

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

iQAR, INC. F/K/A INVENTLY AUTOMOTIVE, INC.,
Patent Owner

Case No. IPR2024-00545
Patent No. 8,972,161

PATENT OWNER'S SUR-REPLY

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Patent Owner iQar respectfully submits this sur-reply to Petitioner's reply (Paper 13). The reply continues to misunderstand the claims and mischaracterize the prior art. The art does not teach what the '161 patent's claims require.

I. INTRODUCTION

The '161 patent is directed to a method for managing vehicle power consumption. The method entails receiving a route, segmenting that route into multiple segment destinations, determining a plurality of efficient speeds that achieve a best summation of energy values, and then notifying the driver of the determined speeds to travel between the segment destinations.

The prior art identified in the Petition is fundamentally different. Neiss—the reference at issue in ground 1—never receives a route at all. It is unaware of where the vehicle is travelling and instead just considers the road immediately ahead of the vehicle (which it calls a “Prediction Horizon”) when setting speed. Because of this, Neiss fails to teach numerous required claim limitations. The Prediction Horizon is not a “route.” And Neiss does not engage in “segmenting” an already received “route.” Instead, it builds its Prediction Horizon one sliver of road at a time.

Schramm and Clapper—the references at issue in ground 2—are no better. Neither reference makes any sort of efficient speed determination as all of the claims require.

Petitioner’s reply addresses none of this. Instead, it spends the bulk of its time arguing that the various limitations should be read out of the claims. For instance, Petitioner would have the Board find that there can be a “route” without a destination, “segmenting said route” can occur even if there is no “route” at all, and “determining a plurality of efficient speeds” can entail nothing more than plugging inefficient speeds into a route determining algorithm. This invites error. It certainly does not show obviousness.

II. ARGUMENT

A. Ground 1: Neiss Does Not Render the Claims Obvious

Again, Neiss does not teach what the claims require: it neither receives nor segments a vehicle route. Petitioner’s reply has not shown otherwise.

1. Neiss Performs the Claimed Steps Out of Order

As explained in Patent Owner’s response, claims 1 and 10 of the ’161 patent require an ordered, two-step process. Both claims are method claims. And both require that a “**route**” be “**receiv[ed] ... at a computer of said vehicle.**” Then, it is this “**receiv[ed]**” route that must be “**[s]egment[ed] ... into a plurality of segment destinations.**” The response also explained that even if one were to improperly characterize Neiss’s Prediction Horizon as a “route” (it is not), Neiss performs the claimed steps out of order. It starts with an empty Prediction Horizon and then iteratively fills that empty Prediction Horizon with road and speed data. See Neiss, ¶¶ [0178]-[0180] (noting that Neiss’s ring buffer / Prediction Horizon must be

“initializ[ed]” and “filled” with road and speed data before vehicle speed can be controlled). So, in Neiss the cart comes before the horse. Assuming the Prediction Horizon is in fact a “route” (again, it is not), Neiss does not “segment” this “route.” At best it, builds the “route” out of “segments.” See Response at 15-17.

Petitioner does not dispute that this is exactly how Neiss operates. Instead, it spends its reply arguing that the “plain language of the claims does not require that the route be received before it is segmented.” *E.g.*, Reply at 5. According to Petitioner, because the claims do not provide that the claimed “segmenting” “be performed by the claimed computer” that receives the route, “they ... impose no requirement that the segmenting necessarily must be performed after receipt of the route.” *Id.*

This entirely misses the point and fails to even remotely account for what the ’161 patent claims and discloses. Whether or not “segmenting” is performed by the same “computer of said vehicle” that receives the “route” does not matter. The claims still require that **“said route”** be segmented. Segmenting something besides “said route” does not fall within the claim scope. And a route cannot be segmented if it does not yet exist. Thus, the claims plainly require that (1) the route exist first and then (2) that it be this already existing route that is subject to segmenting. This is where Neiss falls short. It does not segment an existing route. It stitches data relating to slivers or pieces of road together into a longer Prediction Horizon. This

does not entail “segmenting” the Prediction Horizon. It is **building** that Prediction Horizon. Claims terms have meaning and cannot be ignored. And the claims here unambiguously require “segmenting” of a “route,” not building a “route.” Petitioner has failed to show how Neiss performs this step.

Next, Petitioner has not explained how its interpretation of the ’161 patent’s claims—which effectively reads out the claimed “segmenting” step—is consistent with the specification. This is likely because there is nothing in the specification for it to point to. In **every embodiment**, it is an **existing** route that is segmented. See, e.g., Ex. 1001, 11:15-17; 13:44-47; 13:51-58; 14:5-12; 14:65-15:7; Fig. 2. Indeed, the ’161 patent even distinguishes its method—where a known route is segmented and then used to optimize speed—from prior art systems that do not segment and instead merely consider the vehicle’s current location. See *id.*, 6:34-7:3; Figs. 1A-1B. Claim terms “ordinarily cannot be construed broader than the disclosure in the specification.” *Indacon, Inc. v. Facebook, Inc.*, 824 F.3d 1352, 1357 (Fed. Cir. 2016). This, however, is what Petitioner improperly proposes here.

Apparently recognizing the issues presented by its strained interpretation of the claims, Petitioner attempts to pivot by arguing that Neiss’s “route” is not its Prediction Horizon at all but is instead the collection of “digital road map” data stored by Neiss. Reply at 18-21 (explaining that “the road section ahead of the vehicle ... is ... known by the computer that manages the ring buffer, such that the

data characterizing that road section can be populated into the ring buffer” that forms the Prediction Horizon). This was not an argument made in the Petition. There, the only thing Petitioner identified as a “route” was Neiss’s Prediction Horizon itself. *See, e.g.*, Petition at 14 (“The Prediction Horizon ... corresponds to a route....”). A “[p]etitioner may not submit new evidence or argument in reply that it could have presented earlier.” *VidStream LLC v. Twitter, Inc.*, 981 F.3d 1060, 1064 (Fed. Cir. 2020); *see also Rembrandt Diagnostics, LP v. Alere, Inc.*, 76 F.4th 1376, 1385 (Fed. Cir. 2023). That, however, is exactly what Petitioner is attempting to do here. In any event, Neiss’s “digital road map” data is not a “route.” This data corresponds to many different possible roads that the vehicle may encounter. One would not consider a road atlas to constitute a “route.” The “digital road map” is no different: it provides no indication of where the vehicle is, or where it is going.

2. Neiss’s Prediction Horizon Is Not a “Route”

Next, Patent Owner’s response explained at length why Neiss’s Prediction Horizon does not constitute a route at all. Neiss is unaware of the vehicle’s destination (either its final destination or any intermediate destinations). The Prediction Horizon is simply a portion of the road immediately ahead of the vehicle. And Neiss’s system is indifferent to whether the vehicle will actually travel over this road. Indeed, the system is specifically designed to allow for recalculation in the event the vehicle deviates from the Prediction Horizon. Response at 22-24.

Once again, Petitioner does not dispute that Neiss operates in this very way: Neiss is unaware of and indifferent to the vehicle's destination. Instead, Petitioner attempts to defend its ground by proposing an excessively broad construction of the term "route." According to Petitioner "[n]othing in the claim demands that a route must include a destination." Reply at 3. In other words, in Petitioner's view, the claimed "route" can simply be a road regardless of whether the vehicle intends to travel over that road or not. *See generally id.*

This is wrong. The claims **do** require a destination. Per the claims, the "receive[d] ... route" is "segment[ed] ... into a plurality of segment destinations." Ex. 1001, claim 1. So not only does the claimed route have a destination, it must have a **plurality** of destinations. The only reasonable way to interpret this is that the route is broken up into a series of segments, each of which concludes with "segment destination." The final such "segment destination" is the route's (and the vehicle's) end destination. If the final "segment destination" were not the route end, the "segmenting" of "said route" would not have occurred as the claims require. Instead, only a portion of the route—and not "said route"—would be segmented. So, in sum, by its very words the claims require a "route" with both a final and multiple intermediate destinations. This is exactly how Petitioner interpreted the claims in its Petition. *See, e.g.,* Petition at 20 (graphically showing an alleged "route" with

multiple “segment destinations,” the final such “segment destination” corresponding to the end of the “route”).

Next, the word “route” in the ’161 patent does not refer simply to a road. As Petitioner itself admits, a “route” is a “***path*** from one point/position to another point position.” Reply at 3 (emphasis added). This is how the ’161 patent repeatedly uses the term “route.” Throughout the patent, a “route” always has a start, an end, and a path from that start to end. Ex. 1001, 5:19-21 (a route is “for” a “destination”); 9:10-15 (a “route” has a “starting location,” “any intermediate locations,” and a “destination”); 11:13-17 (a “route” extends “from the starting position” to “an actual or estimated ending position”); 14:20-22 (a “route” extends “from the” vehicle’s “initial position to a destination (e.g., a final destination or an intermediate destination)”); *see also* Response at 18-20. The patent **never** states that there can be a “route” without a destination. The patent also **never** states that a route can simply be a road. That, however, is how Petitioner proposes interpreting the claims. Again, a patent’s claims must be interpreted in a way consistent with the disclosure in the specification. *See Indacon*, 824 F.3d at 1357. Petitioner would have the Board ignore the specification.

None of Petitioner’s other arguments have any merit. According to Petitioner, even if the claimed “route” requires a destination, Neiss still teaches what the claims require because its Prediction Horizon ends at a supposed “intermediate

destination.” Reply at 9-10. It does not. The Prediction Horizon is just a portion of road. Neiss, ¶¶ [0015] (the “Prediction Horizon” is a “predetermined distance” ahead of the vehicle); [0048] (noting that the “Prediction Horizon” is the “approaching road”), [0162] (defining “Prediction Horizon” as “an area around the current vehicle position[]”). It has nothing to do with where the vehicle is going. This is why Neiss continually checks to ensure that the vehicle is actually travelling along the road reflected by the Prediction Horizon: it does not know if the vehicle will actually traverse any of the Prediction Horizon let alone reach its end. *See id.*, ¶ [0188] (noting that “output values for the respective vehicle positions are read out”); Fig. 6 (noting that Neiss uses a “Position Estimator 25” to query its “Look-up Table 26”).

Petitioner also wrongly argues that Neiss recognizes some sort of “correlation between the Prediction Horizon and the vehicle’s overall route.” Reply at 11. Neiss simply uses the word “route” to refer to the road ahead of the vehicle. *See, e.g.*, Neiss, Abstract (referencing the “route ahead of the vehicle”); ¶¶ [0001] (referencing the “route section ahead of the vehicle”); ¶ [0015] (similar). What Neiss does not do, however, is determine the vehicle’s destination. It is never aware of any destination, let alone the multiple “segment destinations” (which must include the route end) the claims here require. So, all that Petitioner has done is note that Neiss

uses the word “route.” The prior art, however, must teach what claims require. Just using the same words as the claims is not enough.

3. Petitioner Has Failed to Show that It Would Have Been Obvious to Modify Neiss

Next, Petitioner attempts to argue that even if the claimed “route” must end at the vehicle’s destination (it does for the reasons explained above), Neiss somehow still “teaches or renders obvious receiving a ‘route’ that” spans the complete path traveled by the vehicle. Petition at 13. There is no such teaching in Neiss. And Petitioner’s attempts to argue that there is (1) mischaracterizes Neiss and misreads the claim, (2) improperly tries to interject a new argument into the proceeding, and (3) borders on the nonsensical.

First, Petitioner is wrong when it argues that the fact that Neiss continually performs new Prediction Horizon calculations as it travels along somehow satisfies the claim limitation requiring “receiving a route.” *Id.* at 13-14. Per Petitioner, “Neiss’s vehicle unequivocally traverses an overall, start-to-finish route, such that the set of Prediction Horizons that constitutes the route to the final destination will have been received (either all at once or iteratively).” *Id.* There is no such disclosure in Neiss. Neiss stores its Prediction Horizon in a “ring buffer memory.” Neiss, ¶ [0162]. And this ring buffer stores only a single Prediction Horizon at a time: earlier ring buffer entries are replaced with new entries as the vehicle travels. *See id.*, ¶¶ [0188]-[0191].

Because it stores only a single Prediction Horizon, Neiss's system never receives any "set" of Prediction Horizons. Instead, it is specifically designed not to collect or store information relating to the entirety of a route. *See id.*, ¶¶ [0007]-[0008] (discussing problems with systems that store speed control data for an entire route). This is because, according to Neiss, the vehicle may encounter a variety of "unforeseeable driving situations" that require recalculation. *Id.*, ¶¶ [0008], [0167]. Petitioner argues that these are only "remote possibilities" that have little bearing on how a POSITA would interpret Neiss. Reply at 14-15. They are not: they are routine driving events like "a slower vehicle driving ahead" or a "change in route." Neiss, ¶¶ [00164]-[0169]. Because Neiss's system does not store an entire route—and stores only one Prediction Horizon—it is able to account for these routine occurrences while using "[l]ess memory." *Id.* By proposing that Neiss would for some reason store many Prediction Horizons, Petitioner ignores this. A POSITA would not consider it obvious to do what Neiss says should not be done (*i.e.*, store more than a single, short Prediction Horizon).

Second, Petitioner now proffers entirely new arguments regarding why Neiss's system would purportedly employ a Prediction Horizon corresponding to a "route." As noted in the Response, because the Prediction Horizon is just a fixed slice of road, Neiss's Prediction Horizon will never correspond exactly to the route the vehicle actually travels or end at the same point as the vehicle's destination.

Instead, the Prediction Horizon will—because it is simply the road ahead and is continuously updated—cover untraveled road and extend well beyond the vehicle’s destination. *See* Response at 25-26. According to Petitioner, this does not matter because it purportedly be “a mere implementation detail to set the length of the frames in the Prediction Horizon such that the endpoint of the last Prediction Horizon aligns with the final destination of the overall route.” Reply at 15. There was no such argument in the Petition. Petitioner never argued that the “length” of Neiss’s frames would be “set” in such a way. And it points to no evidence explaining how or why this would be done, or even if it is possible given that Neiss’s system is unaware of the vehicle’s destination. Again, a petitioner is prohibited from introducing new arguments in reply. *See VidStream*, 981 F.3d at 1064 (Fed. Cir. 2020). And every argument that Petitioner does make must be supported by evidence. Attorney argument alone does not show obviousness. *See Enzo Biochem, Inc. v. Gen-Probe Inc.*, 424 F.3d 1276, 1285 (Fed. Cir. 2005) (“[a]ttorney argument is no substitute for evidence”). This portion of Petitioner’s reply runs afoul of these principles.

Third, as explained in Patent Owner’s response, performing calculations for an entire route in advance would be wasteful, computationally inefficient, and contrary to Neiss’s teachings. *See* Response at 26-27. Petitioner does not dispute any of this. Instead, it pivots and argues that “[t]his is not the theory advanced in

the Petition.” Reply at 17. According to Petitioner, its “theory” is that Neiss would receive the “entire ... end-to-end route” in advance but would then for some reason ignore this and instead continue to perform “calculations ... iteratively for each successive Prediction Horizon” as the vehicle traverses that Prediction Horizon. *Id.* This does not make any sense. And it certainly does not show obviousness. According to Petitioner, supplying Neiss’s system with the entire route would “enable quicker computations on upcoming route segments/frames.” Petition at 17. But if speed computations are still performed in real-time as the vehicle traverses a route, there would be no difference in computation time at all. Petitioner has proposed a meaningless modification. Next, the claims require “segmenting” “said route.” Under Petitioner’s proposed modification, Neiss would receive a route but not segment it. Instead, it would behave exactly as it currently does: iteratively building its Prediction Horizon one frame at a time. So, as expressed in Petitioner’s reply, this argument does nothing to show non-obviousness as it does not change Neiss’s fundamental operation.

B. Ground 2: Schramm and Clapper Do Not Render the Claims Obvious

Ground 2 in the Petition argued that the combination of Schramm and Clapper purportedly render the ’161 patent’s claims obvious. Patent Owner’s response pointed out that these references do not teach a required claim limitation: ***“determining a plurality of efficient speeds that achieve a best summation of said***

energy values.” While Schramm’s system calculates an optimal route for the vehicle, it does so using whatever speed the driver chooses. It does not determine any efficient speeds. Clapper employs a simple look-up table of past speeds to control vehicle speed as it travels from position-to-position. It also does not determine any efficient speeds. See Response at 30-33.

Petitioner spends its reply pointing out that Petition identifies “combination” of art. See Reply at 22-25. While it is of course true that the combined teachings of the art must of course be considered in an obviousness analysis, this does not somehow mean that claim limitations can be ignored. Even in combination, the art must still teach everything the claims require. Again, claims 1 and 10 of the ’161 patent require **“determining a plurality of efficient speeds that achieve a best summation of said energy values.”** The combination of Schramm and Clapper do not teach this. Schramm takes speed as input when determining an optimal vehicle route. Clapper stores inefficient speeds. So, the combined system will simply take Clapper’s inefficient speeds as inputs when performing Schramm’s route determination process. The mere fact that Schramm calculates an optimal route given inefficient input speeds does not somehow transform those inefficient speeds into efficient speeds. The inefficient speeds are still inefficient speeds. This is what Petitioner misses. It has failed to identify anything in the combination of Schramm and Clapper that constitutes the required **“determining”** of **“a plurality of efficient**

speeds that achieve a best summation of said energy values.” This showing deficiency requires rejection of this ground.

III. CONCLUSION

For the foregoing reasons, along with those articulated in Patent Owner’s response, Patent Owner respectfully submits that patentability of the challenged claims should be confirmed.

Respectfully submitted,

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