

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

IQAR, INC.,
Patent Owner.

IPR2024-00545
Patent 8,972,161 B1

Record of Oral Hearing
Held: May 8, 2025

Before JASON W. MELVIN, SEAN P. O'HANLON, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

IPR2024-00545
Patent 8,972,161 B1

APPEARANCES:

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P R O C E E D I N G S

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JUDGE O'HANLON: Good afternoon, everyone. I am Judge O'Hanlon. I'm joined by Judge Melvin and Judge Dougal. This is a hearing in Case Number IPR2024-00545, *Tesla, Incorporated versus iQar, Incorporated*. And this concerns U.S. Patent Number 8,972,161.

I'd like to have counsel for the parties introduce yourselves for the record, starting with Petitioner, please.

MR. JHURANI: Yes, good afternoon, Your Honor. My name is Karan Jhurani, and I'm with Fish & Richardson. With me today are Gretchen DeVries and Karl Renner, also with Fish, and listening on the line is Ashraf Fawzy with Tesla, Incorporated.

JUDGE O'HANLON: Thank you. Was it Mr. Jhurani? Am I pronouncing that correctly?

MR. JHURANI: That's right.

JUDGE O'HANLON: Thank you. And who is presenting for Patent Owner, please?

MR. HERMAN: Good afternoon, Your Honor. This is Patrick Herman from Orrick, Herrington and Sutcliffe, here on behalf of Patent Owner. And listening in will again be Bas de Blank, also from Orrick, and Patent Owner's backup counsel, and Greg Mathis, the CEO of iQar.

JUDGE O'HANLON: Thank you, Mr. Herman. We've had a few of these hearings, so I'm sure you know all the housekeeping items, but I'm going to mention a few just very quickly. Our primary goal is to allow you to be heard. If you have any problems doing that, please contact the personnel that gave you the contact information for this hearing. Please

1 mute yourself when you're not speaking. I'm getting some background noise
2 now, actually, so please mute yourself when you're not speaking.

3 Recording of any PTAB hearing is prohibited. Please reference slide
4 or document numbers for clarity of the record. And please note that there is
5 a public line, so there may be members of the public listening or viewing
6 this hearing today.

7 With that, I invite Mr. Jhurani to begin. Mr. Jhurani, would you like
8 to reserve any time for rebuttal?

9 MR. JHURANI: I will, Your Honor. I'll reserve 15 minutes.

10 JUDGE O'HANLON: And we have a total of 60 minutes for each
11 side. I forgot to mention that.

12 Thank you, Mr. Jhurani. You may begin when you're ready.

13 MR. JHURANI: All right. Thank you, Your Honors. If we can bring
14 up Petitioner slides and go to slide number 2, please. And we'll begin with
15 the discussion, as shown here, of the *Neiss*-based ground, which I will plan
16 to address. And Dr. DeVries will then speak to the issues for the *Schramm-*
17 *Clapper* ground. Let's go to slide 4.

18 The petition challenged all claims of the '161 patent, and iQar does
19 not dispute that most -- iQar does not dispute most claims and instead cabins
20 its argument to a few limitations of the independent claims. Independent
21 claim 1 shown here is representative. For the *Neiss* ground, iQar's
22 arguments have focused on the first two limitations of this claim, receiving a
23 route and segmenting said route into a plurality of segment destinations.

24 Much of iQar's arguments for *Neiss* are premised on interpretations of
25 the *Neiss* reference, which we submit are often incorrect and refuted by
26 express disclosures. So to set the page on these issues, let's talk for a few

1 minutes about *Neiss*'s system and how it works. And with that, let's go to
2 slide 9, please.

3 All right. What is *Neiss* about? *Neiss* is a predictive cruise control
4 system which, as shown on the highlighted text here on the slide,
5 determines, as a function of position, a desired speed inside the speed band
6 to maximize fuel savings.

7 And if we go to slide 10, the highlighted text from *Neiss* tells us that a
8 vehicle's "onboard computer iteratively calculates and stores in a memory
9 vehicle control parameters that optimize the vehicle operating cost function."
10 The cost function optimization in *Neiss* is a process by which it computes
11 vehicle control parameters that achieve a certain objective, such as
12 maximizing fuel efficiency, as we just said, and vehicle control parameters
13 in this context include speed, throttle, et cetera, that basically control the
14 operation of the vehicle. And it's important to note here, as is shown on the
15 slide, that these control parameter optimizations are for a predetermined
16 distance along the route ahead of the vehicle, which *Neiss* refers to here as a
17 "prediction horizon." And we'll talk a lot about this concept today.

18 On slide 11 we have testimony of Dr. Papanikolopoulos, Dr. P as I'll
19 call him for short, explaining the structure of the prediction horizon as
20 provided by *Neiss*. In the second and third sentences of the text shown on
21 the slide, Dr. P cites to *Neiss*'s disclosure which states that the prediction
22 horizon is separated into frames and each frame corresponds to a specified
23 distance to be covered by the vehicle. And figure 10 here pictorially depicts
24 and represents the prediction horizon and its constituent frames. And you
25 see the frame in orange and the overall prediction horizon depicted in this
26 data representation from *Neiss*. So, for example, as *Neiss* gives us an

1 example in paragraph 192 of its disclosure, the prediction horizon can be
2 4,000 meters long and each frame could be, for example, 20 meters along
3 that 4,000-meter path.

4 Let's talk briefly now about *Neiss*'s optimization algorithm and
5 advance to slide 12. At a high level, *Neiss*'s algorithm operates iteratively
6 on the frames of the prediction horizon. And here on slide 12 we have
7 testimony of Dr. P. And I'll draw your attention specifically to the last
8 sentence here on the bottom left, where Dr. P explains that the algorithm
9 computes initial estimates and optimized vehicle parameters, which are
10 "stored in a lookup table corresponding to the frames of the prediction
11 horizon."

12 The optimization process is illustrated in the figure on the right, which
13 shows the lookup table with cells corresponding to frames 0, 1, 2, and 3.
14 And so just sticking with the figure, we see three lookup tables, and these
15 are three lookup tables that are reflective of three distinct times during the
16 optimization process. At time 1, figure 12A at the top depicts the lookup
17 table as including road angle and radius information for the portion of the
18 path corresponding to each frame. This is shown in the first two rows of the
19 table. At time 2, figure 12B shows the same table being populated with
20 initial velocity estimates for each frame, as shown in blue. And at time 3,
21 figure 12C shows that after the optimization has run one time, the optimal
22 velocity values, among other control parameters, are computed and
23 populated in this table.

24 As you can see from figure 12C, *Neiss*'s system replaces the initial
25 velocity estimates, which were shown in blue in figure B, with the optimal
26 velocity values in figure 12C that are shown in red. So while the data in the

1 lookup table changes as the optimizations happen, the table data in each
2 instance still corresponds to the prediction horizon. And that's because the
3 prediction horizon is a physical concept. It is, as *Neiss* tells us, a
4 predetermined distance along the route ahead of the vehicle, and each frame
5 in this prediction horizon similarly specifies a distance along that prediction
6 horizon. The lookup table, in contrast, is effectively a data structure stored
7 in memory, with cells corresponding to and storing data for these particular
8 frames of the prediction horizon.

9 So with this understanding, let's turn to the substantive arguments for
10 *Neiss*. And as a starting point, as I get into this, I'll note that iQar's briefing
11 presents the arguments for a segmenting limitation before the receiving
12 limitation. And while we plan to address both issues today, our view is that
13 the issue for the segmenting limitation are informed and benefited by the
14 context of the presentation for the receiving limitation. So I'll plan to
15 discuss the "receiving a route" limitation first and then follow that up with
16 the segmenting limitation and issues for that. Let's go to slide 14, please.

17 As shown here, the petition identifies three alternative theories for
18 why *Neiss* discloses or renders obvious this limitation. These theories are
19 listed on the right and are enumerated as issues 1(a), 1(b), and 1(c). So to be
20 clear, unless iQar can demonstrate that none of the three petition theories is
21 sufficient, it fails. That is, to prevail, iQar must show that all three theories
22 fail. We have demonstrated, and I will discuss today, that iQar has not only
23 failed to show that all three fail, it has failed to show that any has failed.

24 Let's begin with issue 1(a), *Neiss*'s prediction horizon is a route. And
25 let's turn to slide 16 where we take up this first theory. Although there's
26 some dispute on the record of what a route is, the parties at least agree that a

1 route is a path or road from one point to or position to another. At the top
2 left, Patent Owner's expert says that the route is a road or path from one
3 place to another. On the right, towards the end of the paragraph, the reply
4 explains that the terms "place" and "position" are synonymous and so a route
5 is simply a path from one point or position to another. And Patent Owner's
6 sur-reply agrees. At the bottom left, iQar confirms that this interpretation in
7 the reply is how even the '161 patent uses the term "route."

8 So consistent with this interpretation, prediction horizon in *Neiss* is a
9 route because it is, in fact, a road or path from one point to another. And
10 this is illustrated in slide 18, where we cite to paragraph 15 of *Neiss*. The
11 highlighted text here states that the prediction horizon is "a predetermined
12 distance along the route ahead of the vehicle." In other words, the prediction
13 horizon is a path or road from one point, the vehicle's current position, to
14 another point that is a predetermined distance along the route ahead of the
15 vehicle.

16 Now, iQar, for its part, argues that *Neiss*'s prediction horizon is not a
17 route because, according to iQar, one, a route must include a destination and,
18 two, *Neiss*'s prediction horizon has no correlation to a vehicle's route. Let's
19 take these issues in turn.

20 And let's turn to slide 19, where we take up the first issue, that the
21 route apparently must include a destination. Now, I'll just note here that
22 iQar seems to go further in its sur-reply in this last brief at page 6 and claims
23 that this route must not only include a destination, it must also include a final
24 destination. So let's unpack this a little bit.

25 As a starting point, let's go back to the specification. It is undisputed
26 that the '161 patent never requires that the route must include a destination.

1 At best, iQar has identified some example embodiments where a route has a
2 destination, none of which limit the scope of the term "route." We explained
3 this in our reply at pages 3 to 5. But even if we assume for argument's sake
4 that a route must include a destination, the '161 patent broadly describes a
5 destination, as we see on slide 20. So let's go to that, please.

6 The '161 patent that's cited at the bottom left here states that a
7 destination could be "a final destination or an intermediate destination," thus
8 refuting iQar's suggestion that the destination of a route must have a final
9 destination. On the right we see highlighted examples of destinations in the
10 specification. One destination is identified as work, which would
11 correspond to what we understand as the final destination, and another as a
12 highway or highway on ramp, which would be an intermediate point along
13 the way to what would be presumably a final destination.

14 Consistent with this, the prediction horizon is at least a path from the
15 vehicle's current position to an intermediate position that is along the way to
16 the vehicle's final destination. And for reference, this is summarized in the
17 excerpt from the reply that's shown on slide 21.

18 I'll progress, in the interest of time, to slide 22 and take up iQar's
19 argument about the prediction horizon not being correlated to a route. And
20 iQar says this because, according to them, the prediction horizon is just a
21 portion of road and has no correlation to the route and, therefore, cannot be a
22 route. Not true. This argument is directly at odds with iQar's admission in
23 its preliminary response at page 2 that I'll quote, where they say, quote,
24 "prediction horizon may be a portion of a vehicle's route," end quote.

25 And of course, that's born out of *Neiss*'s disclosures, which are shown
26 on slide 24, where *Neiss* unequivocally ties the prediction horizon to the

1 route being traveled. Specifically, the highlighted text on slide 24 says that
2 the prediction horizon, on the top left of slide 24, that the prediction horizon
3 is a "predetermined distance along the route ahead of the vehicle." And this
4 concept is reinforced by *Neiss*'s claim 1, which is shown on the right.

5 The second limitation of claim 1 here recites sensing parameters as
6 the vehicle travels in route, followed by the third limitation that says as the
7 vehicle travels said route, vehicle control parameters are calculated for a
8 predetermined distance along said route ahead of the vehicle, which, of
9 course, we know *Neiss*, that's telling others the prediction horizon.

10 So to sum this all up, *Neiss*'s prediction horizon is a route, at least
11 because it is a path from one point to another that is a predetermined
12 distance ahead of the vehicle's route, as *Neiss* said. And even if the claimed
13 route must include a destination, *Neiss*'s prediction horizon would include
14 that, consistent with how that term is used in the '161 tab.

15 Let's turn to slide 26. I'll pick up now the second alternative theory of
16 why *Neiss* discloses the "receiving a route" limitation, and that is *Neiss*
17 receives successive prediction horizons that correspond to the routes.

18 Let's go to slide 27. Here at the top right, the petition explains that
19 *Neiss*'s optimization operations are performed iteratively for portions of an
20 overall route as the vehicle travels between a starting point and a final
21 destination. So let's simplify this with an example.

22 Let's say you have a route that goes to a final destination and is 5,000
23 meters long. And let's also say that the prediction horizon is 4,000 meters
24 and each frame in that prediction horizon is 1,000 meters. So four frames,
25 1,000 meters each making up the 4,000-meter long prediction horizon.
26 *Neiss* tells us at paragraph 169 of his disclosure that the optimizations are

1 done after the vehicle traverses each frame, which in our example would be
2 after the vehicle drives 1,000 meters. So at the beginning of the (inaudible)
3 drive, *Neiss's* optimization would be done on the first 4,000 received along
4 this route. And when the vehicle gets to the 1,000 meter mark, *Neiss's*
5 optimization would be done on the remaining 4,000 meters of the route that's
6 received, which would then, of course, encompass the final destination.

7 So as this example illustrates, *Neiss's* system iteratively receives
8 portions of the -- portion or the prediction horizon that would end up making
9 up the entire route from start to the final destination. So under this
10 alternative theory, the route would include a final destination, thus satisfying
11 even Patent Owner's narrow interpretation of the term "route" and
12 "destination."

13 JUDGE O'HANLON: Mr. JHURANI, this is Judge O'Hanlon. I have
14 a question for you.

15 MR. JHURANI: Yes.

16 JUDGE O'HANLON: In the example you just mentioned, the final
17 destination of the route lined up with the end of a frame, I guess, in one of
18 your -- one of *Neiss's* prediction horizons. Does it matter that the final
19 destination of the route in your example did not match up with the endpoint
20 of a prediction horizon?

21 MR. JHURANI: No, Your Honor.

22 JUDGE O'HANLON: That's one of the arguments that Patent Owner
23 made.

24 MR. JHURANI: So, Your Honor, certainly it's feasible and is a
25 matter of implementation that the prediction horizon's terminal point would
26 line up with the final destination. That's certainly an option. It could also be

1 that the prediction horizon could extend past that final destination, in which
2 case it would still encompass that final destination.

3 But to step back from your question, I think this goes to the heart of
4 what is a route? A route, quite simply, and there's truly no dispute on the
5 record about this, is a path from one point to another. So whether that point
6 is the final destination or if it's a destination -- or if it's a point after that or
7 before that, it's immaterial. It's still a point -- it's still a path, dedicated path
8 from one point to another.

9 But certainly in many instances, that path would terminate. And
10 certainly *Neiss's* algorithm is operating on a route, and we can see as a
11 matter of implementation that termination happening at the final destination.

12 Does that answer your question, Your Honor?

13 JUDGE O'HANLON: Yes. Thank you.

14 MR. JHURANI: I'll turn to iQar's -- what appears to be at least iQar's
15 rebuttal to this theory, which is that *Neiss's* vehicle may deviate from its
16 original route and the final destination may not align with the end of the
17 final prediction horizon. We already took the latter up, so I'll go with the
18 first issue where iQar claims the successively received prediction horizons
19 can't be a route because *Neiss* may deviate from that route.

20 As a practical matter, we agree that *Neiss* allows for that possibility.
21 There's no disagreement around that. But that does not alter the fact that in
22 many instances the vehicle would, in fact, traverse its originally set out
23 value. And this is summarized in the reply which we exerted and provided
24 for reference on slide 28.

25 Okay. And I'll say actually on one more point, the reason there's an
26 alignment, too, on the -- with the final endpoint of the route, final destination

1 of the route and the prediction horizon, and the reason that makes sense is
2 because the vehicle is traveling a route and optimizations are performed for
3 predetermined distances along that route. So it would follow that the
4 prediction horizon, which is predetermined distance along that route, would
5 also include the final destination of that barrier route. So anyway, I just
6 wanted to clarify that point and emphasize that further.

7 With that, Your Honors, I'll turn to theory 1(c), having already talked
8 about theories 1(a) and 1(b). And so I'll go to slide 32, please.

9 And this theory is that it would be obvious, in view of *Neiss*, to
10 receive an entire start-to-finish route all at once. And the obviousness theory
11 is simple. *Neiss* does not explicitly say that its onboard computer receives a
12 start-to-finish route all at once. It just says that the vehicle is traversing a
13 route and the system determines a predetermined distance along the route,
14 which it calls the prediction horizon and computes control parameters for
15 each such prediction horizon. So as a matter of logic, for *Neiss*'s system to
16 determine a predetermined distance along a particular route, it would be
17 obvious, predictable, straightforward, what have you for the system to have
18 that entire route. And we have articulated reasons for why, numerous
19 reasons for why, and how this would have been obvious to a POSITA at the
20 petition pages 16 to 17 and Dr. P's testimony at paragraphs 68 to 72 of his
21 declaration.

22 iQar for its part, is attempting to create some confusion by trying to
23 conflate the route and the data that is stored about the route in the lookup
24 table for prediction horizon, and we see that theme repeatedly in their
25 arguments. Effectively here, iQar argues in this briefing, which is provided
26 for reference on slide 38, that means the system does not receive an entire

1 route because the ring buffer only stores data for a single prediction horizon.
2 But as we talked about at the beginning of my presentation, prediction
3 horizon and route aren't physical concepts. They are path or roads from one
4 point to another. The lookup table is not a route. It is a data structure in
5 memory, a ring buffer to be precise, in the terms of *Neiss*, that stores
6 information about the route or prediction horizon, such as the road curvature
7 and angle of elevation.

8 This is amplified further on slide 41. Towards the bottom, the reply
9 here cites to *Neiss*'s disclosure of road data for the upcoming road being
10 "read from the map" and being used to fill cells of the ring buffer or lookup
11 table. So, of course, it'd be obvious for the route to be known and received
12 by the system, because that's how the system would be able to retrieve road
13 data from a map for the portions of that route.

14 And this is actually further crystallized by an argument that iQar
15 advanced in its sur-reply. In its sur-reply, at page 5, iQar characterizes the
16 map in *Neiss* as an atlas that has data for many possible roads that a vehicle
17 may encounter. This characterization actually belies the obviousness theory.
18 To retrieve road data for a particular path or route, it would be obvious for
19 the systems to know the route, to have the route, and query the map using
20 this route or the parameters associated with that route.

21 Okay. We've talked about the three independent theories for how
22 *Neiss*, in our view, teaches or renders obvious "receiving a route."

23 Unless Your Honors have further questions on this limitation, I'll go
24 to the segmenting limitation.

25 Hearing none, I'll advance to slide 44, please. Okay. So let's take up
26 the segmenting limitation. And at the top left on slide 44, the claim recites

1 "receiving a route" and "segmenting said route". We talked earlier about the
2 prediction horizon being a route or a portion of a route. *Neiss's* disclosure
3 confirms that this prediction horizon is segmented. *Neiss* tells us at top right
4 that this prediction horizon is separated into frames. Even Patent Owner's
5 expert in paragraph 155 of his Declaration, Exhibit 2003, asserts that the
6 prediction horizon is, quote, "divided into frames."

7 Now, through reference to data for a prediction horizon, figure 10 at
8 the bottom right illustrates the prediction horizon and how it's segmented
9 into frames. The frames are depicted in orange and have endpoints shown in
10 green which correspond to the segment destinations.

11 So let's take stock. Although iQar quibbles about whether prediction
12 horizon is a route or not, iQar does not and cannot credibly argue and
13 dispute that *Neiss's* system receives the prediction horizon, that is a
14 predetermined distance along the route of the vehicle, nor can there be any
15 dispute that *Neiss's* segments or divides its prediction horizon into frames of
16 a specified distance. The expert admits as much. There can also be no real
17 dispute that the endpoint of these frames or segments are segment
18 destinations.

19 So taken together, *Neiss* receives a route, one or more prediction
20 horizons, and segments or separates these into frames of specified distances
21 along that prediction horizon. That alone resolves the matter and confirms
22 that *Neiss* receives the route and then segments the route.

23 IQar's only rebuttal appears to be that *Neiss's* system gets segments
24 destinations before receiving the route, and this argument admittedly is
25 tough to parse. So I'll actually use Patent Owner's slides here to illustrate
26 what they are doing. If we can bring up Patent Owner slide 15.

1 Here, iQar visually depicts this argument and purports to show that
2 *Neiss*'s segment destinations come before the route and is showing figure 11
3 to illustrate this argument. But to be clear, figure 11 of *Neiss* depicts a
4 memory arrangement of the ring buffer, as *Neiss* tells you in paragraph 176
5 of his disclosure. So this is not -- we're not talking about prediction horizon,
6 we're talking about a memory arrangement of the ring buffer. Noticeably
7 absent from paragraph 176 or in figure 11 is any reference to the prediction
8 horizon.

9 But anyway, iQar's theory appears to be that when *Neiss*'s lookup
10 table in memory is first initialized, it's empty and has no row data. And
11 because the structure of this table, again in computer memory, shows frames
12 before rated road data is included therein, iQar argues that the segment
13 destinations in *Neiss* are present before the before the route is received.

14 This argument fails and that's because it's underpinned by two key
15 assumptions, both of which are fatally flawed. First, iQar incorrectly
16 equates *Neiss*'s prediction horizon with a ring buffer; and second, iQar
17 incorrectly equates road data in *Neiss* with the route.

18 Let's come back to Petitioner's demonstratives and begin with the first
19 argument on slide 46. The prediction horizon is not the same as a ring
20 buffer as explained in the reply and consistent with *Neiss*'s teachings, which
21 are provided for reference on slide 46. As I explained at the beginning of
22 the presentation today, *Neiss*'s prediction horizon is a physical path from one
23 point to another. The ring buffer, in contrast, is just memory that stores data
24 corresponding to the frames of this prediction horizon.

25 Next, let's talk about the road data and how iQar equates that to the
26 route. They are not the same concept, as we explained in our reply that's

1 excerpted on slide 47 and provided here for your reference. *Neiss* confirms
2 this in the second sentence of paragraph 15 that's shown on slide 47. It says
3 here, in part, "As the vehicle travels over a particular route for which route
4 parameters, such as road gradient and curvature, are stored in a roadmap,"
5 and it goes on. So the gradient and curvature are route parameters.

6 Now, along these lines, actually, let me say that, just to be clear, so
7 the gradient and curvature are road -- route parameters, they are not the route
8 itself. And this is further illustrated if we go to the next slide where, next
9 slide 48, here we have the reply which explained that *Neiss*'s computer uses
10 the route to identify the road ahead of the vehicle and then reads the road
11 curvature and gradient information, that is the road information from the
12 map. And it is this road information that is subsequently stored in the
13 locations of the lookup table corresponding to the prediction horizon
14 screens.

15 So to sum this all up and when we resolve that the ring buffer is not
16 the same as the prediction horizon and the route is not the same as road
17 information, the following becomes clear. One, *Neiss* receives a prediction
18 horizon, which is a path from one point to another. This prediction horizon
19 is divided or segmented by *Neiss* into frames or segments. And then the
20 frames of the prediction horizon, which correspond to locations within that
21 ring buffer, that memory structure, those frames and those portions of the
22 memory are used to store information about the varied frames and prediction
23 horizon, the physical entity.

24 So all that said, Your Honors, we don't see that there can be any real
25 credible dispute that *Neiss* does not receive a route and definitely does not
26 segment that route. Quite the opposite, *Neiss* is clear and teaches or at the

1 very least renders obvious receiving the route and then segmenting that route
2 into a plurality of segments that have terminal points as segment
3 destinations.

4 Your Honors, that's all I have for my presentation. Unless you have
5 questions, I'll turn it over to Dr. DeVries.

6 JUDGE O'HANLON: Thank you, Mr. JHURANI.

7 MR. JHURANI: Thank you.

8 MS. DeVRIES: All right. Good afternoon again, Your Honors, or
9 good afternoon, this is Gretchen DeVries again, Your Honors. I'd like to
10 walk you briefly through the dispute with respect to the petition's second
11 ground now, which is based on the *Schramm-Clapper* combination. Let's
12 start on slide 59, please.

13 The *Schramm-Clapper* combination is an approach to determining an
14 energy efficient route between an origin and a destination, taking into
15 account the energy consumption for each segment of the route. And that
16 per-segment energy consumption is based on two things: the topography of
17 the segment and the speed of travel across the segment.

18 The figure on the right of this slide is based on *Schramm's* figure 3,
19 and it has the phrase "and speed" added in the yellow box to indicate the
20 contribution of *Clapper* in the *Schramm-Clapper* combination approach.
21 That is, it indicates that in the combination, *Schramm's* base process, as
22 reflected in this figure, is enriched to take speed into account when
23 identifying the energy optimum route.

24 The dispute on the *Schramm-Clapper* ground is very narrow. There's
25 no dispute about what *Schramm* teaches or about what *Clapper* teaches.
26 There's no dispute over the way in which the petition shows that the two

1 references come together, as illustrated in the figure here. Nor is there a
2 dispute over the reasons that motivated the combination or over the viability
3 of the combination. And indeed, there's also no dispute over the majority of
4 the claim language.

5 Slide 62 shows claim 1 again. For instance, there's no dispute that the
6 *Schramm-Clapper* combination process satisfies the element C language that
7 recites variations in a target speed between pairs of segment destinations.
8 The combination meets this limitation through its consideration of speed on
9 a per-segment basis. There's also no dispute about other element C language
10 that specifies that energy values are calculated based on those variations in
11 target speed. That is, in the combination, a per-segment energy value is
12 calculated for each segment. Nor, in fact, is there any dispute about most of
13 element D. The combination determines the plurality of speeds, but
14 achieves a best summation of those energy values through its identification
15 of the routes with the lowest energy consumption.

16 So the only issue in dispute with respect to the *Schramm-Clapper*
17 combination is whether those plurality of determined speeds are a plurality
18 of efficient speeds. The claim tells us exactly what it takes to be a plurality
19 of efficient speeds. They're the speeds that achieve a best summation of
20 energy values. And this is precisely what the *Schramm-Clapper*
21 combination does. It determines the plurality of speeds that achieve a best
22 summation of per-segment energy values. Please skip to slide 64.

23 Here on slide 64, we provided for your reference an expert from -- I'm
24 sorry, an excerpt from our expert's declaration that addresses why the speeds
25 of the energy optimum route in the *Schramm-Clapper* combination are a
26 plurality of efficient speeds. And I'll talk you through this briefly.

1 The *Schramm-Clapper* combination determines the energy
2 consumption of each of various available routes between an origin and a
3 destination by considering the energy consumption to travel each route. The
4 energy consumption to travel given routes is equal to the sum of the energy
5 values for each segment of the route. And each per-segment energy value is
6 dictated by two things: the topography of the segment and the speed of
7 travel on that segment. The route that has the lowest total energy
8 consumption, that is the best summation of those per-segment energy values,
9 is identified as the energy-optimum route between the origin and the
10 destination.

11 The speeds for the segments of the identified energy-optimum route
12 correspond to energy values, those energy values that give the lowest energy
13 consumption. That is the best summation. So for this reason, these per-
14 segment speeds for the identified energy-optimum routes are those plurality
15 of efficient speeds that achieve a best summation of energy values as recited
16 in the claim.

17 JUDGE O'HANLON: Dr. DeVries?

18 MS. DeVRIES: Yes.

19 JUDGE O'HANLON: Excuse me. You're reading the word
20 "efficient" out of this claim. You're saying just because it's the best
21 summation, it must be the best summation of efficient speeds. I'm not sure
22 that I agree with that.

23 You know, when I read the petition, the way I see it, the only
24 identification of speeds, for example on page 79 of the petition, are
25 *Clapper's* disclosure of previously driven speeds and the speed limit. And
26 Patent Owner makes arguments why those speeds may not be efficient

1 speeds. So I understand how you come up with a best summation. I just
2 don't understand how it's a best summation of efficient speeds. It's certainly
3 a summation of speed, but I don't know that it's a summation of efficiency.

4 MS. DeVRIES: Yeah, that's an excellent question. And I think that
5 really distills down to what the dispute is on this claim. And I'm going to
6 answer that by turning to slide 63, which gives some excerpts from the '161
7 patent. And I hope that that will help to explain why we believe that we can
8 rely on those speeds in the combination as being efficient speeds.

9 So we've put some portions of the '161 patent on here that pertain to
10 this general idea of identifying energy efficient speeds. Specifically, what
11 this portion of the '161 patent is trying to do is find the combination of
12 speeds that together are the most efficient way to drive a particular route.
13 And at the bottom left, we get some framework to how this works. The '161
14 patent explains that it takes a certain amount of energy to drive a given
15 segment at given speed, and the energy consumption for the routes as a
16 whole is simply the sum of the per-segment energies for each segment of the
17 route.

18 But the important thing here is that the '161 patent, in order to find the
19 optimized combination of speeds for this given route, it just takes a lot of
20 combinations of arbitrary speeds and it calculates the total energy
21 consumption for the route for each arbitrary combination. So, for instance,
22 that table on the right that you see tabulates energy values for 17 different
23 combinations of arbitrary per-segment speeds for this given five segment
24 route. And it determines that the combination with the lowest total energy
25 consumption that's explained at the top right is on row 3.

1 So we can conclude from looking at this description in the '161 patent
2 that the speeds that correspond to these row 3 energy values are the plurality
3 of efficient speeds for this route in this context, not because there was
4 anything special about them at the start of the process, but because on the
5 output end of the algorithm, their corresponding energy values sum to that
6 lowest total energy consumption for all of the tested sets of arbitrary speeds.
7 So that is, let me say that again, we can see that speeds are labeled as
8 efficient in the '161 patent because they are deemed to achieve efficiency,
9 not because there was anything special about them to start.

10 So I hope that that answers your question. We don't see the '161
11 patent as supporting any particular requirement on these speeds being
12 special, being efficient as the input. The efficient speed is simply a nature of
13 the output of the optimization process.

14 JUDGE O'HANLON: So, Dr. DeVries, this is Judge O' Hanlon again.
15 Is it your position that no matter what speeds you sum, the lowest
16 summation corresponds with a summation of efficient speeds? Is that
17 correct?

18 MS. DeVRIES: So our position is that the speeds that have been
19 identified to achieve the best summation of energy values across the route
20 are efficient speeds, whether or not those speeds are designated as being
21 anything special when they're input into the process. So, for instance,
22 *Clapper* uses speed limits or historical speeds, and those speeds correspond
23 to energy values. And the energy values are summed, but the speeds
24 themselves are not summed. So it's the sum of the energy values that relate
25 to those speeds that are associated with the speeds that gives the best
26 summation of energy values.

1 JUDGE O'HANLON: Okay. Thank you.

2 MS. DeVRIES: Thank you. I just want to point out one more thing
3 on this idea of efficient speeds. And I'd like to just refer you to page 4 of the
4 Patent Owner's response. And this indicates that they, too, seem to
5 understand the idea of efficient speeds in this way. And they've stated, I'll
6 just read you a little bit from that paragraph, they say that, "The patent
7 determines the plurality of target speeds, but achieve a best summation of
8 energy values across the route, then the vehicle's operator can be notified
9 about those efficient speeds."

10 So again, this is an indication that the efficiency comes because those
11 speeds achieve that summation of the associated energy values, not because
12 the speeds are summed or because there's anything particular or special
13 about those speeds as inputs. It's because on the outputs, they achieve a best
14 summation of energy values.

15 And that's just like what's going on in the *Schramm-Clapper*
16 combination. In the *Schramm-Clapper* combination, the petition relied on
17 *Clapper* for the idea of per-segment speeds. And the Patent Owner had a
18 similar issue with respect to the petition's reliance on *Clapper*. I'll refer you
19 to slide 66 for an excerpt of Patent Owner's argument.

20 And it appears that they've been arguing that because the speeds that
21 are provided as input into this *Schramm-Clapper* route optimization aren't
22 efficient on their face at the input, the feeds for the resulting -- I'm sorry, the
23 feeds for the segments of the resulting energy-optimum routes are also not
24 efficient speeds. But that's simply inconsistent with what we just saw from
25 the '161 patents. In particular, let's examine the petition's reliance on
26 *Clapper* for the idea of per-segment speeds.

1 *Clapper* stores speeds for a given segment based on the speed limit
2 for that segment, based on a person's history of driving that segment. But
3 *Clapper* doesn't attribute any special efficiency attribute to those stored per
4 segment speeds. But as we've seen, that's not the question. The question is
5 whether *Schramm*, in combination with *Clapper*, identifies speeds whose
6 energy values sum to a best summation of energy values. And that is what
7 we have in the *Schramm-Clapper* combination. And that's consistent with
8 the way the '161 patent functions.

9 So unless there are further questions, I'd like to reserve the rest of our
10 time for rebuttal, if that's okay.

11 JUDGE O'HANLON: Thank you, Dr. DeVries.

12 MS. DeVRIES: All right. Thanks very much for your attention.

13 JUDGE O'HANLON: Mr. Herman, we would now like to hear from
14 you. Would you like to reserve any sign for rebuttal?

15 MR. HERMAN: Yes, Your Honors, 10 minutes should be sufficient
16 this time around.

17 JUDGE O'HANLON: All right. Thank you, and you may begin
18 when you're ready.

19 MR. HERMAN: Good afternoon, Your Honors. We're here this
20 afternoon to discuss the '161 patent. As I'll discuss the '161 patent claims a
21 method for managing vehicle power consumption. This is somewhat more
22 akin to the patent we discussed last week. That was the '399 patent.

23 And I'll note that while the '399 patent did not specifically reference
24 determining the vehicle route in its claims, it did require determining the
25 route segment. This patent does. The claims now expressly mention and
26 require route determination. The claims also include a separate limitation

1 requiring segmenting that known route. And the claims specifically
2 reference multiple segment destinations. And this, as we'll discuss, is all
3 missing from the prior art.

4 The first reference at issue, that's *Neiss*, builds what is known as a
5 prediction horizon out of slivers of road data one piece at a time. This is the
6 opposite of what the claims here require. The claims require taking a known
7 route and dividing that route into pieces.

8 As I'll also discussed, the prediction horizon is not a route. It is just
9 road ahead. The second set of references, the *Schramm* and *Clapper*
10 references that you just heard about, do know where the vehicle is going and
11 the route the vehicle is taking. But they are missing something else. They
12 do not determine a plurality of efficient speeds. In fact, they do not make
13 any speed determinations at all, let alone efficient speed determinations.

14 So, turning to slide 2, what is the '161 patent about? As shown in the
15 specification excerpt on this slide, the patent recognizes a problem with the
16 prior art. In the prior art, drivers only had imprecise methods to manage fuel
17 consumption. For instance, they could manually control the car in an effort
18 to improve operation. But as the '161 patent notes, this falls well short of
19 optimization.

20 Turning to slide 3, this slide summarizes the '161 patent's inventive
21 solution. The vehicle includes what is called a "power management logic."
22 It is this logic, as opposed to the vehicle's operator, that engages in
23 optimization. How does it do this? There's a summary in the bottom
24 callout. The logic determines the vehicle's route. The logic segments that
25 route into portions, each ending in the segment destination. The logic
26 calculates the energy needed to travel each of those segment destinations and

1 then determines the optimized or efficient speeds to travel to the
2 destinations.

3 Turning to figure -- slide 4. Slide 4 reproduces figures 2 and 3A from
4 the '161 patent and provide examples of this concept in drawings. Figure 3A
5 to the right shows an example of a route the vehicle may travel. The route
6 which proceeds from a start to destination E is shown in yellow. It's also
7 shown the route passes through a number of intermediate or segment
8 destinations. Those are A, J, and C, and they end in the final destination E.

9 Figure 2 on the right is a flowchart of the process. First the route is
10 determined, then the route is segmented. Then this is then followed by a
11 series of optimization calculations for the now segmented route.

12 The slide 5 shows claim 1. As can be seen, the method starts with
13 receiving a route at a computer of said vehicle, so the actual route the
14 vehicle is traveling must be known. Next, this known and already received
15 route is segmented to determine segment destinations. Then energy values
16 are calculated and a plurality of efficient speeds are determined to achieve a
17 best summation of energy values. Finally, the claim requires that the
18 operator be notified of the efficient speeds to travel between the segment
19 destinations.

20 Turning to slide 7, I'll begin by discussing the *Neiss* reference and
21 there are two issues with the *Neiss* reference. The first and most glaring
22 issue is that *Neiss* performs the steps of claim 1 out of order.

23 As shown on slide 8, a method claim requires that steps be performed
24 in order when either logic or the grammar of the claims dictates this.
25 Performance of steps in order can also be required by the specification.

1 Here, both the claims and the specification require an ordered performance
2 of at least the first two claim steps.

3 So I'll start with claim 1, which, again, is reproduced on slide 9. And
4 as shown by the highlighting, the claim starts with a step A, which requires
5 receiving a route. Then step B requires segmenting said route into a
6 plurality of segment destinations. That plainly, as a matter of logic and
7 grammar, requires that the route be known and received, and that this
8 already received route be segmented.

9 Step B requires segmenting said route. The word "said" there means
10 that the same route that was received must be segmented. It follows that the
11 route must be received and must exist and be known before it is segmented.
12 You cannot segment a route you don't already know and have as already
13 received.

14 So, turning to slide 10, this is exactly what the specification says. The
15 route is determined first, then the already determined route is segmented.
16 Figure 2 on this slide provides an example. As shown in this figure's
17 method, the route is determined first, then the route is segmented.

18 Turning to slide 11, the rest of the specification is no different. The
19 specification repeatedly indicates that a known already determined route is
20 broken up, broken into, divided up, or split into segments. In all cases, the
21 route comes first, then that route is divided into segments, and that is exactly
22 what the claims say here is required.

23 So, moving to slide 12, once the Petitioner identify as a route in *Neiss*,
24 the only thing it pointed to is *Neiss*'s prediction horizon. That's the table in
25 which *Neiss* stores road data and vehicle control parameters.

1 The Petitioner then pointed to the ends of the prediction horizon or the
2 frames in this table as segment destinations. Importantly, it pointed to
3 nothing other than the prediction horizon as the claimed route and the
4 claimed segment destinations. And it points to nothing in *Neiss* that even
5 remotely teaches that *Neiss* knows anything at all about the road or the route
6 ahead of it until it fills the prediction horizon.

7 So the arguments I am making here are not fatally flawed arguments.
8 What is flawed as Petitioner's arguments that are not supported by the
9 evidence and are different from what is said in the petition. There is no
10 prediction horizon until data is stored in *Neiss*'s ring buffer. That is all the
11 Petitioner pointed to as a route, and that is all that *Neiss* discloses.

12 JUDGE O'HANLON: Mr. Herman, this is Judge O' Hanlon. Earlier
13 in your introduction to your presentation today, you said that *Neiss*'s
14 prediction horizon corresponds to a distance ahead of the vehicle. So why
15 isn't that part of the vehicle's route?

16 MR. HERMAN: So, Your Honor, there's one reason for that, and the
17 primary reason is that it has no destinations. So the prediction horizon is
18 equivalent to a carrot that's dangling in front of a horse. It is a position that
19 is always 400 meters ahead of the vehicle. Right? And that 400 meters
20 keeps advancing as the vehicle moves along the road. The 4,000 meters
21 ahead of the vehicle is essentially just a random space in front of the vehicle.
22 It has nothing to do with --

23 JUDGE O'HANLON: The vehicle will travel that route. So it's part
24 of the route?

25 MR. HERMAN: Not necessarily, Your Honor. In fact, *Neiss* is
26 specifically designed to account for the fact that the vehicle is not

1 necessarily going to travel over that prediction horizon. And it does two
2 things --

3 JUDGE O'HANLON: Well, I was reading the '161 patent as making
4 the same sort of accommodations if the vehicle -- I'm sorry, if the driver
5 deviates from a predetermined route. But I grant that perhaps the driver may
6 change or may turn and deviate from the route. But in some instances, won't
7 the driver not turn and instead complete that entire prediction horizon?

8 MR. HERMAN: Yes, Your Honor. The vehicle may, if the stars
9 align properly, drive over the entirety of the prediction horizon. But the
10 claims here are method claims. They are method claims. And to satisfy
11 these claims, you actually need to practice the steps of the method. So just
12 having something in *Neiss* that you can label a route and just having
13 something in *Neiss* that, if the star is properly aligned, could correspond to
14 the vehicle, the end of the vehicle's destination is not practicing the method.

15 To practice the method, you need to, number one, determine and
16 receive the vehicle's route. And then you need to split that route up into
17 pieces so that you have segment destinations. That's not something that
18 *Neiss* does. Right? The prediction Horizon is just 4,000 meters ahead of the
19 vehicle. And it's 4,000 meters that just keeps advancing as the vehicle
20 drives around the road. So at one point in time, it's a random point in space
21 that's 4,000 meters ahead. When the vehicle advances the frame, the
22 prediction horizon advances the frame. And the end of the prediction
23 horizon is the still another random point in space 4,000 meters ahead of the
24 vehicle.

25 What *Neiss* never does is it does not determine this is where the
26 vehicle is now, this is where I'm heading. I'm going to take that route. I'm

1 going to chop it into pieces. I'm going to put segment destinations at the end
2 of each piece. That's not what it does, but the practice -- the method of
3 claim 1 and the method of claim 10, that's what you need to do. You need to
4 receive a route from the start until the end of your travels. And you need to
5 chop that round up into pieces with segment destinations. And if the things
6 at the end of your pieces are not destinations, you have not segmented your
7 route and determined segment destinations as the method claims that are at
8 issue here require.

9 JUDGE O'HANLON: I guess I don't understand why the ends of
10 *Neiss's* frames would not be segment destinations. Can you help me
11 understand that?

12 MR. HERMAN: So the ends of the frames are essentially just random
13 points of road ahead of the vehicle. They are not places where the vehicle is
14 going to turn. They are not gas stations that the vehicle is going to be
15 stopping at on its way to its eventual destination. These are just random
16 spots in the road ahead of the vehicle. There's no correlation between where
17 the vehicle is actually going in the ends of *Neiss's* frames.

18 JUDGE O'HANLON: Doesn't the '161 patent define destination very
19 broadly? Essentially any point along the vehicle's route?

20 MR. HERMAN: So as far as I'm aware, Your Honor, the '161 patent
21 does not say that a destination is a random point in space that has nothing to
22 do with where the vehicle's heading. The destination could be the final
23 destination that the vehicle operator enters into a navigation system. It can
24 be the predicted destination where the vehicle thinks it's going based on the
25 information that it has. I mean, those are examples of destinations in the
26 '161 patents. What the '161 patent never says is that the destination is just

1 some random point in space that the vehicle may just happen to pass, but it's
2 not stopping at and is not necessarily going to. But I think that construction
3 of the term "route" is not supported by the specifications and, respectfully, is
4 overly broad.

5 So, turning to slide 13. So, again, *Neiss*'s vehicle does not know
6 where the vehicle is going. Instead, it only knows where the vehicle is and
7 the road that the vehicle -- the road that sits ahead of the vehicle.

8 So what is the prediction horizon? As shown on the bottom call out of
9 this slide, it's simply a fancy term that *Neiss* uses to specify how much
10 control data it stores. So in the example here, *Neiss* specifies that prediction
11 horizon is 4,000 meters ahead. So the system stores 4,000 meters of road
12 ahead control data. And it does this regardless of whether the vehicle is
13 going to actually travel that 4,000 meters.

14 But for purposes of the claim elements we're discussing here, and
15 those are elements A and B in the order in which the claim requires that they
16 be performed, whether or not that prediction horizon actually is a route or is
17 not does not matter. And why is that? Because *Neiss* performs the claim
18 steps out of order. Its frames, the things Petitioner calls segment
19 destinations, come before its prediction horizon, the thing that Petitioner
20 calls a route.

21 The slide 14 explains why this is the case. As noted here, the
22 prediction horizon is stored in a ring buffer. And *Neiss* explains that this
23 ring buffer must be initialized before it's used to control vehicle speed. And
24 how does that occur? The ring buffer starts empty. Then per *Neiss*, the ring
25 buffer is filled with angle and radius values from cell 0 up until the last cell

1 of the next to last frame. The angle and radius value information is road
2 data that *Neiss* gets from a map database it stores.

3 So when *Neiss* starts, there is no row data in its ring buffer that
4 represents the prediction horizon, so the prediction horizon starts empty.
5 Then there is one cell of row data, then there's one frame of row data, then
6 there are multiple frames of row data, and finally there is a full prediction
7 horizon of row data.

8 So, turning to slide 15. Slide 15 shows this graphically. Figure 11 is
9 a representation of the prediction horizon before it's initialized. As shown,
10 there is no road information. Plainly, that's not a route, just an empty data
11 container. Then, as shown in figure 12A, *Neiss* starts filling the prediction
12 horizon one cell at a time. These cells are labeled integration steps in the
13 figure. What this means is that *Neiss* will have row data for frame 0 and
14 what Petitioner labels as the first segment destination before it has road data
15 for frame 1, which Petitioner labels as the second segment destination, and it
16 will have all of those purported segment destinations, the frame ends, before
17 it has what Petitioner calls and identifies in its petition as a route. The very
18 last thing that happens is the complete filling out of the prediction horizon
19 with road data.

20 So what this means is that *Neiss* does not first receive a route and then
21 segment that route into segment destinations. Instead, it does the opposite.
22 Even if you assume that the prediction horizon is a route, and it is not, *Neiss*
23 starts with the segment destinations and then iteratively stitches those
24 together until it has the whole prediction horizon. Assembling a route from
25 already existing known pieces is plainly different from dividing a complete

1 known route into pieces. *Neiss* only does the former. The claims require the
2 latter.

3 So Petitioner tries to argue that this doesn't matter. First, it tries to
4 argue that the prediction horizon is something separate from *Neiss*'s ring
5 buffer and that it somehow exists in the abstract before it's initialized in the
6 way discussed in *Neiss*. And that simply is not what *Neiss* says. *Neiss*
7 explains in great detail how the prediction horizon starts empty in figure 11,
8 and *Neiss* plainly explains how the prediction horizon is initialized by being
9 filled with road data one cell at a time.

10 Petitioner also tries to argue that the map data *Neiss* uses to fill the
11 prediction horizon exists and is stored on the vehicle before the prediction
12 horizon is filled. But Petitioner only pointed to *Neiss*'s prediction horizon,
13 not its map data, as the claimed route in the petition. It can't change position
14 now. That would be an improper new argument.

15 Moreover, the map data in these stores is akin to a road atlas of the
16 United States. It is all the map data *Neiss* stores for purposes of filling
17 prediction horizons as the vehicle moves from position to position. Generic
18 map data is not a route. It is just a big pile of data. Just like handing
19 someone a road atlas is not the same as providing a route between two cities,
20 *Neiss*'s map data says nothing about any route between two points. So *Neiss*
21 just doesn't do what the claims require. It just doesn't engage in segmenting
22 of any route.

23 And before moving on to the next limitation, I'll also note that
24 Petitioner has failed to meaningfully dispute Patent Owner's and its expert's
25 discussion of how *Neiss* operates and what data it stores and when that data
26 is stored. It did not ask Patent Owner's expert any questions about this

1 operation at his deposition, and it submitted no reply declaration of its own.
2 So much of what they say about *Neiss* in the reply, including the
3 characterizations of what it stores, when the data is generated, and the like,
4 is simply attorney arguments. It is devoid of actual evidentiary support.

5 So, turning to slide 16, *Neiss* also fails to teach both a route and
6 segment destinations. I've explained a little bit of this before, but I'll do so
7 in more detail now. The prediction horizon is not what the claims require.

8 So, turning to slide 17, this slide reproduces claim 1, and as shown,
9 the claim requires both receiving a route and then segmenting said route into
10 a plurality of segment destinations. So the route the vehicle is traveling
11 must plainly be known. It's affirmatively called for by the claim and must
12 be received.

13 Further, not only that, but the claim expressly requires that not only
14 the vehicle's destination be known, but multiple intermediate destinations as
15 well. That's the import of the claimed segment destinations. The final
16 segment destination is the vehicle's ultimate destination. The other of the
17 required plurality of segment destinations are intermediate destinations. The
18 claim could not be plainer. You cannot practice the method if you don't
19 know the path of route the vehicle is following. You can't practice the
20 method without knowing both the vehicle's final destination and multiple
21 intermediate destinations. Petitioner's argument that --

22 JUDGE O'HANLON: Mr. Herman?

23 MR. HERMAN: Yes?

24 JUDGE O'HANLON: What exactly in claim 1 requires a final
25 destination?

1 MR. HERMAN: Your Honor, the claim requires receiving a route
2 and then segmenting said route into a plurality of segment destinations. So
3 you receive a route from start to finish, and then that route that you receive
4 is then segmented into a plurality of segment destinations, the final of which
5 will be the vehicle's final destination. If the final segment --

6 JUDGE O'HANLON: You're interpreting the word "route" to mean
7 from start to final destination. Is that correct? Do I understand you
8 correctly?

9 MR. HERMAN: Yes, Your Honor.

10 JUDGE O'HANLON: All right. Thank you.

11 MR. HERMAN: So turning to slide 18, while Petitioner attempts to
12 muddy up this unambiguous plain language by pointing to portions of the
13 specifications that seem to discuss directionalist travel to some unknown
14 point, this plainly isn't the only thing that the specifications discloses. This
15 is not a case where the patent includes only a single embodiment and you
16 have to jump through all sorts of hoops to ensure that that sole embodiment
17 is within the scope of the claims. Instead, there are many embodiments in
18 the specification that operate just the way the claims require, and you can
19 see two examples of that here on the slide.

20 The top excerpt notes that the route is from the initial position to a
21 destination. The second excerpt notes that the route proceeds from the
22 starting position to an actual or estimated ending position. So there is a
23 route and that route has a destination.

24 Turning to slide 19. In fact, this is expressed again and again
25 throughout the specification. The route has a final destination position. The
26 route proceeds to point B. The route is four destinations. I'm not pointing

1 you to these specification passages to show that the '161 patent uses the term
2 "route" and "destination" in some unusual sense. Instead, I'm pointing to
3 them to show the central fallacy of Petitioner's argument. The specification
4 embodiments that Petitioner points to do not redefine the ordinary meaning
5 of "route" and cause it to embrace travel without any destination in mind.
6 The specification does not use the term "destination" to refer to some
7 random spot of road ahead. The patent instead uses the term "route" and the
8 term "destination" in their ordinary sense, to refer to the path the vehicle is
9 traveling to where it's headed.

10 Turning to slide 20. When instituting, Your Honors referenced the
11 passage from the '161 patent at the top of the slide and noted that this means
12 that there can be a route without the final destination. Respectfully, Patent
13 Owner submits that this is not what that passage says. Instead, it merely
14 refers to the many different ways you can characterize a route. You can
15 have just a start, an end, and a path between or, more typically, you have a
16 start, many intermediate destinations, an end, and all the associated paths in
17 between. Indeed, this is what the claims here require by referencing a
18 plurality of segment destinations. So in the claims you need not just one, but
19 multiple destinations, such as a final destination and multiple intermediate
20 destinations, to perform the methods that the claims require.

21 Turning to slide 21. This is not what *Neiss* teaches. Its prediction
22 horizon is not a route. What is the prediction horizon? It is simply the
23 approaching road or the area around the current vehicle position. Put
24 another way, it is the road ahead, and it is a fixed, unchanging amount of the
25 road ahead, regardless of where the vehicle is going. This could be, for
26 instance, 4,000 meters ahead.

1 The Petitioner itself concedes this, and you can see that on their slide
2 41 of their demonstratives. There they expressly characterize the prediction
3 horizon as, quote, "a distance of road ahead of the vehicle." And it is that
4 road ahead, regardless of whether the vehicle intends to actually travel that
5 4,000 meters of road. And that 4,000 meters point keeps changing as the
6 vehicle moves. So the end of *Neiss*'s prediction horizon is effectively a
7 place that the vehicle never reaches. The prediction horizon just keeps
8 incrementing itself so as to always be 4,000 meters ahead of the vehicle.

9 JUDGE O'HANLON: Mr. Herman, you keep mentioning that the
10 driver might not reach the end of the prediction horizon. What is it in claim
11 1 that requires the driver to drive at all? You know, it seems to me it comes
12 up with a route, determines energy values, and notifies the operator. There's
13 no requirement that the driver actually drive a route, is there?

14 MR. HERMAN: You're right, Your Honor, that there is not an
15 affirmative step that requires that the driver drive the route. But the claim
16 does require determining a route. And the claim also does require
17 segmenting that route into a plurality of segment destinations. So the
18 practice, the method of the claim, you need to know where the driver is
19 going and you need to chop up that driver's route into a plurality of
20 destinations, the final of which is the driver's ultimate destination.

21 So turning to slide 22. *Neiss* is specifically designed, in fact, to
22 account for the fact that it does not know where the vehicle is going. But
23 here *Neiss* explains that its method accounts for the fact that the vehicle may
24 change the route when driving. So *Neiss* does just enough calculations for
25 the road ahead to allow for some control, but not too much to avoid wasting
26 effort.

1 Turning to slide 23. Slide 23 includes a demonstrative showing the
2 differences between *Neiss* and the claims. Underlying the demonstrative is
3 figure 3A from the '161 patent. An example route is highlighted in yellow in
4 that figure and it proceeds from start to intermediate destination A, then on
5 to G, J, C, and finally E. So the patent requires knowing that route;
6 segmenting that route into the segment destinations, that's the A, the G, the
7 J, the C, and the E; and then performing optimization and speed calculations
8 for the segments of the known route.

9 So what does *Neiss* do? This fills up prediction horizons for the road
10 ahead. Some of those can be quite lengthy, up to 4,000 meters long as we've
11 explained already, and you can see the effect of that on this slide as shown
12 by the red arrows. Each one of those is a prediction horizon. They overlap
13 because *Neiss* uses a ring buffer and then adds one frame at a time to the end
14 of the buffer while erasing the start of the buffer. As shown, the prediction
15 horizons extend beyond all the segment destinations, so when the vehicle
16 turns, it will take a while to adjust and initialize a new prediction horizon so
17 there'll be uncovered route. Then when that prediction horizon is finally
18 calculated and takes into account that turn, the new prediction horizon will
19 extend beyond the next segment destination and this continues.

20 So there is no actual correspondence between the route the vehicle is
21 traveling and the prediction horizon because this is not how *Neiss* is
22 designed to operate. Respectfully, it does not matter that the prediction
23 horizon could theoretically align with the route. So respectfully, it does
24 matter that the prediction horizon never necessarily aligns with the route.
25 Because the prediction horizon does not align with the route, what that
26 means is at the end of the prediction horizon is not a destination. The end of

1 a prediction horizon does not align with the segment destinations and it does
2 not align with the final destination of the vehicle's route. So if the claim
3 destinations are determined from the route, they are not just random points
4 in space ahead of the vehicle.

5 Note that Petitioner has also not offered any expert testimony
6 disputing that this is exactly how *Neiss* operates and it also does not ask
7 Patent Owner's expert any questions about this deposition. So the claims
8 here require determining a route and then segmenting that route, and this is
9 simply not what *Neiss* is doing. The prediction horizon is just a fixed
10 amount of road ahead, not a route that has the claimed destinations.

11 So turning to slide 24. Petitioner is also wrong when it argues that it
12 would have been obvious to use a complete route as *Neiss*'s prediction
13 horizon. And there's three reasons for this. First, *Neiss* purposefully does
14 not calculate for a whole route so Petitioner is proposing the opposite of
15 what *Neiss* actually teaches. Second, *Neiss* explains that it is not using the
16 whole route and limiting the prediction horizon to just the road immediately
17 ahead because this allows its system to be flexible, so Petitioner is negating
18 this benefit. Finally, *Neiss* system is designed to limit computational burden
19 and Petitioner's proposed modification would increase that.

20 So turning to slide 25. *Neiss* distinguishes itself from prior art
21 systems that perform calculations for an entire route. What's the problem
22 with this type of system? The vehicle will often deviate from the
23 precalculated route or encounter situations that require changes in speed.
24 This could include slow vehicles or manual changes by the driver.
25 According to *Neiss*, systems that calculate for the entire route, as Petitioner

1 proposes, are unable to quickly adapt to such changing circumstances
2 because significant recalculations must be performed.

3 Second, turning to slide 26, *Neiss* purposefully does not perform
4 calculations for an entire route in advance, but instead, performs small bits
5 of calculations as the vehicle moves along. This is what is meant -- this is
6 what *Neiss* means when it says calculations are performed "online." It is
7 referring to doing calculations as the vehicle is moving and operating.

8 *Neiss* then goes on to list the many advantages of this approach. The
9 memory requirements are reduced. The route can be changed without
10 wasting calculations. You don't need to calculate in advance. The vehicle
11 can quickly adapt to changing circumstances. The calculations are easy to
12 perform. The issue with Petitioner's proposal is that it negates all these
13 benefits. By performing calculations for a whole route, all of these benefits,
14 which is everything that *Neiss* seeks to achieve, would be negated. More
15 memory would be required. It would be hard to adapt to changes in
16 circumstances. Route changes would necessitate huge volumes of
17 recalculation.

18 So Petitioner tries, in reply, tries to minimize this by arguing that you
19 would just supply *Neiss*'s vehicle with the route, but would still do the
20 calculations as the vehicle drives along. But this is the opposite of what it
21 said in the petition. There it explains that the benefit of supplying *Neiss* with
22 the whole route in advance was computational efficiency. That was the only
23 benefit that Petitioner and its expert identified. Indeed, you saw that in the
24 slides that Petitioner showed you today.

25 So supplying the whole route to *Neiss* supposedly improves
26 computational efficiency. But if you only give *Neiss* the route in advance,

1 but don't do any of the computations in advance and instead, continue to
2 compute as *Neiss's* vehicle drives along, you've changed nothing. There is
3 no efficiency benefit. That would just be a meaningless modification that
4 exists for no purpose besides arriving at the claim subject matter. And that
5 certainly does not show obviousness and it isn't what Petitioner argued in the
6 petition in any event.

7 So turning to slide 27, I'll conclude by briefly discussing the final
8 grounds, the combinations of *Schramm* and *Clapper*.

9 So slide 28 reproduces claim 1 again. The claim requires determining
10 a plurality of efficient speeds that achieve a best summation of energy
11 values. So it is not enough, as Your Honors recognize, to just determine
12 multiple speeds. To satisfy the claims the determined speeds need to be
13 efficient speeds that achieve a best summation of energy values. And
14 *Schramm* and *Clapper* entirely fail to teach this. They do not teach that
15 individually, and they do not teach that in combination.

16 So shown on slide 29, *Schramm* simply uses speed as an input. Yes, it
17 determines an efficient route, but it makes that determination using whatever
18 speed is supplied to a system. So if you give it an inefficient speed, it just
19 determines the best route to take given that inefficient speed.

20 Turning to slide 30, *Clapper* does not fix this problem. *Clapper*
21 teaches a system that stores the driver's previous speed or the speed limit for
22 various positions. This has nothing to do with efficiency. If the speed limit
23 is 45 down a hill, *Clapper* will return 45 when driving down the hill,
24 regardless of whether that is efficient or not. If the driver drives at 75 at a
25 given position, *Clapper* will return that regardless of whether that speed or
26 something else like 60 is more efficient at that position.

1 So what do you get when you combine *Schramm* with *Clapper*? You
2 get a system that calculates the best route using either the driver's previously
3 stored speed or the speed limit. There is no teaching anywhere in these
4 references about determining efficient speeds, let alone a collection of
5 efficient speeds that result in optimum energy usage. In fact, there is no
6 speed determination at all. The combined system just use whatever speed is
7 stored regardless of whether it is efficient and regardless of whether that
8 speed results in the best efficiency energy usage. So one required claim
9 limitation is totally absent from the prior art.

10 So Petitioner points once again to a specification embodiment to try to
11 read out the requirements and the claims that the speed be efficient. As I've
12 explained repeatedly, this is not how claims are construed. You don't refer
13 to embodiments in the specification to read out claim limitations.

14 Moreover, the embodiment to which they point on slide 63 does, in
15 fact, operate to identify efficient speeds. Yes, it considers various speeds
16 when performing its calculation, but the end result is a determination of the
17 efficient speeds, the speeds that produces. Whenever it makes any such
18 determination, it just uses whatever speed is stored by *Clapper*.

19 With that, unless there are further questions, I'll reserve the remainder
20 of my time for rebuttal.

21 JUDGE O'HANLON: I have one question, Mr. Herman. Does the
22 '161 patent define what it means by "efficient speed?" And I ask this
23 because Dr. DeVries in her presentation said essentially that as long as you
24 add up different speeds and you take the lowest summation, the best
25 summation, then those speeds are necessarily efficient speeds. So I wonder
26 if the '161 patent defines what is an efficient speed.

1 MR. HERMAN: So there is not a -- it does not act as a lexicographer,
2 the specification of the '161 patent, Your Honor. Right? So it does not
3 propose a definition that departs from the ordinary meaning of "efficient
4 speed." And I don't believe there's a claim construction dispute here about
5 what it means to be an efficient speed. There's just a failure of proof on the
6 part of Petitioner. It hasn't pointed to anything in the prior art as
7 corresponding to an efficient speed.

8 But there are portions of the specification that discuss what the patent
9 means when it's referring to an efficient speed. So for instance, in column
10 14 at line 28, the '161 patent refers to the most energy efficient speed for the
11 vehicle to travel over one or more segments. So the patent is plainly
12 referring to speeds that themselves are energy efficient.

13 Does that answer Your Honor's question?

14 JUDGE O'HANLON: It does. Thank you very much. And thank
15 you, Mr. Herman.

16 We will now hear from Petitioner. I don't know if it's Mr. Jhurani or
17 Dr. DeVries, but whoever wants to speak, you may when you're ready.

18 MR. JHURANI: Thank you, Your Honor. I'll kick us off on the *Neiss*
19 ground, and then I'll invite Dr. DeVries to come up and address *Schramm-*
20 *Clapper* if needed.

21 On *Neiss*, Your Honors, we heard from Counsel today -- well,
22 actually, let me start. I only have a few points to discuss, Your Honors, but
23 if there are questions on your mind, I'm happy to address them first before
24 we go to the brief points that I have.

25 JUDGE O'HANLON: I guess one question that comes to mind is Mr.
26 Herman was saying that essentially the ends of the prediction horizons must

1 correspond with multiple segment destinations and a final destination. Well,
2 I guess there are several kind of points in there. That would be the first topic
3 that I would like to hear about. Thank you.

4 MR. JHURANI: Yeah. Well, you -- we're on the same wavelength
5 because that's precisely on my mind as well. And just to set the stage on that
6 point is what we heard through the presentation today earlier as well as just
7 now is just this notion of pulling in details into the claims that are simply not
8 there. The claim recites receiving a route. It does not recite determining a
9 route. It does not recite determining a destination for that route. It does not
10 recite determining a final destination that presumably should be part of that
11 route. That those three concepts I heard today over and over again are
12 simply absent from the claims.

13 Now, on this notion about the prediction horizon first, and I'll get to
14 Your Honor's question as part of that, the prediction horizon I heard in *Neiss*
15 is just road ahead of the vehicle. And curiously, what I heard in today's
16 presentation was a lot of disclosure in *Neiss* that somehow was just
17 eradicated. They eradicated the use of the word "route," which is expressly
18 described and recited in *Neiss*. That is repeatedly present in paragraph 15,
19 claim 1. Those words somehow don't appear in Patent Owner's discussion
20 and I didn't hear that today either.

21 But *Neiss* tells you expressly that the prediction horizon is a
22 predetermined distance, not just randomly out there. It's a predetermined
23 distance along the route ahead of the vehicle. And this should not be any
24 surprise because Patent Owner earlier in this proceeding before it switched
25 courses told this proceeding that the prediction horizon is a portion of
26 vehicle's route. This is at Patent Owner's preliminary response at page 2.

1 Now, this notion about frame endpoints not being destinations and
2 actually -- well, let me back up. This notion that because there are segment
3 destinations that there must necessarily be a final destination, that's false.
4 Right? Because we know from Patent Owner's own demonstrative where
5 they show figure 3A and I'll bring that up. This is on their demonstrative
6 slide 4. We know that the start route that they have highlighted there goes
7 from A, G, J, C, D. Sure, that's one possible route. But the specification of
8 the '161 patent also contemplates that the route might just go from start to A,
9 just start to C, or it might even just be start to A, which Patent Owner's
10 counsel described as intermediate destinations.

11 So you can have segment destinations without the route terminating in
12 a final destination. And that of course, of course, required by -- or, excuse
13 me, that's, of course, necessitated by the patent's own disclosure, which
14 broadly, as we talked earlier, talks about the destination not being just a final
15 destination, it could be an intermediate destination. So to the extent that
16 receiving a route mandates the presence of a destination, a word that does
17 not appear in that limitation, it does not have to be a final destination. You
18 can still have segment destinations without the route terminating in the final
19 destination.

20 Now, this point about the frame endpoints, what I heard, I think was
21 *Neiss's* prediction horizon has -- the frame endpoints of *Neiss's* prediction
22 horizon are not destinations. And I heard that being characterized as just
23 random points in space. And destination, as Patent Owner's Counsel put it,
24 would connote something like a gas station. That's what I heard. As we saw
25 on slide 20 of Petitioner's demonstrative, *Neiss* tells us that a highway or

1 highway on-ramp is a destination. Nothing special about that. It is a
2 destination, but yet it's just a point on the highway.

3 And these frame endpoints are not just random points in space. They
4 are specified distances along the prediction horizon. *Neiss* tells you in
5 paragraphs 169 and 170 that the prediction horizon, which itself and which
6 Patent Owner has conceded in this proceeding, is a portion of the route at
7 least that same prediction horizon is divided, as Patent Owner's expert tells
8 us, into frames or segments. And those frames would necessarily have
9 endpoints.

10 Nothing special about segments in the '161 patent. Column 13
11 actually just tells us segments can be just any distance along the route ahead
12 of the -- along the route. And that's precisely what the segments or frames in
13 these are as well.

14 And to round that out, going back to figure 3A, which is on Patent
15 Owner's demonstrative, they characterize A, G, C, J, E as destinations or
16 intermediate destinations or maybe even final destination. Curious at
17 column 12, line 44 to 57, *Neiss* calls each of those points intersections.
18 Again, nothing special. These are points on a road. That's it.

19 So this notion that destination has some hyperinflated meaning, as
20 Patent Owner was suggesting right now, first of all, does not appear
21 anywhere in their briefing that destination should be given in the context of a
22 segmenting destination limitations some special meaning. But if we put that
23 aside, their own patent spec refutes their interpretation.

24 I wanted to turn to what Patent Owner's slide 24 and the subsequent
25 slide is about, how it would not be obvious to modify *Neiss* to use an entire
26 route. Real quick, on slide 24, just to make sure -- and this is Patent Owner's

1 demonstrative. Just to be clear, I didn't want there to be any confusion on
2 this point, but I also wanted to flag that the title of the slide is not at all what
3 the theory is. It says on the slide title, "It would not have been obvious to
4 modify *Neiss* to use an entire route as the prediction horizon." That is not
5 what we said. That is not what the petition argued.

6 What the petition actually argued was that it would be obvious to
7 receive an entire start-to-finish route all at once, and that route would still be
8 made up of prediction horizons, predetermined distances along that route.
9 So with that clarity, let's talk.

10 And by the way, the analysis for the obviousness theory is provided in
11 petition at page 16 to 17, so just wanted to have that for the record. But let's
12 go through slides 25 to 27 because I heard a lot of things that deserve some
13 clarification.

14 Starting at slide 25, Patent Owner argued that *Neiss*'s system would
15 not perform calculations for the entire route all at once. But this -- and we
16 flagged this in the reply and it's unclear where the misunderstanding is.
17 That's not the theory. The theory is not performing calculations for the
18 entire route all at once. Rather, the potential theory was to get this entire
19 route at 1 and then iteratively perform calculations on route sections as *Neiss*
20 already performs. This was explained in our reply at pages 16 and 17.

21 On Patent Owner's slide 26, the counsel told you that *Neiss*'s system
22 would also not perform calculations for the entire route all at once because
23 *Neiss*'s system is designed to be adaptable to route changes. But just
24 because the route is designed to be adaptable does not mean that the route
25 would actually change. And I believe Your Honors picked up on this issue

1 earlier, but that's central and the '161 patent contemplate similar adaptability
2 of the system to changing routes.

3 Now, even if a route is received at once, in the combined obvious
4 system of *Neiss*, that would still perform real-time calculations for the
5 upcoming prediction horizons, which would be true even if the route has
6 changed midway through the ride or the car drives that same route. So
7 again, no change in how *Neiss* would perform computations.

8 And finally --

9 JUDGE O'HANLON: Mr. Jhurani?

10 MR. JHURANI: Yes, sir.

11 JUDGE O'HANLON: If that's the case, how would the -- I'm looking
12 at the petition where you provide the rationale for the modification. How
13 would, what you just said, how would that result in an increase in
14 computational efficiency?

15 MR. JHURANI: Sure, Your Honor. So I was going there next. And
16 so on the efficiencies point, the efficiencies come from avoiding the usage of
17 network and computational resources that would otherwise be needed to
18 iteratively receive successive prediction horizons as the vehicle drives, and
19 instead allowing these resources to be deployed for subsequent real-time
20 calculations of vehicle control parameters. We explained this point in the
21 reply at page 17. And this is taken from Dr. P's declaration at paragraph 70.
22 And specifically that portion of the declaration which, frankly, has gone
23 unaddressed by avoiding or reducing use of network and computational
24 resources that would otherwise be needed to obtain this information as the
25 vehicle drives. So that's been our theory all along. What's been engaged

1 with is a theory of Patent Owner's own making, not the theory that was
2 actually put forth.

3 With that, Your Honor, unless there are questions on *Neiss*, I'll turn it
4 over to Dr. DeVries. Thank you, Your Honors.

5 MS. DeVRIES: All right. Hello, Your Honors. I'd like to return to
6 the question of whether there needs to be anything special about speeds for
7 them to be considered efficient speeds. I do have some thoughts, but I'm
8 also, of course, happy to answer questions if there's anything that you'd like
9 to discuss soon, maybe on your mind.

10 So Patent Owner said that in the *Schramm-Clapper* combination, if
11 you input inefficient speeds, you'll get an output of those same inefficient
12 speeds. This is an unjustified criticism. Yet again, Patent Owner's
13 attempting to input an unrecited requirement on the input speeds. The
14 claims don't say anything about what the input speeds need to be, and as
15 we've already discussed, neither does the '161 patents support any
16 requirements on the input speeds.

17 Patent Owner elsewhere said that in the '161 patent optimization
18 process, the end result is the determination of efficient speeds. And that
19 seems reasonable. We agree with that. The point is that there's no
20 requirement imposed by either the claims or the '161 patent on the nature of
21 the speeds that go into the optimization process. It's the output of efficient
22 speed that's relevant.

23 So I just want to avoid any confusion. I think there might have been
24 some confusion earlier. There's no summation of speeds in the '161 patent
25 or in the *Schramm-Clapper* combination. We're summing energy values.
26 Specifically, a set of arbitrary speeds is identified from one point to another

1 and the energy values corresponding to per segment speeds for that route are
2 solved. And this summation process is performed repeatedly for a bunch of
3 different sets of arbitrary speeds to get multiple summations attributable to
4 traversing those several segments under different conditions, so under
5 different speeds for the determination of one of those summations being the
6 most efficient summation, the best summation of energy values.

7 And having resolved that most efficient summation of energy values
8 that would be spent when traversing the routes under the corresponding set
9 of conditions, the '161 patent then looks back at the speeds that correspond
10 to that summation. Remember, those speeds were just initially selected as
11 arbitrary speeds. This is what it means to determine a plurality of efficient
12 speeds.

13 The '161 patent tells us the set of speeds that correspond to the
14 identified energy-efficient determination are identified. And while those
15 speeds still are arbitrary, in a sense, they are through the identification of
16 that energy-efficient summation attributed to that selected energy-efficient
17 route. And for the first time then those arbitrary speeds are determined to be
18 a plurality of efficiency. So that is a determination of efficient speeds is
19 satisfied in the '161 patent itself simply by the association of an arbitrary set
20 of speeds with an energy efficient route.

21 I think earlier Patent Owner pointed to column 14, line 28 of the '161
22 patent in support of its attempt to read more than just fits into the term
23 "efficient speeds." And this paragraph says that the system could determine
24 the most energy efficient speed for the vehicle to travel over one or more
25 segments. What that paragraph doesn't say is anything about how that
26 determination is performed. So we have to look elsewhere.

1 And we've already talked about the claims and the '161 patent, both of
2 -- I'm sorry, the claims and the example from the '161 patent, both of which
3 tell us that determining those energy-efficient speeds involves, among other
4 things, calculating energy values and determining the speeds that achieve a
5 best summation of those energy values. So all the speeds considered in the
6 '161 patent are arbitrary. It's a brute force algorithm to test (inaudible)
7 speeds.

8 JUDGE DOUGAL: Counsel?

9 MS. DeVRIES: Yes.

10 JUDGE DOUGAL: This is Judge Dougal. I'm struggling a little bit
11 with the combination, looking at the petition. So *Clapper* teaches being
12 aware of the speeds or saving the speeds. But it kind of looks like you're
13 just taking *Schramm* and you just putting the word "and speed" in various
14 places. But I'm having trouble finding how you're getting -- I mean, okay.
15 So you're aware of the speed of the segment. You take that into account.
16 But how does that get you to the claim language? You're calculating -- I
17 mean really what *Schramm* is talking about is making a calculation based on
18 the elevation change. Right? And I can put the known speed, the speed
19 limit, like *Clapper* teaches, into that calculation. And that gives me -- I can
20 pick between two routes that you're -- you know, one has less elevation, one
21 has more, essentially. But *Clapper* is not teaching me to calculate an
22 efficient speed or calculate something about speed. What's the teaching in
23 *Clapper* that changes *Schramm* enough to get this claim limitation?

24 MS. DeVRIES: Yeah, that's a really good question. Let me refer you
25 to slide 57 of Petitioner's demonstratives. So this is a table from *Schramm*.
26 And *Schramm* stores some information before it even starts its optimization

1 process. On the left you see that there are some choices for segment
2 elevations. And *Schramm* unmodified by *Clapper* is going to say for each
3 segment of our route, what's the elevation change in that segment? And if
4 the elevation changes, say 2, whatever the elevation change corresponds to
5 bucket 2, then it's just *Schramm* unmodified. And *Schramm* is going to go
6 and say, well, let's see what speed I was told to drive, and it's going to pick
7 the energy value for that speed I was told to drive.

8 So let's suppose I was told to drive in speed bucket 1. We know that
9 the energy value for that segment is 1.02, and *Schramm* keeps that speed
10 constant for all of the segments of the route. And it eventually adds up those
11 energy values, allowing elevation to vary by segment, but not allowing
12 speed to vary. And it identifies the energy optimum route in the sense that it
13 looks for the route that has the combination of elevation changes that
14 together give a best summation of energy values from that Figure 6.

15 Your Honor, can you still hear me?

16 JUDGE DOUGAL: So in your new calculation, instead of having it
17 all be calculated based on 50 miles an hour, it's based on segment 2, it's 45,
18 segment 3, it's 75. And so you're calculating your energy consumption value
19 based on different speeds now?

20 MS. DeVRIES: Yeah, that's right. So *Schramm* has all this data
21 already, and we're just allowing the *Schramm-Clapper* combination to make
22 use of this data that already tells us how energy consumption can be affected
23 not only by elevation, which is what *Schramm* uses, but also by speed. So
24 we free the *Schramm-Clapper* combination to use all of the data in this table,
25 and we vary speed by segment within those routes that are available between
26 origin and destination.

1 So now when we get our identified route, the route that has the lowest
2 summation of those energy values that we see in the table, that route is
3 energy efficient because the elevation and speed for each of the segments of
4 that identified route correspond to energy values that sum to a lowest
5 summation of all of the available routes.

6 And in a sense, that's just like what the '161 patent does our speeds --
7 our, I'm sorry, the *Schramm-Clapper* speeds are provided as speed limits or
8 as user histories of certain segments, but they may not be selected because of
9 their efficiency. They are output as efficient speeds because of their
10 association with the lowest summation of all of those energy values selected
11 from the table of figure 6. Just like in the '161 patents, the speeds are
12 provided as arbitrary speeds into the optimization process. They're output as
13 a plurality of efficient speeds because they correspond to energy values that
14 give the lowest possible summation of all of the available options.

15 Do Your Honors have any further questions on *Schramm-Clapper*?

16 JUDGE O'HANLON: No, I don't believe we do. Thank you.

17 We'll now hear from Mr. Herman.

18 MS. DeVRIES: All right. Thank you very much for your time, Your
19 Honor.

20 JUDGE O'HANLON: Mr. Herman, whenever you're ready.

21 MR. HERMAN: Thank you, Your Honors.

22 So, once again, Petitioner ignores the language of the claims, seeks to
23 read out and negate claim limitations. So claims 1 and 10 are both method
24 claims. So it is not enough to simply point to something in the prior art and
25 label that a route and point to something else and label that a segment, and
26 then call it a day.

1 *Neiss*, the prior art in the first ground must actually perform the steps
2 of the claim method in the way the claims require. And what do the claims
3 here require? They first require receiving a route. Then they require
4 segmenting said route into a plurality of segment destinations. The
5 segmenting step is performed on the received route. That's what the claim
6 clearly means when it says "segmenting said route." So it is not enough to
7 just have a segment to just have a route. To meet the claims, you need to
8 receive a route, and then you need to engage in segmenting of that received
9 route.

10 The problem with the petition is that this is not what *Neiss* does. It
11 does not receive and then segment a route. Even if Your Honors assume that
12 *Neiss*'s prediction horizon is a route, *Neiss* cannot be clearer: it does not
13 start with a full complete prediction horizon. Instead, it builds the prediction
14 horizon one cell or integration step at a time by filling the cell with relevant
15 data from a map.

16 Because of this, what Petitioner calls segment destinations always
17 come before the complete prediction horizon. The complete prediction
18 horizon is the last thing that *Neiss*'s system receives before it starts
19 controlling vehicle speed. The claims of the '161 patent require that the
20 route be the first thing received, as the route is what all the other labor claim
21 steps are based on.

22 So Petitioner tries to argue that in *Neiss*, the prediction horizon
23 somehow always exists before it's initialized. It does not. *Neiss* explicitly
24 says that the prediction horizon starts empty. It shows that in its figures.
25 And it also shows and explains that that prediction horizon is first initialized
26 and then filled with road data one cell at a time. There is no other

1 explanation in *Neiss* of how this prediction horizon is filled with road data
2 anywhere else.

3 Next, the prediction horizon in *Neiss* is not the type of route and does
4 not include the segment destinations the claims here require. The prediction
5 horizon is simply some fixed distance ahead of the vehicle, for instance
6 4,000 meters, and the vehicle never reaches that point. It is a moving target.
7 When the vehicle reaches the end of one frame, *Neiss* just adds another
8 frame to the end of the prediction horizon, so it is still 4,000 meters ahead.
9 This process repeats with the prediction horizon always being a fixed 4,000
10 meters ahead of the vehicle. Patent Owner submits that that is not a
11 destination, it is just a point on the road ahead. Nor are the frame ends
12 destinations. They are also just points on the road ahead.

13 The '161 patent's claims use "route" and "segment destinations" in
14 their ordinary sense to refer that the path the vehicle is traveling to its
15 eventual destination and the intermediate destinations the vehicle passes
16 along the way. That is not what the prediction horizon is. Yes, *Neiss* does
17 use the term "route," but besides being along the vehicle route, *Neiss* never
18 says that the prediction horizon matches the route or the path of the vehicle
19 or the path that the vehicle is traveling from its current location to its
20 intended destination.

21 *Neiss* never says that its vehicle is aware of the vehicle's destination,
22 either the final or any intermediate destination. *Neiss* never says that its
23 vehicle takes an existing known route to a destination, either a final or
24 intermediate destination, and segments that route into portions with
25 intermediate segment destinations. *Neiss* never says that his prediction
26 horizon ends at any vehicle destination or any intermediate vehicle

1 destination. Instead, *Neiss* and Petitioner itself characterize the prediction
2 horizon as simply being the road ahead of the vehicle and a fixed distance of
3 road ahead of the vehicle, regardless of whether the vehicle intends to travel
4 that road or route.

5 So again, merely using the words of the claim is not enough. The
6 prior art must actually teach what the claims require. And *Neiss* does not
7 know where the vehicle is going. It follows that the prediction horizon is not
8 a route and includes no destinations as the claims here require.

9 Nor would it have been obvious to receive the whole route in advance.
10 So you heard Petitioner say just now in its rebuttal that in their view, even if
11 the whole route was received, there would be no change in how *Neiss* would
12 perform prediction horizon calculations. But the sole reason why Petitioner
13 noted that *Neiss* would be modified to receive the whole route in the petition
14 was because this would supposedly result in network resource and
15 computational efficiency.

16 So first I'll start by noting that *Neiss* does not use any network
17 resources. I don't know what they're talking about there. The vehicle
18 already stores map data on the vehicle and uses that map data while it's
19 driving along. The vehicle does calculations on the vehicle as the vehicle's
20 driving along. Perhaps Petitioner was confused about *Neiss*'s reference to
21 online calculations. So that word "online" is not referring to computations
22 performed over a network. That just means that computations are performed
23 on the vehicle effectively in real time.

24 So all that leaves for motivation to combine is the supposed savings in
25 computational efficiencies. But doing the exact same computations you did
26 before contributes and improves nothing. So again, whatever Petitioner is

1 proposing results in no actual savings. There is no motivation. Instead, all
2 that there is is the hindsight-based and after the fact justification.

3 JUDGE DOUGAL: Counsel?

4 MR. HERMAN: Yes.

5 JUDGE DOUGAL: Yes, this is Judge Dougal. So looking at the
6 petition on page 17, they definitely, like you just cited, identify their first
7 reason to combine as being computationally efficient. But then their second
8 ground, that is they say -- or the second reasoning, they say it was well
9 known to upload a route in an external mapping application in the context of
10 a vehicle control system.

11 So this is just well-known technology. Predictable. I mean, I want to
12 use their actual words, right, application of a known technique to a known
13 system to yield predictable results. And they cite KSR. Is there a deficiency
14 there? What's your response to that?

15 MR. HERMAN: Your Honor, the deficiency there is that *Neiss*
16 purposefully chose not to do that. But it notes in this background section
17 that there are systems like that. There are systems that receive the entire
18 route in advance. Those systems exist. But it is not that. It purposefully
19 chose not to receive the entire route in advance and it distinguished itself
20 from that. So what it decided to do, what *Neiss* decided to do was not
21 receive the entire route in advance, not perform calculations for the entire
22 route in advance, and instead, only perform calculations online as the vehicle
23 drives along.

24 So, yes, it was known that cars could navigate from position A to
25 position B in prior art, but *Neiss* purposefully did not take the type of

1 approach that prior art references like that are talking about where you
2 perform computations for the entire route.

3 And also I'll note that simply saying that you receive the entire route
4 on the vehicle doesn't really say anything at all here because the claims
5 require more than that, not just receiving the route on the vehicle, but
6 segmenting the route and performing calculations for those segments. So
7 saying that you receive the entire route, but then only perform calculations
8 for a tiny little sliver doesn't get you anywhere near what the claims require,
9 because the claims require segmenting the entire route and then performing
10 calculations for the entire route.

11 But I think this theoretical argument that we're talking about here does
12 not even arrive at the claim subject matter, which is why when you look at
13 the petition, the petition argued that it would have been computationally
14 efficient to perform calculations for the entire route, because that's the
15 argument that they were trying to make. They were trying to make the
16 argument that *Neiss* would receive the entire route and perform calculations
17 for the entire route. And Patent Owner's view is that that would not have
18 been obvious because it's contrary to what *Neiss* teaches about how
19 computations are being done. Does that answer Your Honor's question?

20 JUDGE DOUGAL: Yes. Thank you.

21 MR. HERMAN: So I don't remember where I left off, but I'll start
22 again with the *Schramm* and *Clapper* combination. And I'll conclude by
23 briefly addressing that ground. So Patent Owner's point here is that the prior
24 art, even when combined, is completely missing a required claim limitations.
25 So the combined system of the prior art simply does not determine any
26 efficiency, let alone the plurality of efficient speeds that the claims require.

1 Instead, the combined system will simply use whatever speeds are stored in
2 *Clapper's* database as the vehicle changes its position along a route. There
3 are no determined deficiencies.

4 Note also that the petition did not argue that *Clapper* would store a
5 whole bunch of different speeds for each segment and that the combined
6 system would somehow pick the best one. So that's not what the petition
7 argued, and that's not what *Clapper* teaches. *Clapper* stores only a single
8 speed for each position, and the petition simply argued that *Schramm* would
9 use those stored position speeds as the vehicle moved along. So it's *Clapper*
10 stored speeds, which are individual speeds for given positions that are output
11 and used by *Schramm's* system. And simply pointing to a combination of
12 references does not allow one to completely ignore claim limitations. And
13 that Petitioner -- or Patent Owner submits is exactly what Petitioner is doing
14 here.

15 With that, do Your Honors have any further questions?

16 JUDGE O'HANLON: We do not. Thank you, Mr. Herman. Thanks
17 to all counsel today for your presentations and answering our many
18 questions. We appreciate it. The case is submitted. A final written decision
19 will be issued in due course.

20 Let's go off the record.

21 (Whereupon, the proceedings at 3:18 p.m. were concluded.)

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