

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

iQAR INC.,
Patent Owner

Case IPR2024-00543
U.S. Patent No. 10,882,399

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	CLAIM CONSTRUCTION	2
A.	iQar’s Implicit Constructions Depart From Plain Meaning Without Sufficient Justification.....	4
1.	<i>Segment</i> ([1.a], [11.c.1])	5
2.	<i>Vehicle Route</i> ([1.a], [11.c.1]).....	10
3.	Application of <i>Electric Power</i> ([1.c], [11.c.1], [11.c.2])	11
III.	CLAIMS 1 AND 11 ARE UNPATENTABLE.....	15
A.	Hongo’s Identification Of Driving Blocks (BKNs) Discloses A <i>Segment Of A Vehicle Route</i> ([1.a], [11.c.1]).....	15
B.	Hongo’s Adaptive Cruise Control Renders Obvious The Application Of <i>Calculated Electric Power To The Vehicle To Travel Along The Segment Of The Vehicle Route</i> ([1.c], [11.c.2])	18
IV.	CLAIMS 6 AND 8 ARE UNPATENTABLE.....	23
A.	Hongo Describes <i>Determining Multiple Route Segments</i> As Recited In Claim 6	23
B.	Hongo and Newstrom Render Obvious <i>Communicating With A Remote Database</i> As Recited By Claim 8	26
V.	CONCLUSION.....	29

LIST OF EXHIBITS

TESLA-1001	U.S. Patent No. 10,882,399 to Koebler, et al. (“the ’399 Patent”)
TESLA-1002	Excerpts from the Prosecution History of the ’399 Patent (“the Prosecution History”)
TESLA-1003	Declaration and Curriculum Vitae of Dr. Vassilios Morellas
TESLA-1004	Complaint, iQar Inc. v. Tesla, Inc., 1:23-cv-00694, W.D. Tex., June 20, 2023
TESLA-1005	Certified Translation of Japanese Pat. Pub. No. JP 2003-276472 (“Hongo”)
TESLA-1006	Translation Certification for TESLA-1005
TESLA-1007	Japanese Pat. Pub. No. JP 2003-276472 (“Hongo2”)
TESLA-1008	U.S. Pat. No. 6,282,464 (“Obradovich”)
TESLA-1009	U.S. Pat. No. 7,059,435 (“Niki”)
TESLA-1010	U.S. Pat. App. Pub. No. US 2005/0251325 (“Kudo”)
TESLA-1011	U.S. Pat. No. 6,314,347 (“Kuroda”)
TESLA-1012	U.S. Pat. No. 7,552,008 (“Newstrom”)
TESLA-1013	U.S. Pat. No. 8,229,644 (“Boecker”)
TESLA-1014	U.S. Pat. No. 6,420,975 (“DeLine”)
TESLA-1015	Trach, Walter, Jr. et al., “Driver Assistive Systems for Rural Applications: Digital Mapping of Roads for Lane Departure Warnings (“Trach”)
TESLA-1016	Mukhachev P. A. et al., “Modern Machine Learning Methods for Telemetry-Based Spacecraft Health Monitoring,” Automation and Remote Control, 2021, Vol. 82, No. 8, pp. 1293–1320 (2021)

TESLA-1017	Gorjestani A. et al., “Radar Based Longitudinal Virtual Bumper Collision Avoidance System Implemented on a Truck” (Feb. 1999)
TESLA-1018	Walker, Jearl, “Fundamentals of Physics,” 10th Edition, Halliday & Resnick, ISBN 978-1-118-23072-5 (“Walker”)
TESLA-1019	U.S. Pat. App. No. 2004/0180670 (“Pande”)
TESLA-1020	U.S. Pat. No. 7,860,647 (“Amano”)
TESLA-1021	U.S. Pat. No. 7,460,946 (“Shima”)
TESLA-1022	U.S. Pat. No. 6,675,085 (“Straub”)
TESLA-1023-1049 RESERVED	
TESLA-1050	Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (USPTO June 21, 2022) (“Director’s Guidance”)
TESLA-1051	Defendant Tesla, Inc.’s Opposed Motion to Transfer Venue to the Northern District of California Under 28 U.S.C. § 1404(a), iQar Inc. v. Tesla, Inc., 1:23-cv-00694, W.D. Tex., October 31, 2023
TESLA-1052	District Court Trial Statistics (12-Month Period Ending June 30, 2023 June 30, 2023)
TESLA-1053	Supplemental Declaration of Vassilios Morellas
TESLA-1054	Deposition Transcript of Chris Hoff (January 30, 2025)
TESLA-1055	Excerpts of Merriam Webster’s Collegiate Dictionary, Eleventh Edition (2003)

I. INTRODUCTION

iQar’s Patent Owner Response (“POR”) seeks to distinguish asserted prior art. But without claim language to permit such distinction, iQar is forced to resort to implicit constructions in developing its patentability narrative. These constructions clearly depart from plain meaning. While iQar identifies certain examples of specification disclosure, the law is clear that mere disclosure is insufficient for such departure—clear and unambiguous evidence of disclaimer, disavowal or redefinition is required. *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040 (Fed. Cir. 2016); *Thorner v. Sony Computer Ent. America LLC*, 669 F.3d 1362, 1366-67 (Fed. Cir. 2012). The POR fails to identify such evidence, and iQar’s constructions therefore fail as a matter of law.

The constructions are also not new. iQar already pursued them in its Preliminary Response (“POPR”). And, while the POR is accompanied by testimony from Craig Hoff, this testimony provides nearly no corroboration for repackaged POPR arguments. The POR also fails to address aspects of the underlying record highlighted by Tesla in its Preliminary Reply, much less address the unfavorable analysis and findings offered by the Panel (albeit, preliminarily) in the Institution Decision. *See* Prelim. Reply, 2 (citing TESLA-1001, 5:38-55, 14:5-39, 18:33-36, 20:19-25).

iQar’s patentability narrative is rooted in a flawed interpretation of the

claims as requiring “a prospective determination of the electric power needed to travel along a not yet traveled segment of a vehicle route at a certain speed.” POR,

1. To be clear, the language at-issue in claim 1 is ***determining a segment of a vehicle route*** ([1.a]), and ***applying calculated electric power to the vehicle to travel along the segment of the vehicle route at a calculated speed*** ([1.c]).¹ This language has no requirement for timing associated with the ***determining*** and ***applying*** operations. And the Panel observed the same, noting that “claim 1 does not specify how or when electric power and speed are calculated.” Dec., 16.

The challenged claims are left without any meaningful patentable distinction from the prior art under plain meaning. The Panel should therefore reject iQar’s implicit constructions and consequently find claims 1-20 unpatentable.

II. CLAIM CONSTRUCTION

iQar mischaracterizes the ’399 patent in demanding the claimed invention requires a “prospective determination of the electric power.” POR, 1. This requirement is borne out of iQar’s attempt to avoid well-known techniques relating to using a current vehicle position to identify a current route section in calculating and maintaining a target vehicle speed for that section (as taught in Hongo). iQar therefore unsurprisingly seeks a patentability narrative that *excludes* examples of

¹ Reference to claim language is bolded and italicized throughout.

power optimization techniques within the specification that involve current segment information and are still within claim scope.

These power optimization techniques are enabled through calculation of an “efficient speed.” TESLA-1001, 2:21-63, 5:31-55. This calculation involves two values: (1) “probable optimal speed,” which is derived from historical data reflecting the most energy-efficient speed previously recorded for a segment, and (2) “optimized speed,” which is computed in real-time using physics-based energy calculations based on environmental factors, vehicle status, and operational parameters. *Id.*, 19:33-45; 21:1-10; *see also id.*, 11:44-63, 14:47-17:37. These values are weighted to determine the most effective speed for energy-efficient travel. *Id.*, 21:1-10. The system then calculates and applies a corresponding power required to maintain the efficient speed. *Id.*, 19:46-61. According to the specification, this ensures that the vehicle consumes the least energy necessary while still maintaining the optimal speed for the given segment, adapting both to historical efficiency trends and real-time driving conditions. *Id.*

This framework is expressed in the specification through various examples of power optimization techniques, including some where power is calculated and applied while a vehicle is traveling within a current segment, and others where power is applied prospectively. TESLA-1053, ¶¶12-28. iQar exclusively focuses

on the latter, but does so unjustifiably because claims 1 and 11 lack limiting language and the specification does not identify any disclaimer or disavowal.

The specification confirms the opposite—power optimization techniques where power is calculated and applied while a vehicle travels within a current segment are within claim scope. The “efficient speed” discussed above is encompassed by the *calculated speed*, and, includes a weighted combination of the “probable optimal speed” and the “optimized speed.” Determination of the “probable optimal speed” involves identifying a segment that includes the vehicle’s current position (i.e., a current segment). TESLA-1001, 18:4-67, FIG. 5. Further, the “probable optimal speed” may be calculated for each segment, confirming that power needed to maintain the “efficient speed” may similarly be calculated and applied while a vehicle travels through a current segment. TESLA-1053, ¶¶18-28; *see* TESLA-1001, 18:25-67, 21:1-55. This is also consistent with the Panel’s observation that the claims may be satisfied by “rely[ing] on historical route information to optimize the energy used to travel each segment of a route.” Dec., 16.

A. iQar’s Implicit Constructions Depart From Plain Meaning Without Sufficient Justification

iQar’s implicit constructions depart from plain meaning because they restrict scope without supporting language. These departures are unjustified because there

is no evidence of clear and unmistakable disclaimer, disavowal, or redefinition, and the POR fails to demonstrate otherwise. The POR similarly fails to meet the standard required for lexicography. *Hill-Rom Services, Inc. v. Stryker Corp.*, 755 F. 3d 1367, 1371 (“The standards for finding lexicography and disavowal are exacting”); *see Thorner*, 669 F.3d, 1365. Unlike lexicography and disavowal, the specification instead observes “there are many ways to optimize energy efficiency,” confirming that the claims should not be limited in the manner advanced in the POR. TESLA-1001, 7:32-36; *see* TESLA-1054, 41:20-43:6; 44:20-45:19.

1. ***Segment*** ([1.a], [11.c.1])

Claims 1 and 11 describes a ***segment*** as part ***of a vehicle route***. The plain meaning of “segment” is “a separate piece of something.” *See* TESLA-1053 (citing TESLA-1055, 5). Thus, reference to ***segment*** in relation to the clause ***of a vehicle route*** means “a separate piece of a vehicle route.” *Id.* Further, the plain meaning of “route” is “a traveled way.” *Id.* (citing TESLA-1055, 4). As such, ***segment of a vehicle route*** plainly means “a separate piece of a traveled way of a vehicle.” *Id.* If temporal characteristics relating to vehicle position while traveling were desired, the patent drafter would have used modifiers used in the specification, such as “**current** route segment” and “**upcoming** route segments”)

(or “next segments”). TESLA-1001, 3:55-4:15²; *see also id.*, 5:31-55; *See* Prelim. Rep., 2. These modifiers are absent, and thus, the claim language reveals an intent for broader scope.

The specification reinforces this plain meaning understanding of [1.a] and [11.c.1] because it describes examples of current segment information being used in relation to power calculation and application associated with the “efficient speed.” In Figure 5 (below), the “probable optimal speed” (constituent element of the “efficient speed”) is determined by identifying a segment that includes a vehicle’s current position. TESLA-1001, 18:4-67.

² Emphasis is added in bolded and underlined font.

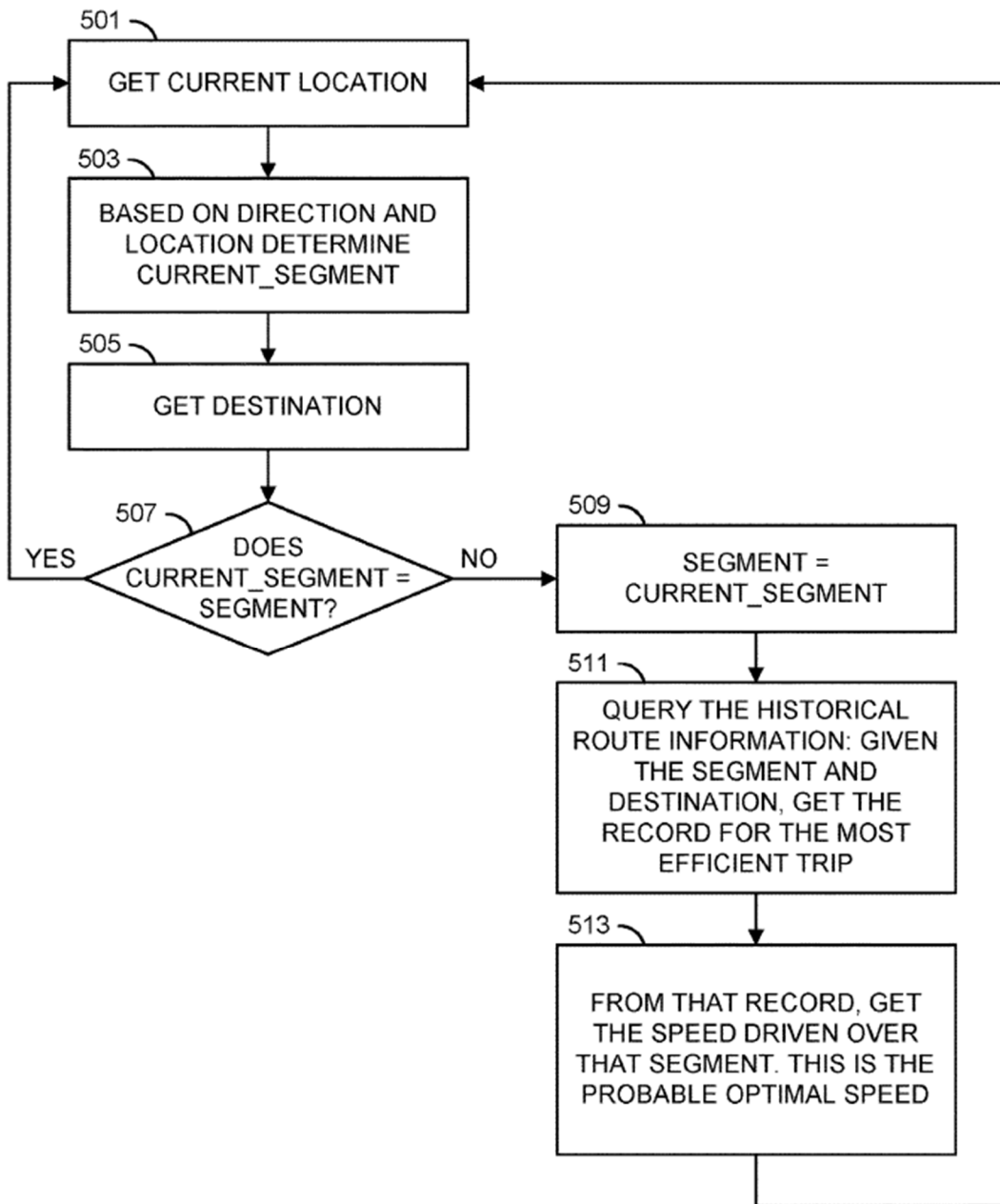


FIG. 5

TESLA-1001, FIG. 5

As shown above, the “probable optimal speed” is determined “as the **current segment** changes (e.g., as the vehicle moves).” TESLA-1001, 18:57-67. This

involves “using historical data to determine a Probable Optimal Speed.” *Id.*, 18:25-56. Once the vehicle has “entered a new segment,” “[a] database is examined to find the historical information about this segment.” *Id.* This “new segment” is a current segment because it includes a current position of the vehicle once the vehicle has entered it (i.e., the segment on which the vehicle is currently traveling). TESLA-1053, ¶¶29-32.

Indeed, in deposition, Dr. Hoff confirmed that a segment involved in Figure 5 is an example of the *segment* under plain meaning because the method involves determining a segment based on a current vehicle position as the vehicle is traveling along a route (e.g., *determining a segment of a vehicle route*). *See* TESLA-1054, 18:12-19:4, 19:14-20:1. The segment is then used to query historical segment information identifying a historical speed for that segment, which is then used to calculate a probable optimal speed. *Id.*, 21:6-17; *see* TESLA-1001, 18:57-67; TESLA-1053, ¶33.

Further, the specification’s usage of the term “segment” within the context of its disclosed power optimization techniques is also consistent with the plain meaning of *segment* encompassing both current and future segments. *See, e.g.*, TESLA-1001, 3:55-4:15. Specifically, in examples where “applied power” is “calculated continuously[,]” power calculation occurs “at each point (e.g., every segment, or points within a segment) as the vehicle is driven.” *Id.*, 5:49-55. In

these examples, because “the most energy efficient speed at which to drive may be continuously calculated,” power application through use of calculated energy efficient speeds occurs for “**current and upcoming route segments.**” *Id.*, 5:43-50; *see* TESLA-1005, [0009]. These examples are within claim scope under plain meaning (where no temporal requirements are imposed on the segment). Dec., 16; TELS-1001, 5:38-55, 14:5-39, 18:33-36, 20:19-25; TESLA-1053, ¶¶34-39.

The POR’s blanket assertion that power optimization techniques involving future segments are a “central purpose” of the purported invention also misrepresents the specification. POR, 24-25. This presumes, without any disclosure, that no energy efficiency benefits may be achieved through power optimization techniques involving use of current segments. POR, 24-25. If this were true, then Figure 5 would not involve current segment information in determining a “probable optimal speed.” Instead, in this technique, a current segment is used to query a database to obtain historical information to determine “a speed that is most likely the best (e.g., most efficient) speed to travel for the current trip.” TESLA-1001, 18:25-56.³

³ To the extent that iQar’s position is that Figure 5 is outside the scope of claims 1 and 11, the POR’s proffered evidence fails to meaningfully demonstrate disavowal

2. ***Vehicle Route*** ([1.a], [11.c.1])

Claims 1 and 11 use “vehicle” as an adjective to modify the noun “route,” signaling that the ***vehicle route*** references a route (“a traveled way”) for a vehicle. TESLA-1053, ¶40 (citing TESLA-1055, 4). Nothing in the plain meaning of ***vehicle route*** limits the “traveled way” to one that ends at a particular destination. Indeed, a ***vehicle route***, plainly read, may be understood without a final destination as a defining attribute. *Id.*, ¶¶41-42.

The specification reinforces this plain meaning understanding through non-limiting examples of vehicle routes. *See, e.g.*, TESLA-1001, 2:64-3:19, 11:44-12:15, 14:25-37. While some examples may be “determined based on the current position of the vehicle and a final destination position,” this statement is not definitional. TESLA-1001, 11:64-12:15. In other power optimization techniques, energy efficiency may be provided in a manner that “[t]he destination of the driver does not have to be known (e.g., input into a GPS or other similar system by the driver).” *Id.*, 2:64-3:19. Further, “[t]he route may be continuously re-segmented,” e.g., “as the vehicle moves” and as “the power management device may become aware of changing road conditions...” *Id.*, 14:25-37. These descriptions

or disclaimer. *Compare* Ex-2007, ¶¶78, 90, 163, 171-179, 185-88, 190, 204, 206, 217, 226, *and* TESLA-1053, ¶¶18-26.

demonstrate a lack of an unambiguous disclosure that a **vehicle route** is defined by a final destination point. TESLA-1053, ¶¶43-45. Dr. Hoff agreed, since in deposition he testified that a final destination “is **one feature** of the route, but it’s a fairly key feature of the route.” TESLA-1054, 36:21-37:3. He then confirmed that claims 1 and 11 make no reference to a “destination.” *Id.*, 36:8-13.

iQar’s interpretation of **vehicle route** as requiring a final destination point thereby departs from plain meaning. In [1.a], because “determining” is used as a verb to modify the noun “segment,” the required determination is of the **segment**—not the **vehicle route**. iQar’s interpretation is also unusable and intractable because there is no clear statement in the specification as to what is represented by a “final destination position.” Rather, the specification describes real-world scenarios where a destination may constantly change, suggesting a vehicle route may exist without a specified final destination position. *See, e.g.*, TESLA-1001, 12:48-59 (“Thus, as the vehicle drives around, the probable destination determined by the statistical destination logic **may constantly change** to revise the destination or intermediate destination”); TESLA-1053, ¶¶46-47.

3. Application of **Electric Power** ([1.c], [11.c.1], [11.c.2])

Claims 1 and 11 recite the application of **calculated electric power to the vehicle to travel along the segment of the vehicle route at [a]/[the] calculated speed**. As to claim 1, the operation recited in [1.c] is **applying**, not calculating.

Dec., 16 (“claim 1 does not specify **how** or **when** electric power and speed are **calculated**”). Without language limiting the type of power applied, this encompasses exemplary power optimization techniques described in the specification. TESLA-1053, ¶¶48-54; *see* TESLA-1001, 18:25-67. Similarly, while [11.c.1] recites a *power management system* being set to *calculate*] *[sic]* *electric power and speed over a segment of a vehicle route*, there is otherwise no restriction regarding how such calculation is performed. Limitations [1.c] and [11.c.1] therefore each encompass power optimization techniques described in the specification. TESLA-1053, ¶49; *see* TESLA-1001, 18:25-67.

The specification reinforces the plain meaning understanding of [1.c] and [11.c.2] because it describes examples of calculating and applying a power while a vehicle is traveling along a current segment. As explained in §II.A.1, *supra*, in Figure 5, the “probable optimal speed” (constituent element of the “efficient speed”) is determined by identifying a segment that includes vehicle’s current position (i.e., current segment). TESLA-1001, 18:4-67. This “probable optimal speed” is combined with an “optimized speed” to determine the “efficient speed.” *Id.*, 21:1-10. Power is then calculated and applied as the vehicle travels within a current segment, since, as noted in Figure 5’s description, a “probable optimal speed” is determined for each new segment entered by a vehicle. *Id.*, 18:25-67; *see also id.*, 11:44-63, 14:47-17:37, 21:1-10. That is, calculation and application of

power occurs on a segment-by-segment basis because the Figure 5 description indicates that a “probable optimal speed” is determined for each new segment.

TESLA-1053, ¶¶50-54.

Again, iQar’s demand that “calculations **must be** performed for upcoming not yet reached route segments...” departs from plain meaning. POR, 22. This is without claim language support and, as explained above, ignores disclosed specification examples within claim scope. TESLA-1001, 18:25-67, TESLA-1053, ¶57. Indeed, the plain meaning of “along” is simply “in a line matching the length **or direction of.**” TESLA-1053, ¶60 (citing TESLA-1055, 3). A vehicle, therefore, can be said to “travel along a particular road segment” by moving on and in the direction of the road segment. *Id.* This may be accomplished without regard to when the vehicle originally drove onto the road segment from some other road or road segment. *Id.* As such, power may be applied to a vehicle already traveling over a current segment and nonetheless be applied such that the vehicle “travel[s] along the segment of the vehicle route at a calculated speed.”

iQar contends that applying power while a vehicle travels along a segment is “not possible,” but this only confirms why its interpretation represents a tortured read. POR, 22; *see* Ex-2007, ¶177. This belies common sense since the purported impossibility can simply be avoided by an obvious design choice regarding segment length to ensure power calculation and application while a vehicle is

traveling along a current segment. TESLA-1053, ¶¶58-59. Indeed, in Figure 5, because the “probable optimal speed” is evaluated on a segment-by-segment basis, the power associated with maintaining vehicle speed also occurs while a vehicle is traveling along a newly-entered segment. *Id.*, ¶¶55-56; *see* TESLA-1001, 18:64-67; *see* §II.A.1.

Moreover, despite conceding the specification describes “embodiments where **only speed calculations** are performed[,]” (POR, 30), iQar nonetheless characterizes the claims as requiring both power and speed calculations. *Id.*; TESLA-1001, 2:53-55. Even if correct, the Petition demonstrated satisfaction of this requirement since “correlations between power and speed renders the calculation of each obvious,” consistent with the specification. *See* TESLA-1003, ¶127 (citing TESLA-1018); *see* TESLA-1018, 157, 167-68; TESLA-1001, 2:53-55. Dr. Hoff also admitted in deposition that maintaining a speed of a vehicle involves application of a necessary power. TESLA-1054, 33:21-34:3. And, as discussed in §III.B, *infra*, Hongo’s adaptive cruise control similarly involves maintaining a vehicle speed, and thereby involves applying a calculated power based on well-known correlations of power and speed. *See* Pet., 58; *see* TESLA-1003, ¶161; *see* TESLA-1018, 157, 167-68.

III. CLAIMS 1 AND 11 ARE UNPATENTABLE

A. Hongo's Identification Of Driving Blocks (BKNs) Discloses A *Segment Of A Vehicle Route* ([1.a], [11.c.1])

The Petition demonstrated satisfaction of [1.a] and [11.c.1] because “Hongo’s ‘driving block’ discloses a *segment* of a travel direction on a road being traveled (*vehicle route*).” Pet., 26-27; *see id.*, 58. Further, as described in paragraph [0027] of Hongo, position information acquired by means 140 is divided “into sections approximately every 20m in the driving direction on the road being driven on...” *Id.*, 26-27. In a playback mode, means 130 uses a “current position coordinate r” and “road environmental real-time information X” to identify a “block number BKN,” which “discloses *determining* the block based on the gathered information” and thereby satisfying the “determining” operation recited in [1.a]. *See id.*, 27 (citing TESLA-1005, [0032]). The Petition further noted that “Hongo discloses embodiments with both ‘trace’ and ‘playback’ modes that render claim 1 obvious...” *Id.*, 26 (fn 1) (citing TESLA-1003, ¶96 (fn 3) and TESLA-1005, [0025]).

iQar attempts to distinguish this straight-forward mapping but is forced to do so using implicit constructions of *segment* and *vehicle route* that depart from plain meaning. *See* §§II.A.1-2 (addressing [1.a], [11.c.1]). This infests the POR’s purported prior art distinctions because they implicate features not actually required under plain meaning. *See* POR, 9.

For instance, iQar attempts to distinguish Hongo's BKN from the *segment* by characterizing it as "represent[ing] just a *single vehicle position*." POR, 13-14 (emphasis in original). But Hongo's use of a current vehicle position to query a database is like Figure 5, where "historical information is queried to determine what speed the vehicle was traveling every time that the vehicle....was in the same segment..." TESLA-1001, 18:25-56. Both techniques are encompassed by the *segment* because they involve determination of a portion of a traveling vehicle's path based on a current vehicle position (i.e., a current segment). See TESLA-1053, ¶¶61-64; TESLA-1005, [0027]. Dr. Hoff similarly suggested that Figure 5 and Hongo's identification of BKNs involve use of a current vehicle position to identify a current segment. Compare TESLA-1054, 18:12-19:4 and 61:5-15. And, as Dr. Morellas explains, "Hongo's reference to 'section' in paragraph [0027] indicates that each BKN is associated with 'block range coordinates (r1, r2)' that define a divided section of a road being driven on by a vehicle—or simply, a 'segment of a vehicle route.'" TESLA-1053, ¶65.

iQar also mischaracterizes the Petition in advancing purported distinctions based on implicit constructions. For instance, the POR contends the Petition assumed a configuration of Hongo's DB 20 that includes "positions actually traversed by the vehicle." POR, 12. To be clear, the Petition demonstrated satisfaction of [1.a] based on express teachings in Hongo's written description—

that a current position coordinate (r) is used as an index to search DB 20 and identify a BKN (*segment*). *See* Pet., 26 (citing TESLA-1005, [0027]). Dr. Hoff confirmed this understanding of Hongo’s teachings in deposition. *See* TESLA-1054, 59:9-60:16. Simply put, the Petition did not assume any configuration of DB 20 as storing “positions actually traversed by the vehicle” since the claims have no such requirement under plain meaning. Pet., 28. As explained in §II.A.1, *supra*, the *segment* is not limited to any type of information, rendering iQar’s contentions regarding the nature of information stored in Hongo’s DB 20 irrelevant. *See* TESLA-1001, 14:17-24.

iQar also posits that Hongo’s “section” cannot be the recited “segment” because it is “static” and “unchanging.” POR, 18. Yet again, iQar fails to justify this distinction with any claim language or specification disclosure. Even if it had, the specification uses permissive language, noting that “[t]he route may be segmented in any appropriate manner.” TESLA-1001, 14:17-24. Nonetheless, as Dr. Morellas explains, “the specification describes segments that change, [but] it does not explicitly exclude the possibility of predefined, static segments that remain constant.” TESLA-1053, ¶66 (citing TESLA-1001, 11:64-12:15). Indeed, “a POSITA would have understood that using predefined, static segments in the Figure 5 technique makes sense because, in this example, historical route data is stored and analyzed to determine a ‘probable optimal speed’ for previously

traveled segments. *Id.*, ¶67 (citing TESLA-1001, 18:4-67). Further, “a POSITA would have balanced efficiency and precision in designing an applicable route segmentation strategy, which further supports the understanding that both static and dynamic segments can be used in different implementations.” *Id.*, ¶68 (citing TESLA-1001, 14:38-45).

B. Hongo’s Adaptive Cruise Control Renders Obvious The Application Of *Calculated Electric Power To The Vehicle To Travel Along The Segment Of The Vehicle Route* ([1.c], [11.c.2])

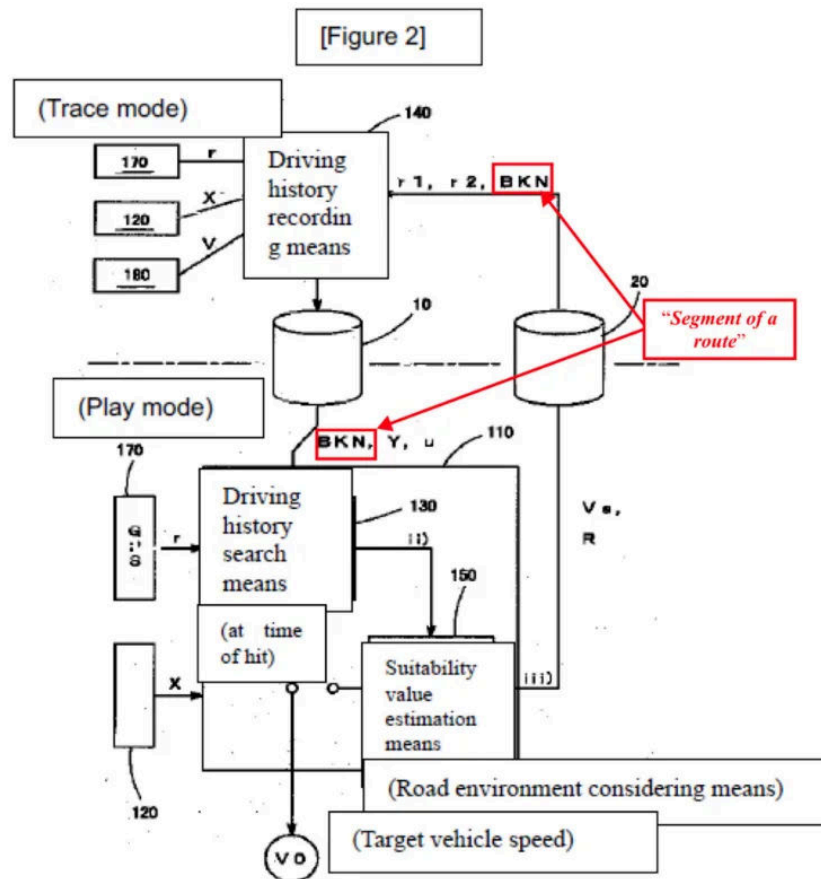
As explained in the Petition, adaptive cruise control provided by Hongo-Obradovich-Niki satisfies these limitations by “using a target vehicle speed to adapt cruise control in a hybrid vehicle.” Pet., 39. And, consistent with the specification, this involves “controlling vehicle movement using the target vehicle speed,” by “calculating and applying a power corresponding to the target vehicle speed to the vehicle engine.” *Id.*; see TESLA-1001, 2:30-63. Further, “[a]s to the application of power to enable the vehicle to travel along the segment of the vehicle route, Hongo-Obradovich-Niki would have provided adaptive cruise control as a vehicle is traveling along a route.” Pet., 40. Additionally, “[s]ince the ‘target speed’ is calculated based on means 140 determining a block number BKN identifying a driving block in the driving block DB 20, the ‘target speed’ is calculated for the driving block (*segment of the vehicle route*)...” *Id.*

iQar ignores these mappings and instead interprets [1.a] and [1.c] as

involving “*prospective* speed/power calculations” such that “calculations must be performed for upcoming not yet reached route segments...” POR, 22-23. As explained in §II.A.3, *supra*, this departs from plain meaning without justification.

The POR also mischaracterizes Hongo in casting its “trace” and “playback” modes as being distinct because paragraph [0025] teaches “an implementation scheme **having both** a ‘trace mode’ and a ‘play mode’....” TESLA-1005, [0025]; *see* POR, 27-28. Consistent with this disclosure, the Petition observed that “Hongo discloses embodiments with both ‘trace’ and ‘playback’ modes that render claim 1 obvious in combination with the teachings of Obradovich and Niki.” Pet., 26 (fn 4).

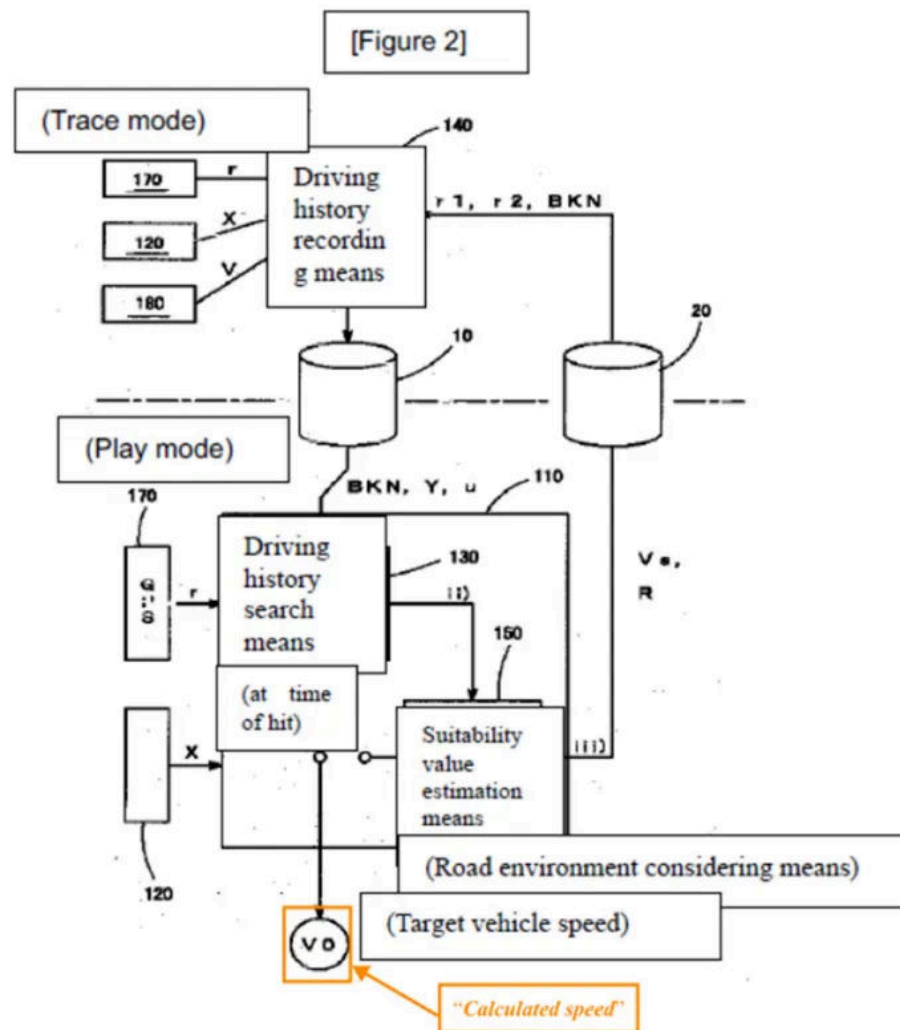
The Petition nonetheless demonstrated satisfaction of [1.a] and [1.c] (and corresponding claim 11 limitations) based on the functionality of Hongo’s “playback” mode. As to [1.a], while the Petition referenced “trace” mode functionality of Hongo’s paragraph [0027], the annotated version of Hongo’s Figure 2 (reproduced below) confirms that identification of BKN occurs in each of the “trace” and “playback” modes.



Pet., 27 (citing TESLA-1005, FIG. 2)

This is consistent with Hongo's written description that the BKN is "specified from the current position coordinate" using "a **method equivalent** to the above-mentioned driving history recording means 140" relating to the trace mode using "the driving history search means 130..." TESLA-1005, [0032]. Thus, through reference to an "equivalent" method in discussing playback mode functionality, Hongo confirms that the playback mode involves the driving history search means 130 using the current position coordinate r to identify a BKN in a similar manner as the functionality described in paragraph [0027]. See TESLA-1053, ¶¶69-78.

As to [1.c], the Petition similarly identified that a target speed is calculated as the output of an adaptive cruise control process provided by the “playback” mode.



Pet., 38 (citing TESLA-1005, FIG. 2)

This is also consistent with Hongo’s written description, which teaches using “equations/formulas” in calculating the target vehicle speed in the “playback mode.” TESLA-1005, [0035], [0036], [0055] (cited in Pet., 38-39); ¶¶78-79.

iQar also attempts to reduce Hongo's teachings to a "simple lookup procedure when determining appropriate speed" but fails to otherwise explain this is beyond the scope of the operations recited in [1.c] and [11.c.2]. As explained in §II.A.1, *supra*, Hongo's adaptive cruise control involves applying power to maintain a vehicle speed in a similar manner as the power optimization technique involved in Figures 5 and 6 of the specification. The only basis for iQar's purported distinction is that the claims are limited to a "prospective" application of power before a vehicle reaches the *segment*. See POR, 28.

But for its narrow interpretation, the iQar is unable to distinguish the operations recited in [1.c] and [11.c.2] and power application techniques involved in Hongo's adaptive cruise control. See Pet., 40 (citing TESLA-1005, [0017]). The POR remains silent on how Hongo's adaptive cruise control techniques are different from an interpretation of the claims as encompassing determining a current segment and applying power for the current segment. iQar's purported distinctions therefore rise and fall with the Panel's resolution of claim interpretation. And yet, the Panel has already preliminary found that the claims encompass "calculating and applying power to a vehicle based on **the route segment in which the vehicle is currently traveling**." Dec., 17; *see id.*, 21-22.

The POR also seeks to divorce Niki's teachings from the Hongo-Obradovich combination. See POR, 31. In doing so, iQar tacitly admits that Niki teaches

power calculation since it “performs *instantaneous* power and speed calculations for single, discrete positions.” POR, 31 (citing TESLA-1009, 8:35-63, 9:1-10:23). This characterization actually complements Hongo’s adaptive cruise control techniques, which involve the use of “single discrete positions” to identify BKNs in determining a target vehicle speed for a route section. Pet., 21-25; TESLA-1053, ¶80. Thus, the application of *electric power* is met by Niki’s instantaneous power calculation as part of Hongo’s adaptive cruise control technique. Pet., 40; see TESLA-1009, 8:47-59; §II.A.2, *supra*; TESLA-1053, ¶¶81-82.

IV. CLAIMS 6 AND 8 ARE UNPATENTABLE

A. Hongo Describes *Determining Multiple Route Segments* As Recited In Claim 6

As explained in the Petition, Hongo satisfies [6.1] “[g]iven that each block is a 20m portion, a route longer than 20m includes multiple driving blocks,” and thus, involves a determination of “*multiple route segments*.” Pet., 45-46; TESLA-1003, ¶¶136-38. Further, Hongo satisfies [6.2] because “[a] POSITA would have found it obvious that, in circumstances where a vehicle travels on a curved path, Hongo-Obradovich-Niki would have computed a target speed for each driving block of the curved path.” *Id.*, 47.

Claim 6 includes a wherein clause reciting that [1.a] *further comprises determining multiple route segments* ([6.1]) and *each route segment having a separate calculated speed and selected* ([6.2]). Under plain meaning, [6.1] further

limits the operation recited [1.a] by specifying that the *determining* operation includes *determining multiple route segments*. Because [1.a] and [6.1] each lack language regarding timing, the *determining* operation recited in [6.1] may be satisfied without regard to when each of the *multiple route segments* are determined.

As Dr. Morellas confirms, vehicle systems were known to “determine segments sequentially in time as the vehicle travels along a route that includes multiple segments” such that “multiple segments are identified over a period of time associated with vehicle travel.” TESLA-1053, ¶85. Dr. Hoff suggested the same in deposition. *See* TESLA-1054, 24:1-6 (referring to Figure 5 as “continually evaluating what segment [a vehicle] is in”); *id.*, 24:3-7. This testimony is even consistent with examples of “routes” that are “partially segmented,” and “continuously re-segmented as the vehicle moves...” TESLA-1001, 14:25-37. Continuous re-segmenting of a route “periodically” would have led to determining multiple segments over a time period. TESLA-1053, ¶¶83-86.

iQar imputes a timing restriction that each of “*multiple* route segments” and their corresponding calculated speeds and drive train parameters are required to be determined at the “*same time*.” POR, 32 (emphasis in original). But this departs from plain meaning because iQar fails to identify any language in [1.a], [6.1], or [6.2] directed to temporal restrictions.

iQar also mischaracterizes Hongo in asserting that its system is “unable to ascertain the block number” when target speed calculations are based on the equation referenced in paragraph [0036]. POR, 33. In paragraph [0032], Hongo explains that “[i]n the playback mode, the block number BKN and the road environment parameter Y are specified from the current position coordinate r,” and that “the driving history DB 10 is searched for driving history data 11 with matching keys (BKN, Y).” TESLA-1005, [0032]. Hongo’s description therefore makes clear that when, as in paragraph [0036], “[i]f block number BKN misses,” this means that a BKN (identified based on the current position coordinate r) is not found in driving history data 11 stored in driving history DB 10. *See* TESLA-1053, ¶¶87-88. This is not the BKN being unascertainable—it only suggests that an ascertained BKN is not identified within driving history DB 10.

iQar also mischaracterizes the Petition in contending that its mappings involve “replac[ing]” the speed determination technique employed by the Hongo system “in opposite circumstances.” POR, 33. To the extent that iQar asserts the Petition maps to distinct embodiments, this is undercut by Hongo’s broader teaching in paragraph [0032] that the method employed to determine a target speed is one in which “the driving history DB 10 is searched for driving history data 11 with matching keys (BKN, Y).” That is, while the specific manner in which determining the target speed value may be different amongst the techniques

described in paragraphs [0033]-[0039], they each are directed to mutually-exclusive circumstances, and thus, would have been understood by a POSITA to be part of the same overall system. TESLA-1053, ¶89.

B. Hongo and Newstrom Render Obvious *Communicating With A Remote Database* As Recited By Claim 8

As explained in the Petition, the Hongo-Obradovich-Niki-Newstrom combination renders obvious the operation of *communicating with a remote database* within claim 8 because, in Newstrom, “database 20 can be loaded by database manager 22 into ‘solid state memory’ located in a vehicle through a ‘wireless connection to server,’ and thus, the geospatial database 20 may be hosted on a server.” Pet., 83 (citing TESLA-1012, 8:26-38); TESLA-1003, ¶197.

Claim 8 includes a wherein clause further limiting the *determining* operation recited in [1.b.2] by including *the step of communicating with a remote database*. Under plain meaning, the *determining* step includes two sub-steps: (1) obtaining information, and (2) assessing information to identify *operational status* of the vehicle. TESLA-1053, ¶¶90-91. There is no indication within the claim language as to which of these two sub-steps are further limited to include *communicating with a remote database*. *Id.*, ¶92.

There is also no temporal requirement in either claim 1 or claim 8 regarding when each sub-step is required to be performed. That is, nothing in the claim

language requires that information used for assessment in determining an “operational status” be obtained during vehicle operation. Taking, for instance, one interpretation in the *communicating* operation limits the first sub-step such that the information obtained for assessment for an *operational status* is information obtained from a *remote database*. TESLA-1053, ¶93.

The specification supports this plain meaning understanding through disclosure of various examples of “operational status” that are determined based on assessment of operational status information. *See, e.g.*, TESLA-1001, 4:16-33, 8:53-61. Indeed, operational status itself “may be derived (e.g., based on other information, including other operational status information).” *Id.*, 4:16-33; TESLA-1053, ¶¶94-95.

iQar imputes a timing restriction in that the step of *communicating with a remote database* must occur “when” the operation recited in [1.b.2] is performed. *See* POR, 34. But this departs from plain meaning because iQar fails to identify any language in claims 1 and 8 directed to temporal restrictions.

For this reason, iQar fails to justify its departure in contending that claim 8 excludes “[p]re-loading a database from a remote server.” POR, 34. This presupposes that claim 8 can only limit the second sub-step of [1.b.2] (i.e., determining *operational status* based on obtained operational status information). But nothing in the claim language forecloses interpreting claim 8 as limiting the

first sub-step—i.e., the sub-step of obtaining operational status information further comprises “communicating with a remote database.” Thus, satisfaction of claim 8 may be achieved by obtaining information used to determine an operational status by obtaining such information from a “remote database” through communication. TESLA-1053, ¶96.

iQar’s interpretation is also flawed because neither claim 8 nor [1.b.2] include the verb “using.” *See* POR, 34. Nor does claim 8 recite language directed to a type of usage of the *remote database*. Rather, the operation recited in claim 8 is *communicating with*, and the claim otherwise leaves open how and when such communication occurs so long as it be part of a process that involves *determining information about operational status of the vehicle*, as recited in [1.b.2]. TESLA-1053, ¶97. Claim 8 lacks any language limiting the nature of communications with a remote database. *Id.*

iQar also misreads Newstrom’s teachings relating to retrieving information from database 20 (which involves communications with a remote server). Beyond pre-loading geospatial database 20 during initialization, Newstrom further recognizes that information within geospatial database 20 may be changed during vehicle operation, since “the Database Manager can unload unused portions and load new portions as the location of the queries change.” TESLA-1012, 8:26-38. Thus, consistent with the Petition, such disclosure would have suggested to a

POSITA that “the vehicle can use a wireless connection to the server as the vehicle is being driven.” Pet., 83 (citing TESLA-1012, 8:26-38, and TESLA-1003, ¶197); TESLA-1053, ¶98.

Moreover, Dr. Morellas explains that such a configuration would have naturally flowed from Newstrom’s disclosure given “the system’s ability to dynamically load and unload portions of the geospatial database 20 implies that it could interact with an external server to fetch new tiles or updated geospatial data as needed.” TESLA-1053, ¶99. Indeed, “its system architecture does not preclude communication with an external server for additional data or updates.” *Id.* This would have provided an obvious solution to improve accuracy of the information specified in the geospatial database 20, addressing the challenge that “information previously retrieved from geospatial database 20 is no longer valid[]” during vehicle operation. *See* TESLA-1012, 8:15-25.

V. CONCLUSION

For the foregoing reasons, Tesla respectfully requests a final written decision finding the Challenged Claims unpatentable.

Respectfully submitted,

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petitioner's Reply to Patent Owner's Response totals 5,592, which is less than the 5,600 allowed under 37 CFR § 42.24(b)(1).

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4), the undersigned certifies that on February 11, 2025, a complete and entire copy of this Petitioner's Reply to Patent Owner's Response and all supporting exhibits were provided via email to the Patent Owner by serving the correspondence email addresses of record as follows:

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