

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

IQAR INC.,
Patent Owner.

IPR2024-00541
Patent 7,925,426 B2

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

DOUGAL, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background and Summary*

Petitioner, Tesla, Inc., requests that we institute an *inter partes* review challenging the patentability of claims 1–4 (the “challenged claims”) of U.S. Patent 7,925,426 B2 (Ex. 1001, “the ’426 patent”). Paper 2 (“Petition” or

“Pet.”). Patent Owner, iQar, Inc., argues that the request is deficient and should not be granted. Paper 6 (“Preliminary Response” or “Prelim. Resp.”).

Applying 35 U.S.C. § 314(a), which requires demonstration of a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim, we do not institute an *inter partes* review.

B. Related Matters

The parties identify the following related district court litigation: *iQar Inc. v. Tesla, Inc.*, 1:23-cv-00694 (W.D. Tex). Pet. 85; Paper 4, 1.

C. The '426 Patent

The '426 patent is titled “Power Management Systems and Devices” and is directed to “optimizing the power consumption of [a] vehicle.” Ex. 1001, codes (54), (57). Systems for managing the power consumption of the vehicle can be used to provide the optimization, and “include power management logic that can calculate an applied power for the vehicle engine based on information provided from the external environment . . . , the operational status . . . , one or more command inputs from a driver, and one or more operational parameters of the vehicle.” *Id.* at code (57).

D. Illustrative Claim(s)

Of the challenged claims, claim 1 is the sole independent:

1. A method of managing the power consumption of a vehicle, comprising:

- (a) a computer device receiving a route;
- (b) said computer device segmenting said route into segment destinations; and
- (c) said computer device for each of said segment destinations:
 - (i) calculating an optimized speed by minimizing power consumption over said segment destination,

wherein information is (j) information about the external environment of a vehicle, (jj) information about the operational status of the vehicle, (jjj) one or more user command inputs, or (iv) one or more operational parameters of the vehicle are received as input to said calculating and analyzed by one or more processors;

(ii) calculating a probable speed;

(iii) determining an efficient speed based on said optimized speed and said probable speed; and

(iv) applying the calculated power corresponding to said determined efficient speed to the vehicle engine to travel said segment destination.

Ex. 1001, 26:25–45.

E. Evidence

Petitioner’s grounds of unpatentability rely on the following evidence:

Name	Patent Document	Exhibit
Neiss	US 2004/0068359 A1 (Apr. 8, 2004)	1005
Ran	US 6,317,686 B1 (Nov. 13, 2001)	1006
Andersson	US 6,836,719 B2 (Dec. 28, 2004)	1007
Hosoda	JP H11-220807 (Aug. 10, 1999)	1008/1009 ¹

F. Prior Art and Asserted Grounds

Petitioner asserts the following grounds of unpatentability (Pet. 1), supported by the declaration of Dr. Nikolaos Papanikolopoulos (Ex. 1003):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–2	103(a) ²	Neiss, Ran
3	103(a)	Neiss, Ran, Andersson
4	103(a)	Neiss, Ran, Hosoda

¹ English language translation of Ex. 1008.

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. We refer to the pre-AIA version of § 103.

II. ANALYSIS

A. *Legal Standards*

Petitioner bears the burden to demonstrate unpatentability. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). At this preliminary stage, we determine whether the information presented in the Petition shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been obvious over the prior art. *See* 35 U.S.C. § 314(a).

A claim is unpatentable as obvious under 35 U.S.C. 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)). We resolve the question of obviousness based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the prior art and the claims; (3) the level of skill in the art; and (4) when in evidence, objective indicia of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We apply these principles to the Petition’s challenges.

B. *Level of Ordinary Skill in the Art*

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Id.* at 13, 17. Petitioner asserts that a person of ordinary skill in the art

would have had a bachelor's degree in electrical engineering, computer engineering, mechanical engineering (including automotive engineering), civil engineering (transportation systems), physics, or a related field, and at least four years of experience (or the academic equivalent) in the field of transportation systems. Additional graduate education could substitute for professional experience, and *vice versa*.

Pet. 2–3 (citing Ex. 1003 ¶¶ 1–19, 25–26; Ex. 1004).

Patent Owner does not contest Petitioner's level of skill. Prelim.

Resp. 5. We are persuaded, on the present record, that Petitioner's proposal is consistent with the problems and solutions in the '426 patent and prior art of record. We adopt Petitioner's definition of the level of skill for the purposes of this Decision.

C. Claim Construction

We construe claims in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b).

Petitioner asserts that no terms require express construction. Pet. 2. Patent Owner agrees. Prelim. Resp. 5.

We determine that no terms need to be construed at this stage. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. 35 U.S.C. § 103 – Neiss, Ran, Andersson, Hosoda

Petitioner argues that the combination of Neiss and Ran renders obvious claims 1 and 2. Pet. 5–66. Petitioner argues that the combinations of Neiss, Ran, and Andersson renders obvious claim 3, and Neiss, Ran, and Hosoda renders obvious claim 4. *Id.* at 66–80. Patent Owner argues

Petitioner has not demonstrated a reasonable likelihood of success showing that independent claim 1 is unpatentable. Prelim. Resp 10–22.

For the reasons expressed below, we determine that Petitioner has not established a reasonable likelihood of succeeding in showing that independent claim 1 is unpatentable.

1. Claim 1

The method of claim 1 includes performance of the following calculations:

- (i) calculating an optimized speed by minimizing power consumption over said segment destination . . . ;
- (ii) calculating a probable speed;
- (iii) determining an efficient speed based on said optimized speed and said probable speed.

Ex. 1001, 26:32–42.

As will be discussed in more detail below, Petitioner relies on Neiss for teaching calculating an optimized speed (Pet. 37–45) and on Ran for teaching calculating a probable speed (*id.* at 51–53). Patent Owner does not contest these teachings. *See generally*, Prelim. Resp. 19–22. Petitioner then relies on the combination of Neiss and Ran to teach determining an efficient speed based on the optimized and probable speeds (Pet. 16–21, 53–60), which Patent Owner does contest (Prelim. Resp. 19–22).

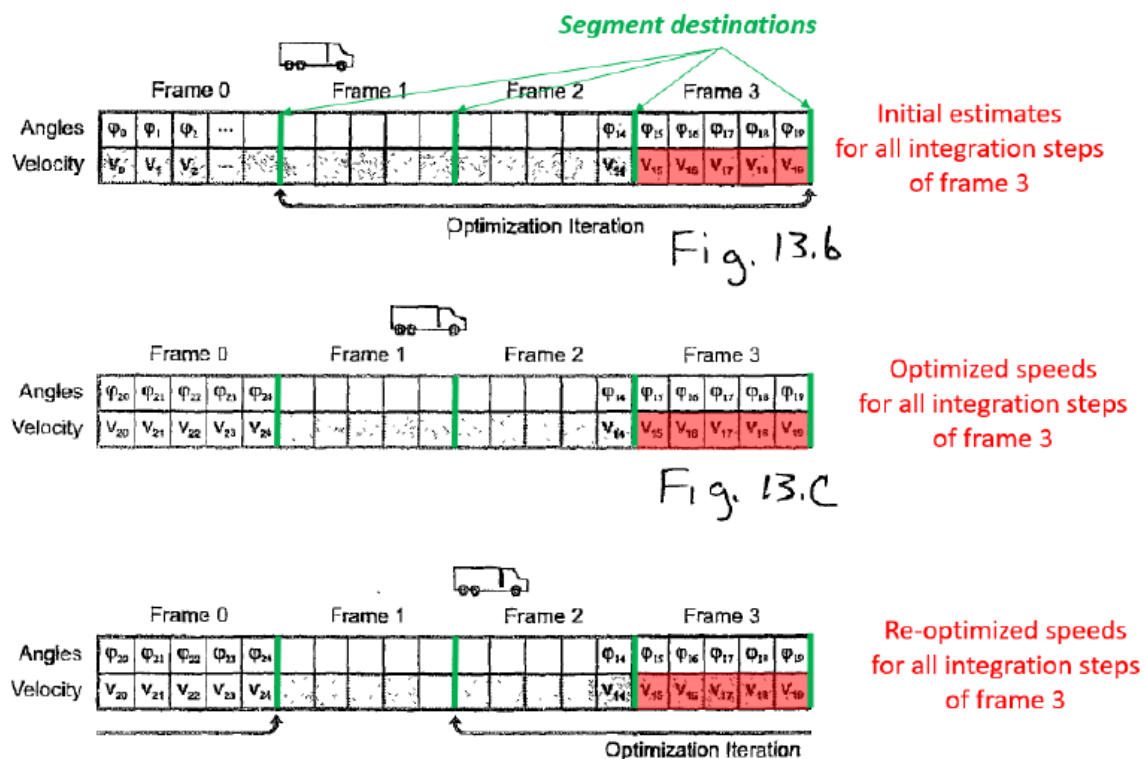
Because “determining an efficient speed” is “based on said optimized speed and said probable speed,” we look at each calculation below.

a) Optimized Speed

Petitioner argues that Neiss teaches that an “optimization algorithm is iteratively performed for frames in a prediction horizon ahead of the vehicle.” Pet. 38 (citing Ex. 1005, Abst., ¶¶ 15, 169–170). Petitioner further

argues that the optimization algorithm “calculates a speed/velocity for each frame . . . that is optimized to minimize the vehicle’s fuel consumption” where the ’426 patent equates “fuel efficiency to power consumption.” *Id.* at 41 (citing Ex. 1005 ¶¶ 48, 81–82, 92–98, 179–181, Figs. 12a–c; Ex. 1003 ¶¶ 100–106, 138–149; Ex. 1001, 6:14–30).

Petitioner states that “Neiss explains that, at initialization, optimal vehicle control parameters are computed for [a] first set of frames (e.g., frames 0, 1, and 2), and then once vehicle gets to frame 1, an optimization iteration is performed for another set of frames (e.g., frames 1, 2, and 3).” *Id.* at 38 (citing Ex. 1005 ¶¶ 178–180, 188–192; Ex. 1003 ¶ 133). This can be seen conceptually with reference to Neiss Figures 13b–d, reproduced in part below, with Petitioner’s mark-ups. *Id.* at 40.



Figures 13b–d “show the operation of the optimization algorithm during driving of the vehicle.” Ex. 1005 ¶ 29. The above figures also

illustrate how, as a vehicle moves along a prediction horizon, the system recalculates new optimized velocity or speed for future frames that the vehicle will travel. Petitioner added the words “Segment destinations” and arrows pointing to newly added green lines to highlight the end of each Frame 0–3. Petitioner added red highlighting to the velocity values of Frame 3. Petitioner also added, in red, the words “Initial estimates for all integration steps of frame 3” next to Figure 13b, “Optimized speeds for all integration steps of frame 3” next to Figure 13c, and “Re-optimized speeds for all integration steps of frame 3” next to Figure 13d (Petitioner also excluded the “Fig. 13.d” label).

Petitioner explains that “[o]nce the vehicle reaches the end of a frame [(i.e. the green-line segment destinations)], ‘a new calculation is triggered’ for upcoming frames along the route.” Pet. 39 (quoting Ex. 1005 ¶ 188). Thus, Neiss “iteratively executes its optimization algorithm for each frame in the Prediction Horizon, and computes optimized/re-optimized speeds for the entirety of each frame (i.e., from the first integration step of the frame to the last integration step that terminates at the endpoint/destination of the frame/segment).” *Id.* at 40 (citing Ex. 1003 ¶ 136).

b) Probable Speed

Petitioner argues that Ran teaches “using traffic prediction models . . . to calculate predicted speeds for upcoming road segments based at least on real-time traffic conditions on those road segment(s).” *Id.* at 51 (citing Ex. 1006, 11:23–42, 18:18–31, 19:46–49; Ex. 1003 ¶¶ 84–99). Petitioner further argues that, “[b]ecause the predicted speed for the segment is determined based at least on such real-time traffic conditions at the upcoming route segments, this speed is a ***probable speed*** that the vehicle is

likely or expected to travel at the respective road segment.” *Id.* at 52–53 (citing Ex. 1003 ¶¶ 84–99, 168).

c) Efficient Speed

Petitioner provides two alternative positions on how to determine the efficient speed. Pet. 16–21, 53–60. We address each in turn.

(1) Replace Current Velocity

Petitioner first argues that in the combination of Neiss and Ran:

Neiss’s optimization algorithm would be modified by leveraging Ran’s real-time traffic-based predicted speeds (***calculate[d] probable speeds***) for upcoming road segments/frames—instead of using current velocity of an existing frame, as Neiss teaches—to adapt the computed optimized values for the upcoming segments/frames to obtain improved speeds (***efficient speeds***) that can be used to control the vehicle.

Pet. 17–18 (citing Ex. 1003 ¶¶ 84–86).

Looking back to Figures 13b–d of Neiss, Petitioner explains that, in the modified combination, the first calculations related to Frame 3 would use the current vehicle velocity and “each additional optimization iteration . . . would use the predicted vehicle velocity for the upcoming segment/frame—instead of using the ‘current vehicle velocity’ for the segment/frame currently being driven (as Neiss teaches)—to adapt and further refine the previously computed optimal ‘velocity values.’” *Id.* at 56–57 (citing Ex. 1003 ¶ 177; Ex. 1005 ¶¶ 12, 163, 167, 190). In essence, Petitioner proposes using Ran’s probable speed in Nan’s optimization calculation to obtain an efficient speed, where an optimized speed was previously calculated.

However, this is not what is required by the claim. Claim 1 requires “determining an efficient speed based on said optimized speed and said probable speed.” Ex. 1001, 26:41–42. The Petition does not explain how the

previously calculated optimized speed is used to determine the efficient speed, only that it is previously calculated. *See* Pet. 16–21, 53–58; Prelim. Resp. 19–21. The Petition does assert that the optimized speed is “adapted/refined” in future calculations, but this mere assertion is inadequate. Pet. 57. Petitioner cites to Neiss as teaching that as additional calculations are performed, the velocity values in the look-up table are “adapted” and “updated.” *Id.* at 57–58 (citing Ex. 1005, Abstr., ¶¶ 10, 15, 167, 169). But Neiss’s teaching that the velocity values are replaced, i.e. adapted and updated in view of current conditions, does not explain how that optimized speed is used to determine the efficient speed. Thus, the Petition fails to identify how the combination teaches or suggests all of the limitations of claim 1.

Further, the Petition is also lacking in that it does not adequately explain why one of skill in the art would remove usage of the current velocity from determining the efficient speed. *See* Pet. 16–21, 53–58. Though the Petition proposes replacing the current velocity/speed with the probable velocity/speed, it focusses on why one of skill in the art would want to use the probable speed in the calculation. *Id.* We agree with Patent Owner that such a calculation is unlikely to be considered an optimized or efficient speed when it does not consider the current velocity of the vehicle. Prelim. Resp. 21–22.

(2) Real-Time Conditions

Petitioner’s second position is that

given Neiss’s express recognition of adapting optimized velocities using real-time conditions that account for “current velocity” and the well-known and conventional approaches to combining speed values (as Ran teaches), a POSITA would have been motivated to combine the *optimized speed* value (as

described in [1d1]) and ***probable speed*** value (as described for [1e]) to obtain a combined/adapted speed, which corresponds to the ***efficient speed***.

Pet. 59. Petitioner cites to Ran's teaching that a simplified way to calculate the probable speed is to use "a weighted average of two speeds" (*id.* (citing Ex. 1006, 7:14–27)), which Ran teaches are historical speed and current speed of a traffic flow (Ex. 1006, 7:14–27). Petitioner asserts that in view of this teaching, "a weighted average of two speeds" is a known technique for combining speed values. Pet. 59–60.

In the prior position, and here, Petitioner relies extensively on Neiss for the proposition that "real-time conditions" should be considered when calculating the optimized speed. *Id.* at 16–17, 57–60. This is why, for example, the Petition previously argued that Ran's probable speed should be integrated into Neiss's optimization calculation to obtain an efficient speed. *Id.*

Here, however, the position of the Petition is that *after* the optimization calculation is completed, the "real-time conditions" should be considered to perform a new and different calculation. *Id.* at 59. However, we are not presented with any evidence that it would be beneficial to combine Neiss's optimized speed with Ran's probable speed in a new calculation, after the optimization has been performed. We are merely presented with evidence that probable speed has been calculated in that way, and so it is a possible way to calculate a speed. This is insufficient to meet Petitioner's burden.

"The mere fact that [a] possible [calculation] existed in the prior art does not provide a reason that a skilled artisan would have" made the combination. *Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*, 97

F.4th 882, 887 (Fed Cir 2024) (“*KSR* did not do away with the requirement that there must exist a motivation to combine various prior art references in order for a skilled artisan to make the claimed invention.”).

d) Conclusion

We have analyzed Petitioner’s arguments and cited evidence, and determine that Petitioner has not shown a reasonable likelihood of prevailing with respect to claim 1 for at least the reasons discussed above.

2. Dependent Claims 2–4

Having determined that Petitioner has not shown a reasonable likelihood of prevailing with respect to claim 1, Petitioner likewise fails to show how the claims which depend from claim 1 are unpatentable.

III. CONCLUSION

For the foregoing reasons, we do not institute trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), no *inter partes* review as to any claim of U.S. Patent 7,925,426 B2 is instituted.

IPR2024-00541
Patent 7,925,426 B2

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