

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

AUTONOMOUS DEVICES, LLC,
Patent Owner.

IPR2024-00745
Patent 11,663,474 B1

Before ROBERT J. WEINSCHENK, TERRENCE W. McMILLIN, and
RUSSELL E. CASS, *Administrative Patent Judges*.

CASS, *Administrative Patent Judge*.

PRELIMINARY GUIDANCE
PATENT OWNER'S MOTION TO AMEND
37 C.F.R. § 42.121(e)

I. INTRODUCTION

On October 22, 2024, we instituted trial as to claims 45–47, 51, 56, 57, 59, 60, 68, and 69 of U.S. Patent No. 11,663,474 B1 (“the ’474 patent”). Paper 9 (“Decision” or “Dec.”). After institution, Patent Owner filed a Motion to Amend that is contingent on the patentability of claims 45, 56, and 57. Paper 14 (“Motion” or “Mot.”), 1–2. Patent Owner requests that the Board consider (1) proposed substitute claims 85–88 and 91 if the Board finds claim 45 unpatentable, (2) proposed substitute claims 89 and 90 if the Board finds claims 56 and 57 unpatentable, and (3) proposed substitute claims 92 and 93 if the Board finds claims 56 and 57 patentable. Paper 19 (“Opposition” or “Opp.”).

In the Motion, Patent Owner requests that we provide preliminary guidance concerning the Motion in accordance with 37 C.F.R. § 42.121(a)(1)(ii). Mot. 1; *see* 37 C.F.R. § 42.121(e)(1); *see also Rules Governing Motion to Amend Practice and Procedures in Trial Proceedings under the America Invents Act before the Patent Trial and Appeal Board*, 89 Fed. Reg. 76,421 (Sept. 18, 2024) (“Final Rule”). We have considered Patent Owner’s Motion and Petitioner’s Opposition.

In this Preliminary Guidance, we provide information indicating our initial, preliminary, non-binding views on whether Patent Owner has shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend in an *inter partes* review and whether Petitioner establishes a reasonable likelihood that the substitute claims are unpatentable. 37 C.F.R. §§ 42.121(e)(1), (2); *see also* 35 U.S.C. § 316(d) (statutory requirements for a motion to amend); 37 C.F.R. §§ 42.121(a)(2), (a)(3), (b) (regulatory requirements and burdens for a motion to amend); *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 (PTAB Feb. 25, 2019) (precedential) (providing information and guidance regarding motions to amend). The reasonable likelihood

standard this Preliminary Guidance applies is different than the preponderance of the evidence standard applied when ultimately deciding the Motion. *Compare* 37 C.F.R. § 42.121(e)(1) *with* § 42.121(d). Finally, this preliminary guidance is not a “decision” for purposes of rehearing under 37 C.F.R. § 42.71(d). 37 C.F.R. § 42.121(e)(2).

For purposes of this Preliminary Guidance, we focus on the proposed substitute claims, and specifically on the amendments proposed in the Motion. *See* 37 C.F.R. § 42.121(e)(1); Final Rule, 89 Fed. Reg. at 76,425. We do not address the patentability of the originally challenged claims. *See id.* Moreover, in formulating our preliminary views on the Motion and Opposition, we have not considered the parties’ other substantive papers on the underlying merits of Petitioner’s challenges. We emphasize that the views expressed in this Preliminary Guidance are subject to change upon consideration of the complete record, including any revision to the Motion filed by Patent Owner. Thus, this Preliminary Guidance is not binding on the Board when rendering a final written decision or any other subsequent decision in this proceeding. 37 C.F.R. § 42.121(e)(2); *see Medytox, Inc. v. Galderma S.A.*, 71 F.4th 990, 1000 (Fed. Cir. 2023).

II. PRELIMINARY GUIDANCE

A. Statutory and Regulatory Requirements

Patent Owner bears the ultimate burden to show that its motion to amend complies with the requirements of 35 U.S.C. §§ 316(d)(1) and (3) and 37 C.F.R. §§ 42.121(a)(2), (a)(3), (b)(1), and (b)(2). 37 C.F.R. § 42.121(d)(1). For the reasons discussed below, at this stage of the proceeding, and based on the current record, it appears that Patent Owner has shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend. *See* 37 C.F.R. § 42.121(e)(1).

1. Reasonable Number of Substitute Claims

A motion to amend must propose a reasonable number of substitute claims. 35 U.S.C. § 316(d)(1)(B); 37 C.F.R. § 42.121(a)(3). On the current record, Patent Owner has shown it proposes a reasonable number of substitute claims because it requests that the Board consider claims 85–88 and 91 to replace original claims 45–47, 51, and 60 if necessary, and either claims 89 and 90 or claims 92 and 93, depending on whether the Board finds claims 56 and 57 patentable. Mot. 1–5, App. A. In particular, Patent Owner indicates that “once the Board determines patentability of claims 56 and 57, it is not possible that both of the alternatives of substitute claims for claim 56 (or both of the alternatives of substitute claims for claim 57) would be issued.” Mot. 4. Substitute claims 92 and 93 are proposed “in order to ensure that claims 56/57, if held patentable, will be rewritten in independent format (including the limitations of the base claim 45 and intervening claim 46) and have proper antecedent basis and do not depend from an otherwise unpatentable claim.” *Id.* Petitioner does not argue that the number of proposed substitute claims is unreasonable. *See generally* Opp.

2. Respond to a Ground of Unpatentability

A motion to amend must respond to a ground of unpatentability involved in the proceeding. 37 C.F.R. § 42.121(a)(2)(i). On the current record, Patent Owner has responded to a ground of unpatentability involved in this proceeding by amending the claims in response to the Petition’s asserted prior art. *See* Mot. 5, 19–24, App. A. Petitioner does not argue otherwise. *See generally* Opp.

3. Scope of Amended Claims

A motion to amend may not enlarge the scope of the claims of the patent. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). On the current record, Patent Owner’s Motion has not enlarged the scope of the claims of the patent because

proposed substitute claims 85–91 retain all limitations of their original corresponding claims 45–47, 51, 56, 57, and 60, and proposed substitute claim 85, from which each of proposed substitute claims 86–91 ultimately depends, further includes additional limitations as compared to respective original claim 45. *See* Mot. 6–7, App. A. Substitute claims 92 and 93 are proposed only to rewrite original claims 56 and 57 into independent form, and retain all the limitations of original claims 56 and 57. *See* Mot. 7, App. A. Therefore, proposed substitute claims 85–93 do not enlarge the scope of the claims of the challenged patent. Petitioner does not argue otherwise. *See generally* Opp.

4. New Matter

A motion to amend may not introduce new subject matter. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). On the current record, we preliminarily determine that Patent Owner’s Motion does not introduce new subject matter because Patent Owner appears to have identified adequate written description support for proposed substitute claims 85–93. *See* Mot. 7–18. In particular, Patent Owner provides citations to Application No. 17/561,976 (“the ’976 application”), from which the ’474 patent issued, as well as citations to Application No. 15/340,991, to which the ’976 application claims priority through a chain of continuation applications. *See id.* at 8 n.1; *see also* Ex. 1002, 334:5–12.

Petitioner argues that Patent Owner fails to identify disclosure supporting the claim 85 feature of “inputting the multiple object representation data structures into the input neurons of a neural network for processing as claimed—and particularly not multiple object representation data structures that include the recited label for object type, coordinates for object location, and computer model for object size.” Opp. 23–24 (citing Ex. 1022 ¶ 80). Further, Petitioner argues that support is lacking for “a number of specific nuances recited in Substitute Claim 85,

including that the instruction sets are determined using correlations between input neurons and two *different* devices (i.e., the second and third devices) for object representation data structures pertaining to the *same* ‘multiple objects’ detected at different times.” *Id.* at 24 (citing Ex. 1022 ¶ 81). Specifically, with respect to the second and third devices in proposed substitute claim 85, Petitioner finds fault with Patent Owner’s reliance on the embodiments shown in Figures 38 and 39 of the ’976 application, which relate, respectively, to what Patent Owner identifies as a “‘second device’: Loader 98a” and a “‘third device’: Boat 98b.” *Id.* at 25; Mot. 17. Petitioner asserts that “PO’s theory would appear to require that (1) the Loader 98a and Boat 98b learned instructions for operating their respective devices based on representations of the same objects, and (2) the first device would need to be capable of executing instructions from both Loader 98a (second device) and Boat 98b (third device).” Opp. 25. Petitioner argues that Patent Owner provides no explanation “that bridges the gap between Figures 38 and 39, or explains how the two devices in these two separate figures would operate as claimed.” *Id.*

In view of Petitioner’s arguments, it would be helpful for Patent Owner to explain how the embodiments shown in Figures 38 and 39, and particularly the identifications of Loader 98a and Boat 98b as respective second and third devices, provide written description support for the limitations Petitioner highlights, rather than relying on string citations. *See* Opp. 24–25. Nevertheless, we determine, at this juncture, that the disclosure identified by Patent Owner in the Motion appears to provide written description support for proposed substitute claim 85, as discussed below.

The ’976 application discloses an embodiment in which “Device 98 may be or include Loader 98a,” where “Loader 98a may also include or be coupled to DCADO Unit 100.” Ex. 1002, 479:24, 480:3, Fig. 38. The ’976 application

discloses, in general, that a Device's Circumstances for Autonomous Device Operation (DCADO) unit, may comprise "any hardware programs, or a combination thereof," and may comprise "the functionality for learning the operation of Device 98 in circumstances including objects with various properties," "for structuring and/or storing this knowledge in a knowledgebase (i.e. neural network, graph, sequences, other repository, etc.)," and "for enabling autonomous operation of Device 98 in circumstances including objects with various properties."

Id. at 393:32–33, 406:6–11. In operation,

Loader 98a comprising DCADO Unit 100 may learn User 50-directed collecting, moving, maneuvering, lifting, unloading, and/or other operations in a circumstance that includes [various] Objects 615 among which Loader 98a may need to maneuver and/or with which Loader 98a may need to interact. In the future, when a circumstance that includes Objects 615 with similar Object Properties 630 is encountered, Loader 98a may implement collecting, moving, maneuvering, lifting, and/or unloading operations autonomously.

Id. at 480:26–31. Moreover, the '976 application discloses the following, in the case of a remote DCADO Unit 100 that resides on a server accessible over a network:

[A]ny number of Loaders 98a can utilize the remote DCADO Unit 100 for autonomous operation in circumstances including objects with various properties. For example, multiple operators (i.e. Users 50, etc.) may operate their Loaders 98a that are configured to transmit their operations in circumstances including objects with various properties to a remote DCADO Unit 100. Such remote DCADO Unit 100 enables learning of the operators' collective knowledge of operating Loaders 98 in circumstances including objects with various properties. Any number of Loaders 98 can utilize such collective knowledge comprised in the remote DCADO Unit 100 for their autonomous operation.

Id. at 480:32–481:2.

The disclosure quoted above appears to provide written description support for the functionality in proposed substitute claim 85 of determining instruction sets

for operating second and third devices by inputting respective multiple object representation data structures into input neurons and using correlations between the input neurons and instruction sets for operating the second and third devices. *See* Mot., App. A. In particular, on the current record, it appears likely that one of ordinary skill in the art would understand that, given the arrangement disclosed in the '976 application of multiple Loaders 98a in communication with a remote DCADO Unit 100, a certain Loader 98a would operate autonomously based on prior operations of at least two other Loaders 98a that, at different times, contributed to the collective knowledge of DCADO Unit 100. *See, e.g.*, Ex. 1002, 420:18–21 (describing how Artificial Intelligence Unit 110 within DCADO Unit 100 “comprises the functionality for anticipating one or more Instruction Sets 526 based on one or more incoming Collections of Object Representations 525”). This would involve, at least in some embodiments, using correlations between input neurons in a neural network and instructions sets for operating the other Loaders 98a. *See, e.g., id.* at 427:1–2 (“For example, a neural network may include one or more input neurons that can be activated by inputs.”). Petitioner has not presented arguments specifically addressing the disclosure of embodiments involving multiple Loaders 98a. *See* Opp. 23–25; *but see* Pet. 28 (noting “examples given in the '474 Patent, for example, in which ‘a Device 98 ... having access to a combined Knowledgebase 530 can use the collective knowledge learned from multiple Devices 98 for the Device’s 98 autonomous operation’” (citing Ex. 1001, 103:35–39)).

Moreover, contrary to Petitioner’s argument (*see* Opp. 23–24), the '976 application appears to disclose that the multiple object representation data structures that are input to the neurons may include a “label for object type, coordinates for object location, and a computer model for object size,” as recited in

proposed substitute claim 85 (*see, e.g.*, Ex. 1002, 399:1–5 (“Examples of object properties include . . . type of an object . . . location of an object (i.e. distance and bearing/angle from a known point, coordinates, etc.), shape/size of an object (i.e. height, width, depth, computer model, point cloud, etc.) . . . ”)).

For the above reasons, we determine that Patent Owner appears to have identified adequate written description for the newly added limitations Petitioner highlights in its arguments. As noted above, however, it would be helpful for Patent Owner to provide further explanation as to how the identified disclosure provides written description support for these limitations in proposed substitute claim 85, given that the Motion essentially lists citations for each limitation, with minimal explanation (*see* Mot. 15–18), and in view of Petitioner’s arguments (*see* Opp. 23–25).

At this stage of the proceeding, on the record before us, Patent Owner has shown a reasonable likelihood that there is adequate written description support in the original disclosure of the ’474 patent for proposed substitute claims 85–93.

B. Unpatentability Arguments by Petitioner

Petitioner bears the ultimate burden to show that any proposed substitute claims are unpatentable. 37 C.F.R. § 42.121(d)(2). For the reasons discussed below, at this stage of the proceeding, and based on the current record,¹ it appears that Petitioner has shown a reasonable likelihood that proposed substitute claims 85–93 are unpatentable. *See* 37 C.F.R. § 42.121(e)(1).

¹ We express no view on the patentability of original claims 45–47, 51, 56, 57, 59, 60, 68, and 69 in this Preliminary Guidance. Instead, we focus on limitations added to those claims in the Patent Owner’s Motion to Amend.

1. Obviousness

Petitioner contends that proposed substitute claims 85–91 would have been obvious over either the combination of Grotmol (Ex. 1008) and Zhu (Ex. 1023), or the combination of Grotmol, Zhu, and Buibas (Ex. 1005).² Opp. 1.

i. Proposed Substitute Claim 85

Proposed substitute claim 85 recites the following newly added limitations:

[85.8] wherein the knowledgebase includes a neural network, wherein the one or more inputs are one or more input neurons of the neural network,

[85.9] wherein the machine readable code, when executed by the one or more processors, further causes the one or more processors to perform at least:

[85.10] generating a stream of circumstance representations comprising:

[85.11] the generated circumstance representation that (i) includes multiple object representation data structures that each comprises: a label for object type, coordinates for object location, and a computer model for object size, and (ii) represents multiple objects detected at a first time, and

[85.12] another circumstance representation that (i) includes another multiple object representation data structures that each includes: a label for object type, coordinates for object location, and a computer model for object size, and (ii) represents the multiple objects detected at a second time,

[85.13] wherein the determining the one or more instruction sets for operating the second device includes: inputting the multiple object representation data structures of the stream into the one or more input neurons, and using a correlation between the one or more input

² Petitioner does not include proposed substitute claims 92 and 93 in the new obviousness grounds because “Substitute claims 92-93 are identical to original claims 56 and 57 and are unpatentable based on Grounds 1A and 2C as described in the Petition and Reply.” Opp. 1 n.1.

neurons and the one or more instruction sets for operating the second device; and

[85.14] determining another one or more instruction sets for operating a third device at least by: inputting the another multiple object representation data structures of the stream into the one or more input neurons, and using a correlation between the one or more input neurons and the another one or more instruction sets for operating the third device.

Mot., App. A.

ii. Grotmol and Zhu

Petitioner contends Grotmol teaches limitations 85.8, 85.9, 85.13, and 85.14. Opp. 7–8, 14–19. In particular, with respect to limitations 85.13 and 85.14, Petitioner asserts that “Grotmol discloses that ‘[t]he trained controller of the robot may comprise a trained configuration configured to enable autonomous operation’ and ‘the trained configuration may be loaded to one or more other robots in order to provide learned behaviors,’” and that “Grotmol also discloses that the trained configuration of a controller can be updated through continuous learning, including learning in the ‘override’ and ‘correct’ modes.” Opp. 17 (citing Ex. 1008, 33:21–35). According to Petitioner:

A POSITA would have understood from these disclosures, for instance, that the neural network for a controller can first be trained on a third device to learn instruction sets for operating a third device; the trained configuration of the neural network can be shared with and loaded on a second device where the trained configuration is updated through additional learning of instruction sets for operating the second device (e.g., in the override/correct modes); and the updated trained configuration can further be shared with and loaded on a first device from the second device.

Id. 17–18 (citing Ex. 1022 ¶ 68). This argument builds on the one provided in the Petition, namely that, in Grotmol, a trained configuration from a second device could be shared with a first device. *See* Pet. 59–60, 67–68; *see also* Dec. 36–38.

Here, Petitioner further asserts that one of ordinary skill would have understood a trained configuration from a third device could be updated on the second device prior to being shared with a first device. *See* Opp. 17–18.

Petitioner contends that the combination of Zhu with Grotmol teaches limitations 85.10–85.12. Opp. 9–14. In particular, Petitioner asserts that Zhu teaches “techniques for, among other things, capturing images of an environment surrounding an autonomous vehicle and detecting objects including other vehicles depicted in the images,” by using data “to determine ‘when a sensor has detected an object, and the type of object detected by the sensor’” and by applying sensor parameters “to the detected object with a ‘label’ with a ‘bounding box’ of a defined size.” Opp. 2 (citing Ex. 1023, 1:48–2:4, 10:58–67, 11:16–55, 14:43–17:28, Figs. 9, 10; Ex. 1022 ¶ 41).

In combining Grotmol and Zhu, Petitioner proposes that it would have been “obvious to apply Zhu’s suggestion for extracting additional features of detected objects—such as a classification/type of the object, and the object size and location (e.g., using a bounding box),” such that “Grotmol’s autonomous vehicle would then predictably use the additional features of the extracted objects suggested by Zhu” for training and autonomous operation. Opp. 2–3 (citing Ex. 1022 ¶¶ 42–44; Ex. 1008, 21:64–22:18, 25:30–42, 26:5–20, 27:24–40, Figs. 10A–11B, 15; Ex. 1023, 14:43–17:28, Figs. 9–10). Petitioner reasons that one of ordinary skill would have been motivated to make this combination “to provide additional semantic information to Grotmol’s controller that would allow it to more accurately and efficiently characterize circumstances encountered by the vehicle and to compare current circumstances to prior circumstances learned in the past (e.g., as represented in a trained neural network).” *Id.* at 3–4 (citing Ex. 1022 ¶ 45; Ex. 1023, 11:16–55).

For the reasons explained in the Opposition, at this stage, and based on the current record, we determine that Petitioner has shown a reasonable likelihood that proposed substitute independent claim 85, as well as proposed substitute dependent claims 86–91, would have been obvious based on Grotmol and Zhu.

iii. Grotmol, Zhu, and Buibas

Alternatively, in addition to Petitioner’s contentions regarding Grotmol and Zhu noted above, Petitioner contends that the combination of Buibas with Grotmol and Zhu teaches limitations 85.8, 85.10, 85.13, and 85.14. Opp. 8–10, 19–21. In particular, with respect to limitations 85.13 and 85.14, Petitioner asserts that “Buibas discloses techniques by which many different users can independent[ly] train their respective robotic devices to autonomously perform different tasks, behaviors,” and then “make the trained configurations of their robots available to others (e.g., by uploading trained brain images to the cloud).” *Id.* at 20 (citing Ex. 1005 ¶¶ 70, 171–207, 211–213, 222–225, Figs. 16–19). Petitioner further asserts that users can download the brain images for their own robots “and can even merge multiple brain images learned on other devices to obtain a combined set of capabilities.” *Id.* at 20–21 (citing Ex. 1005 ¶¶ 90–127, 188–189, 225, Figs. 3–9). Based on this disclosure, Petitioner argues that:

The merged brain image, whether by an interleaved merge or a non-interleaved merge, produces an offspring that has one or more input neurons correlated with instruction sets learned at each of the parents (e.g., at a second device and a third device), which correlations are used to determine[] instruction sets during autonomous operation.”

Id. at 21 (citing Ex. 1022 ¶ 72). This argument builds on the one provided in the Petition, namely that “a first robot (***first device***) ‘loads’ a brain image (containing a ***knowledgebase***), either in full or as a partial image combined with other images, which was trained on a second robot (***second device***).” *See* Pet. 27; *see also* Dec. 22–24, 32–33. Here, Petitioner further asserts that a brain image could be

based on training on a third device in addition to training on the second device. *See Opp.* 21.

For the reasons explained in the Opposition, at this stage, and based on the current record, we determine that Petitioner has shown a reasonable likelihood that proposed substitute independent claim 85, as well as proposed substitute dependent claims 86–91, would have been obvious based on Grotmol, Zhu, and Buibas.

III. CONCLUSION

This concludes our Preliminary Guidance. Patent Owner has the option to reply to this Preliminary Guidance *or* to file a revised Motion to Amend by DUE DATE 3. 37 C.F.R. §§ 42.121(e)(3), (f); Ex. 3001. Patent Owner's reply or revised Motion to Amend may only respond to this Preliminary Guidance or Petitioner's Opposition and may be accompanied by new evidence (including declarations). 37 C.F.R. § 42.121(e)(3). Petitioner has the option to file a sur-reply responsive to this Preliminary Guidance, Patent Owner's reply, or Patent Owner's revised Motion to Amend, but may not present new evidence in any case. 37 C.F.R. § 42.121(e)(3). Petitioner may also file a reply to the Preliminary Guidance if Patent Owner does not file a reply or revised Motion to Amend. 37 C.F.R. § 42.121(e)(4).

In addition, Patent Owner is reminded that amendments of the challenged claims may also be pursued in a separate reissue or reexamination proceeding before, during, or after an AIA trial proceeding, including subsequent to the issuance of the Final Written Decision. We draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner

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of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

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