the
9 data that were being collected by the
10 trace mode.

11 Q So essentially, what happens is
12 the trace mode operates for some period
13 of time and generates data, correct?

14 A It generates data, correct.
15 Yes.

16 Q And then the trace mode stops,
17 correct?

18 A (Reviewing.) I wouldn't say
19 that it stops.

20 For example, for places that the
21 vehicle has not been driven before, the
22 trace mode can still operate to collect

1 new data and report it to the database.

2 Q And says here in paragraph 26
3 that when the trace mode is collecting
4 data for storage in database 10, that the
5 ACC system is not used.

6 So Hongo is saying it does not
7 both control vehicle speed and collect
8 historical data at the same time, true?

9 A Well, the trace mode has not
10 been used by the automatic cruise
11 control. But it can operate in the
12 background collected data and populate in
13 the database.

14 Q But that's actually --

15 A But in the play mode is what all
16 this information is pulled out of the
17 database that's been used by the system
18 to apply the appropriate power.

19 Q So it's your understanding of
20 Hongo that the trace mode is operating in
21 the background when Hongo is controlling
22 vehicle speed.

1 Is that how you're understanding
2 Hongo?

3 A It could operate in this mode as
4 well.

5 Q And it's your view, even though
6 that is the case, even though Hongo says
7 the above mentioned ACC system is not
8 used while this trace mode is being
9 implemented; is that right?

10 A (Reviewing.) Yes.

11 Q Now, if you could look back at
12 Figure 2 of Exhibit 1005.

13 A Yes.

14 Q Let me know when you're there.

15 A Yes, I am here.

16 Q If you see all the way down at
17 the bottom of Figure 2, there's a little
18 circle with the abbreviation V0 in it,
19 and the translation says that's target
20 vehicle speed.

21 Do you see that?

22 A I do.

1 Q So that is the output of unit
2 110, a target vehicle speed, correct?

3 A Correct.

4 Q Now, in this figure, in Figure
5 2, that is the only thing that's
6 indicated as being output from unit 110,
7 the target vehicle speed, correct?

8 A Yes.

9 Q So there's no indication in
10 Figure 2 that unit 110 is outputting
11 power, correct?

12 A Actually, power is a function of
13 the speed. So it's equivalent.

14 Q But it's not being output by
15 unit 110, correct?

16 A It doesn't matter. The target
17 vehicle speed is used to derive power,
18 the appropriate power.

19 Q So --

20 A Power is a dependent variable on
21 speed, it's not independent.

22 Q But unit 110 is not determining

1 the correlation between the two, correct?

2 It's just outputting speed?

3 A But this is a non-physical
4 principle, that power is dependent on
5 speed. It doesn't have to.

6 Q But my question is whether power
7 is being output, a power value.

8 Is there a power value that's
9 being output separately from the speed by
10 unit 110?

11 A Like I said earlier, the speed
12 is what determines how much power you
13 need to apply to the engine to achieve
14 that target speed.

15 Q But the only thing that's being
16 output by unit 110 is the target vehicle
17 speed, correct?

18 A This is what is -- what Figure 2
19 says.

20 MR. HERMAN: Okay.

21 I don't have any further
22 questions.

1 THE REPORTER: Do you have
2 questions?

3 RYAN CHOWDHURY: I don't
4 think we have any further
5 questions either.

6 PATRICK HERMAN: With that
7 hopefully relatively painless, and
8 I think you're done for the day.

9 Thank you for your time
10 today, Doctor.

11 THE WITNESS: Thank you very
12 much for your questions as well.

13 (Whereupon Testimony Concluded at 12:03
14 p.m. ET.)

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A C K N O W L E D G E M E N T

STATE OF _____

COUNTY OF _____

I, the undersigned, hereby
certify that I have read the transcript
of my testimony taken under oath in my
deposition; that the transcript is a true
and complete and correct record of my
testimony, and that the answers on the
record as given by me are true and
correct.

DR. VASSILIOS MORELLAS

Signed and subscribed to before
me this _____ day of _____,
20__.

Notary Public

1 I, S. Arielle Santos, CSR, CLR, do
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3 That prior to being examined, the witness named
4 in the forgoing deposition, was by me duly
5 affirmed remotely under order SC of FL No.
6 AOSC20-23 Amendment 4 (II)(C)(2) to testify the
7 truth, the whole truth, and nothing but the
8 truth.

9 That said deposition was taken before me at the
10 time and place set forth and was taken down by
11 me in shorthand and thereafter reduced to
12 computerized transcription under my direction
13 and supervision, and I hereby certify the
14 foregoing deposition is a full, true and correct
15 transcript of my shorthand notes so taken.

16 I further certify that I am neither counsel for
17 nor related to any party to said action nor in
18 anywise interested in the outcome thereof.

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21 S. Arielle Santos, CSR

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