

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FEDEX CORPORATION,
Petitioner,

v.

TRANSCEND SHIPPING SYSTEMS LLC,
Patent Owner.

IPR2022-01117
Patent 7,253,731 B2

Before CHARLES J. BOUDREAU, ELIZABETH M. ROESEL, and
FREDERICK C. LANEY, *Administrative Patent Judges*.

BOUDREAU, *Administrative Patent Judge*.

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

I. INTRODUCTION

FedEx Corporation (“Petitioner” or “FedEx”) filed a Petition requesting *inter partes* review of claims 1–9, 11–26, and 28–30 of U.S. Patent No. 7,253,731 B2 (Ex. 1001, “the ’731 patent”). Paper 2 (“Pet.”). Petitioner filed a Declaration of Dr. Robert Akl (Ex. 1003) with the Petition. Patent Owner Transcend Shipping Systems, LLC (“Patent Owner” or “Transcend”) did not file a Preliminary Response.

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b) (2018); 37 C.F.R. § 42.4(a) (2022). We may not institute an *inter partes* review “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). The “reasonable likelihood” standard is “a higher standard than mere notice pleading” but “lower than the ‘preponderance’ standard to prevail in a final written decision.” *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

Applying those standards, and upon consideration of the arguments and evidence presented, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim, and accordingly, we institute an *inter partes* review as to all challenged claims of the ’731 patent on the grounds of unpatentability presented.

II. BACKGROUND

A. *Real Parties in Interest*

FedEx Corporation identifies FedEx Corporate Services, Inc., Federal Express Corporation d/b/a FedEx Express, and FedEx Freight Corporation, as well as itself, as the real parties in interest for Petitioner. Paper 3, 2

(Petitioner’s Updated Mandatory Notices). Transcend Shipping Systems, LLC identifies itself as the real party in interest for Patent Owner Paper 10, 2 (Patent Owner’s Updated Mandatory Notices).

B. Related Matters

The parties collectively identify fifteen district court current or past district court actions involving Patent Owner, including *Transcend Shipping Systems, LLC v. Federal Express Corporation*, No. 2:22-cv-00110 (E.D. Tex.), now terminated, in which the ’731 patent, among other patents, was asserted against real parties in interest Federal Express Corporation d/b/a FedEx Express and FedEx Freight Corporation; and *Transcend Shipping Systems, LLC v. DHL Express (USA), Inc.*, No. 2:22-cv-00190 (E.D. Tex.), which Patent Owner advises us remains pending. Pet. 86–87; Paper 10, 2.

Petitioner also reports that “the ’731 patent was the subject of an unfiled IPR draft petition commissioned by one or more of the parties in the dismissed district court proceedings.” Pet. 88. Petitioner represents that it was not involved in the preparation of that petition. *Id.*

C. The ’731 Patent

The ’731 patent, titled “Apparatus and Method for Providing Shipment Information,” issued August 7, 2007, from U.S. Patent Application No. 10/055,116, filed January 22, 2002, and claims priority from U.S. Provisional Application No. 60/263,877, filed January 23, 2001. Ex. 1001, codes (21), (22), (45), (54), (60). The ’731 patent discloses an apparatus including a shipment conveyance device such as a shipping container, a pallet, or a piece of luggage, where the shipment conveyance device includes a receiver, a global positioning device, a processor for generating messages regarding a position or location of the shipment conveyance device, and a transmitter. *Id.* at code (57).

An embodiment is shown in Figure 2 of the '731 patent, reproduced below.

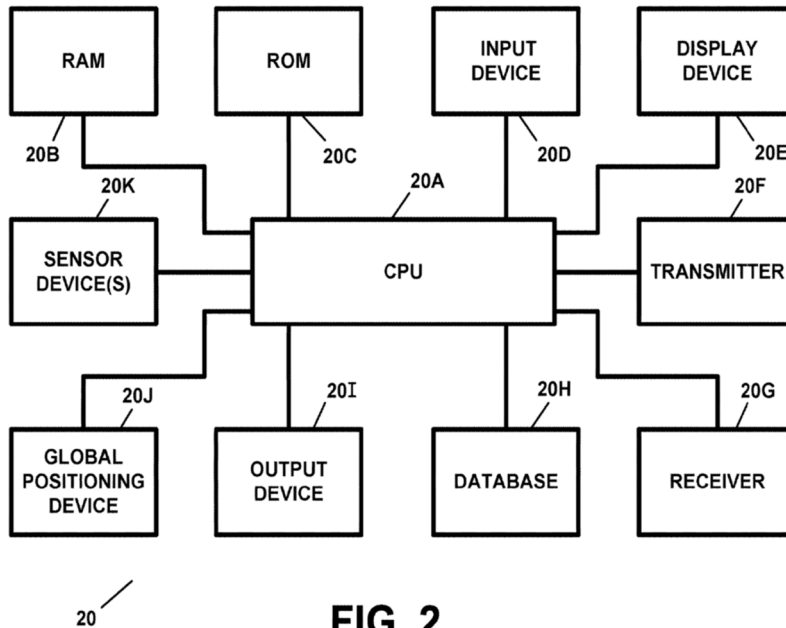


FIG. 2

Figure 2, above, is a block diagram of shipment conveyance device computer 20 including central processing unit (“CPU”) 20A, random access memory (“RAM”) device(s) 20B, read only memory (“ROM”) device(s) 20C, input device 20D, display device 20E, transmitter(s) 20F, receiver 20G, database 20H, output device 20I, global positioning device 20J, and sensor device 20K. Ex. 1001, 10:57–11:43, 13:60–14:62.

Figure 3 of the '731 patent is reproduced below.

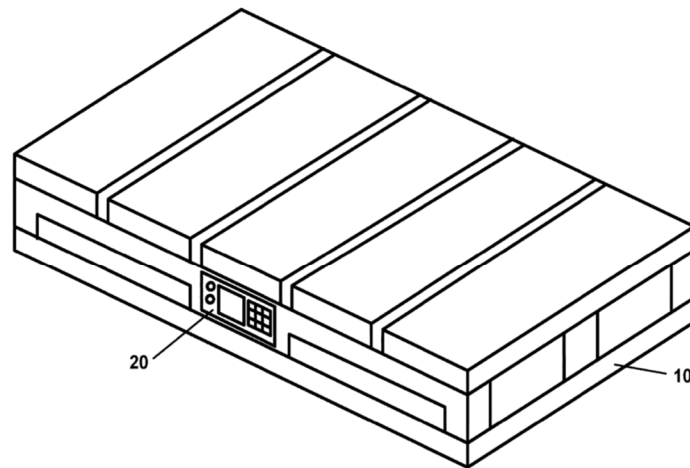


FIG. 3

Figure 3, above, shows pallet 10 with shipment conveyance device computer 20. Ex. 1001, 15:18–42.

The '731 patent discloses that shipment conveyance device computer 20 “can be programmed to provide shipment location updates, shipment status updates, etc.” and “can generate status messages regarding its position or locations, stops made by the carrier, and/or the temperature of the shipment, impacts received by the shipment conveyance device 10, and/or other information.” Ex. 1001, 18:16–22; *see also id.* at Fig. 5 (step 503). According to the '731 patent, the status messages can be generated and transmitted “at pre-designated time intervals, and/or upon the occurrence of a pre-specified event (i.e. a stop made by the carrier, an impact during an accident, an unusual stopping period, a shipment temperature change, and/or any other event or occurrence relating to the shipment).” *Id.* at 18:23–31.

D. Illustrative Claim

Of the challenged claims, claims 1, 20, and 21 are independent claims. Claim 1, reproduced below with bracketed claim element designations used by Petitioner added, is illustrative of the claimed subject matter.

1. [1pre] An apparatus, comprising:

[1a] a shipment conveyance device, wherein the shipment conveyance device is associated with a shipment, and further wherein the shipment conveyance device is at least one of a shipping container, a pallet, and a tote;

[1b-1] a memory device, wherein the memory device is located in, on, or at, the shipment conveyance device, wherein information regarding the shipment is stored in the memory device, and [1b-2] further wherein the information regarding the shipment includes a description of a good, product, or item, being shipped via the shipment conveyance device, and [1b-3] at least one of origination information, sender information, shipper information, destination information, receiver information, handling instruction information, delivery instruction information, invoice information, packing ship information, delivery time information, and payment instruction information, regarding the shipment;

[1c-1] a global positioning device, wherein the global positioning device is located in, on, or at, the shipment conveyance device, and [1c-2] further wherein the global positioning device determines a position or location of the shipment conveyance device;

[1d-1] a processing device, wherein the processing device processes at least one of information regarding the shipment and information regarding the shipment conveyance device in response to an occurrence of an event or in response to a request for information regarding the shipment or the shipment conveyance device, [1d-2] wherein the processing device generates a message containing information regarding the position or location of the shipment or the shipment conveyance device and information regarding at least one of the occurrence of an event, a status of the shipment, a

shipment temperature, and an impact or force on the shipment conveyance device; and

[1e-1] a transmitter, wherein the transmitter is located in, on, or at, the shipment conveyance device, [1e-2] wherein the transmitter transmits the message to a communication device associated with at least one an individual or entity, a sender of the shipment, a receiver of the shipment, a carrier of the shipment, and an individual or entity authorized to receive information regarding the shipment or the shipment conveyance device.

Ex. 1001, 23:50–24:26; Pet. viii–ix.

E. Asserted Grounds

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
1–9, 11, 12, 14–26, 28–30	103	Keillor, ² Morimoto ³
1, 5, 9, 11–14, 16, 20, 21, 24, 26, 28, 29	103	Westerlage, ⁴ Woolley ⁵

Pet. 1, 6–81.

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103, effective March 16, 2013. Because the ’731 patent issued from an application filed before that date, we refer to the pre-AIA version of § 103.

² Keillor et al., US 5,917,433, issued June 29, 1999 (Ex. 1004).

³ Morimoto, US 7,035,856 B1, filed September 28, 2000, issued April 25, 2006 (Ex. 1005).

⁴ Westerlage et al., US 5,826,195, issued October 20, 1998 (Ex. 1006).

⁵ Woolley et al., US 5,892,441, issued April 6, 1999 (Ex. 1007).

III. ANALYSIS

A. Legal Standards

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)).

A patent claim is unpatentable for obviousness if the differences between the claimed subject matter 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.” 35 U.S.C. § 103(a). The question of obviousness is resolved based on underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when presented, objective evidence of nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record,

to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art (“POSITA”) would have had “at least a Bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and 1–2 years of experience in the design or development of electronic devices or technology related to location management, or the equivalent.” Pet. 5 (citing Ex. 1003 ¶ 21).

The words “at least” result in an unbounded skill level. With the exception of those words and for purposes of this Decision, we apply Petitioner’s articulation of the level of ordinary skill in the art, which is consistent with the level of skill in the art at the time of the invention as reflected in the asserted prior art.

C. Claim Construction

In an *inter partes* review, we apply the same claim construction standard as would be used by a district court to construe a claim in a civil action involving the validity or infringement of a patent. 37 C.F.R. § 42.100(b). Under that standard, claim terms are given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *Id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc); *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012). “The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (quoting

Vivid Techs., Inc. v. Am. Sci. Eng’g, Inc., 200 F.3d 795, 803 (Fed. Cir. 1999))).

Petitioner contends that the claim phrase “at least one of . . . and,” which is recited, *inter alia*, in each of the independent claims, should be construed as “only one item from the list, or any combination of items in the list,” arguing that such construction is consistent with the use of that phrase throughout the ’731 patent specification and in statements made by the applicant during prosecution. Pet. 6 (citing Ex. 1001, 8:29–36, 9:9–19, 11:53–13:55; Ex. 1002, 144–45 (’731 patent prosecution file); Ex. 1003 ¶¶ 70–72). Petitioner further contends that no express constructions are necessary for any other claim terms and that all claim terms should be construed according to the *Phillips* standard. *Id.* at 5–6.

Based on the current record and without any opposition from Patent Owner, we see no need for express construction of any term at this stage of the proceeding.

D. Obviousness over Keillor and Morimoto

Petitioner alleges claims 1–9, 11, 12, 14–26, and 28–30 of the ’731 patent are unpatentable under 35 U.S.C. § 103 as obvious over Keillor and Morimoto. Pet. 1, 6–52. We begin our analysis with a brief overview of Keillor and Morimoto.

1. Keillor

Keillor, titled “Asset Monitoring System and Associated Method,” describes an asset monitoring system including an asset monitor for providing a remotely located central station with information relating to a container, such as a shipping container. Ex. 1004, codes (54), (57), 1:5–13. Figure 1 of Keillor is reproduced below.

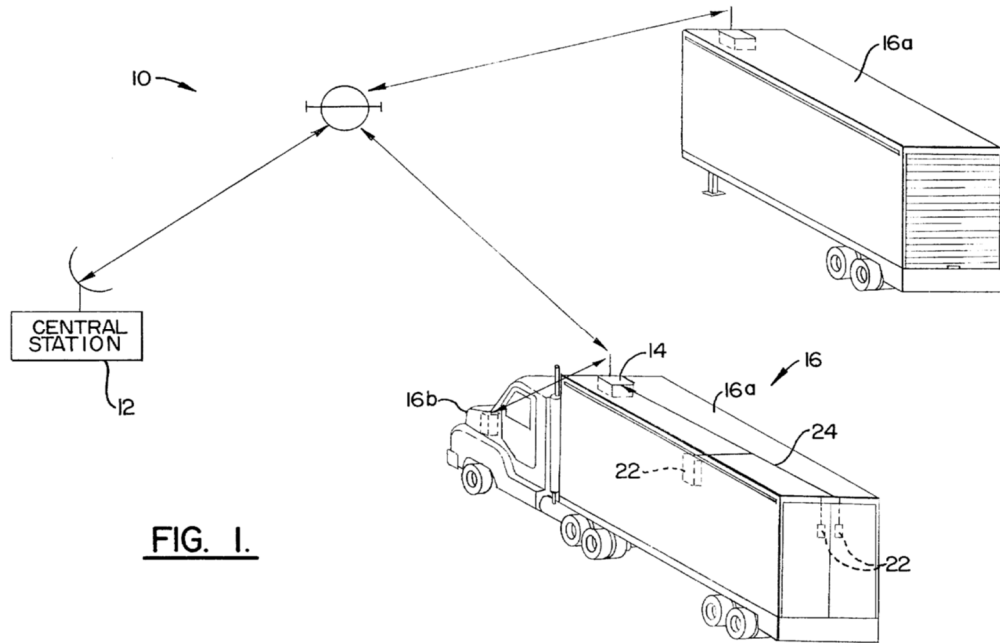


Figure 1, above, shows asset monitoring system 10 including central station 12 and asset monitors 14 associated with containers 16, which in this example are trailers 16a towed by tractors 16b. Ex. 1004, 4:60–62, 5:22–29. Figure 2 of Keillor is reproduced below.

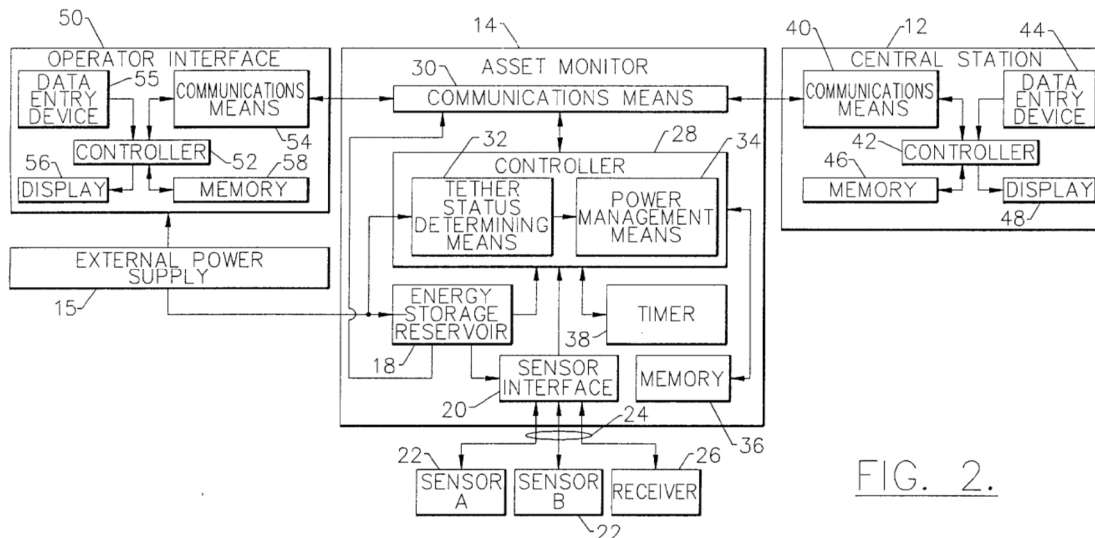


Figure 2, above, shows a block diagram of an asset monitoring system, including asset monitor 14, central station 12, operator interface 50, and

external power source 15. Ex. 1004, 4:63–67, Fig. 2. As shown in Figure 2, asset monitor 14 includes sensor interface 20 for communicating with sensors 22, such as temperature sensors or door position sensors, which are associated with trailer 16a and/or tractor 16b. *Id.* at 6:62–7:8. Asset monitor 14 also includes position determining means, such as global position system (“GPS”) receiver 26, for determining the position of container 16 based upon externally supplied location data and reporting the current position to the asset monitor. *Id.* at 7:66–8:18. Asset monitor 14 also includes controller 28 and communications means 30. *Id.* at 9:34–38, 10:5–13, Fig. 2.

2. *Morimoto*

Morimoto, titled “System and Method for Tracking and Routing Shipped Items,” describes an automated system and method for tracking and routing shipped goods. Ex. 1005, code (54), 1:7–10. According to Morimoto, the method “may be implemented using a system of specialized shipping containers” that are “configured with attached or embedded memory devices for storing information about the item(s) being shipped.” *Id.* at 2:8–9, 2:50–54. “[T]he memory device may store routing and final destination information for the container, as well as other information.” *Id.* at 2:54–67. “[T]he memory device may be configured with a wireless interface . . . that allows the contents of the memory device to be read and updated.” *Id.* at 3:1–4. Figure 4 of Morimoto is reproduced below.

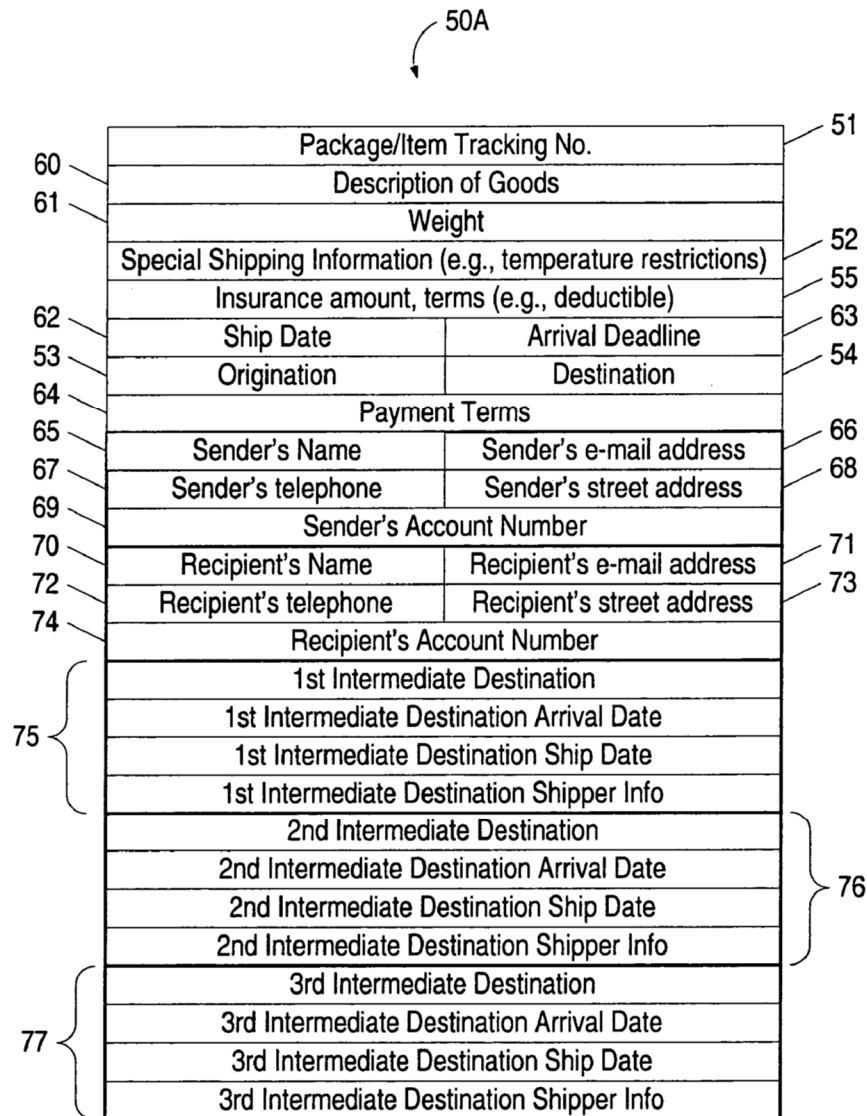


FIG. 4

Figure 4, above, illustrates a data file stored in a memory device attached to a container or carrier for shipping packages. Ex. 1005, 3:55–57. Morimoto describes the data file as including:

a unique item identification number (e.g., a package tracking number) 51, a description of the goods being shipped 60, the weight of the goods being shipped 61, any special shipping instructions (e.g., temperature, humidity, and vibration restrictions) 52, insurance terms (e.g., the insurance carrier, the policy number, the amount of insurance, and any deductible

amounts) 55, the original shipping date 62, the arrival deadline 63, the origination location 53, the destination 54, any payment terms 64, information about the sender (e.g., sender's name 65, sender's email address 66, sender's telephone number 69, sender's street address 68, sender's shipping company account number 69), information about the recipient (e.g., recipient's name 65, recipient's email address 66, recipient's telephone number 69, recipient's street address 68, recipient's shipping company account number 69), and information about one or more intermediate destinations (75 through 77).

Id. at 9:31–51.⁶

3. Independent Claim 1

Petitioner contends that claim 1 is unpatentable over Keillor and Morimoto. Pet. 13–35. In this combination, Petitioner generally maps the teachings of Keillor to the structural elements of claim 1. For example, Petitioner maps “a shipment conveyance device” (element [1a]) to Keillor's containers 16. *Id.* at 15–16 (citing, *inter alia*, Ex. 1004, 5:21–49, Fig. 1). Petitioner maps “a memory device . . . located in, on, or at, the shipment conveyance device” (element [1b-1]) to Keillor's memory device 36, which is part of asset monitor 14, which is, in turn, located in or on container 16. *Id.* at 16–18 (citing, *inter alia*, Ex. 1004, 5:50–51, 11:33–38, Figs. 1, 2). Petitioner maps “a global positioning device . . . located in, on, or at, the shipment conveyance device” (element [1c-1]) to Keillor's GPS receiver 26, which is also part of asset monitor 14. *Id.* at 23–25 (citing Ex. 1004, 4:23–32, 5:50–67, Figs. 1, 2). Petitioner maps “a processing device” (element [1d-1]) to Keillor's controller 28. *Id.* at 26–29 (citing, *inter alia*, Ex. 1004, 4:3–5, 7:18–36, 10:5–11:38, Figs. 2, 3). Petitioner maps

⁶ We note that, in some instances, the reference numerals in the quoted description are inconsistent with the reference numerals in Morimoto Figure 4.

“a transmitter . . . located in, on, or at, the shipment conveyance device” (element [1e-1]) to Keillor’s communication means 30, which is part of asset monitor 14. *Id.* at 33–34 (citing Ex. 1004, 5:50–67, 9:15–34, 11:34–38, 13:29–32, 14:11–31, Figs. 1, 2). Finally, Petitioner maps “a communication device” (element [1e-2]) to Keillor’s communications means 40 of central station 12. Pet. 34–35 (citing Ex. 1004, 3:45–51, 9:15–33, 14:43–46).

Addressing the limitations of claim elements [1b-2] and [1b-3] reciting the types of information stored in the “memory device” of claim 1, Petitioner provides alternative mappings based on Keillor either alone or in combination with Morimoto. Pet. 19–23 (citing Ex. 1004, 7:18–43, 11:12–39, 15:40–57; Ex. 1005, 2:7–67, 5:1–40, 9:31–10:8, 10:65–11:7, Fig. 4). According to Petitioner, “[t]he POSITA would have recognized that this combination would enhance the information provided to users of Keillor’s system looking to track and ensure delivery of shipments.” Pet. 9 (citing Ex. 1003 ¶ 86). The Petition provides several reasons that Petitioner contends would have motivated a POSITA to make the Keillor-Morimoto combination and cites teachings from both references and its declarant’s testimony as support for those reasons. Pet. 9–12; Ex. 1003 ¶¶ 86–96.

Claim 1 also recites a number of functional limitations. For example, element [1d-1] recites that “the processing device processes at least one of information regarding the shipment and information regarding the shipment conveyance device in response to an occurrence of an event or in response to a request for information regarding the shipment or the shipment conveyance device.” Ex. 1001, 24:6–11. Petitioner contends that Keillor discloses both alternatives recited in the claim. Pet. 29–30 (citing Ex. 1004, 7:18–36, 10:5–61, 10:65–11:38, Fig. 3). For the first recited alternative, Petitioner directs us to Keillor’s disclosures that asset monitor 14 via a

controller implemented using processors may “prompt the position determining means . . . to determine the present location of the asset monitor” in response to the “central station . . . request[ing] that the asset monitor identify its present position” and that “the central station . . . may request an update on the status of the various sensors,” which, Petitioner contends, triggers the asset monitor to respond with corresponding sensor-related data, such information relating to an interrupt or “the actual condition or event which was sensed.” *Id.* at 29 (emphasis omitted) (quoting Ex. 1004, 10:56–61, 10:65–66, 11:6–10) (citing Ex. 1004, 10:5–57, 10:65–11:10, Fig. 3). For the second recited alternative, Petitioner contends that Keillor “describes a number of events which would result in the processing of information,” including “the detection of a condition or event which falls outside of a predetermined accepted range,” for example, “if [a] sensed temperature falls outside of the predetermined range of acceptable temperatures.” *Id.* at 30 (emphasis omitted) (quoting Ex. 1004, 7:30–35, 11:13–16) (citing Ex. 1004, 7:18–35, 11:11–38, Fig. 3). Petitioner contends that these disclosures teach that asset monitor 14 notifies the central station “of the interrupt and the location of the container at the time of the interrupt” and “the actual condition or event which was sensed.” *Id.* (quoting Ex. 1004, 11:22–28) (citing Ex. 1004, 11:12–38).

Element [1d-2] recites that “the processing device generates a message containing information regarding the position or location of the shipment or the shipment conveyance device,” and element [1e-2] recites that “the transmitter transmits the message to a communication device associated with at least one [of] an individual or entity, a sender of the shipment, a receiver of the shipment, a carrier of the shipment, and an individual or entity authorized to receive information regarding the shipment

or the shipment conveyance device.” Ex. 1001, 24:12–14, 24:20–26. Petitioner contends that “generat[ing] a message” and “transmit[ing] the message” would have been obvious in view of Keillor’s teachings concerning transmission of information, including position/location information, from the asset monitor to the central station over a communications link. Pet. 30–35 (citing, *inter alia*, Ex. 1003 ¶¶ 129–132, 134; Ex. 1004, 3:45–54, 4:3–5, 4:23–32, 5:62–66, 8:19–38, 9:15–33, 10:47–11:38, 13:29–32, 14:11–31).

Based on the current record and without any opposition from Patent Owner, we determine that Petitioner’s arguments and evidence challenging claim 1 based on Keillor and Morimoto meet the threshold for institution.

4. Independent Claims 20 and 21

Independent claim 20 recites substantially the same limitations as independent claim 1, with the exception that it omits “wherein the shipment conveyance device is associated with a shipment, and further” from element [1a]; refers to “a” shipment rather than “the” shipment in elements [1b-1] and [1b-2]; further recites that the processing device “is located in, on, or at, the shipment conveyance device” in element [1d-1], and omits from element [1d-1] the phrase “at least one of information regarding the shipment and.” *Compare* Ex. 1001, 23:50–24:26, *with id.* at 25:54–26:32. Similarly, independent claim 21 recites substantially the same limitations as independent claim 1, with the exception that it specifically recites “a shipping container” rather than “a shipment conveyance device [wherein the shipment conveyance device is at least one of a shipping container, a pallet, and a tote]” throughout. *Compare id.* at 23:50–24:26, *with id.* at 26:33–27:8. Petitioner relies on its arguments with respect to claim 1 for claims 20 and 21. Pet. 49–52. Based on the current record and

without any opposition from Patent Owner, we determine that Petitioner's arguments and evidence challenging claims 20 and 21 based on Keillor and Morimoto meet the threshold for institution for the same reasons as for claim 1.

5. Dependent Claims 2–9, 11, 12, and 14–19

Claims 2–9, 11, 12, and 14–19 depend from claim 1, and claims 22–26 and 28–30 depend from claim 21. Petitioner contends that the additional limitations of these claims are taught or suggested by Keillor and Morimoto. Pet. 35–52. In view of the absence of a preliminary response and our determination that Petitioner's challenges to claims 1 and 21 based on Keillor and Morimoto meet the threshold for institution, we do not provide a claim-by-claim analysis for dependent claims 2–9, 11, 12, 14–19, 22–26, and 28–30 at this stage of the proceeding.

E. Obviousness over Westerlage and Woolley

Petitioner alleges claims 1, 5, 9, 11–14, 16, 20, 21, 24, 26, 28, and 29 of the '731 patent are unpatentable under 35 U.S.C. § 103 as obvious over Westerlage and Woolley. Pet. 1, 52–81. We begin our analysis with a brief overview of Westerlage and Woolley.

1. Westerlage

Westerlage, titled "Data Messaging in a Communications Network," describes a monitoring system in which a messaging unit is attached to or associated with an item to be monitored, such as a truck trailer, and the messaging unit is used to communicate information on the current position and/or status of a fleet of truck trailers. Ex. 1006, codes (54), (57), 2:19–30. Figure 1 of Westerlage is reproduced below.

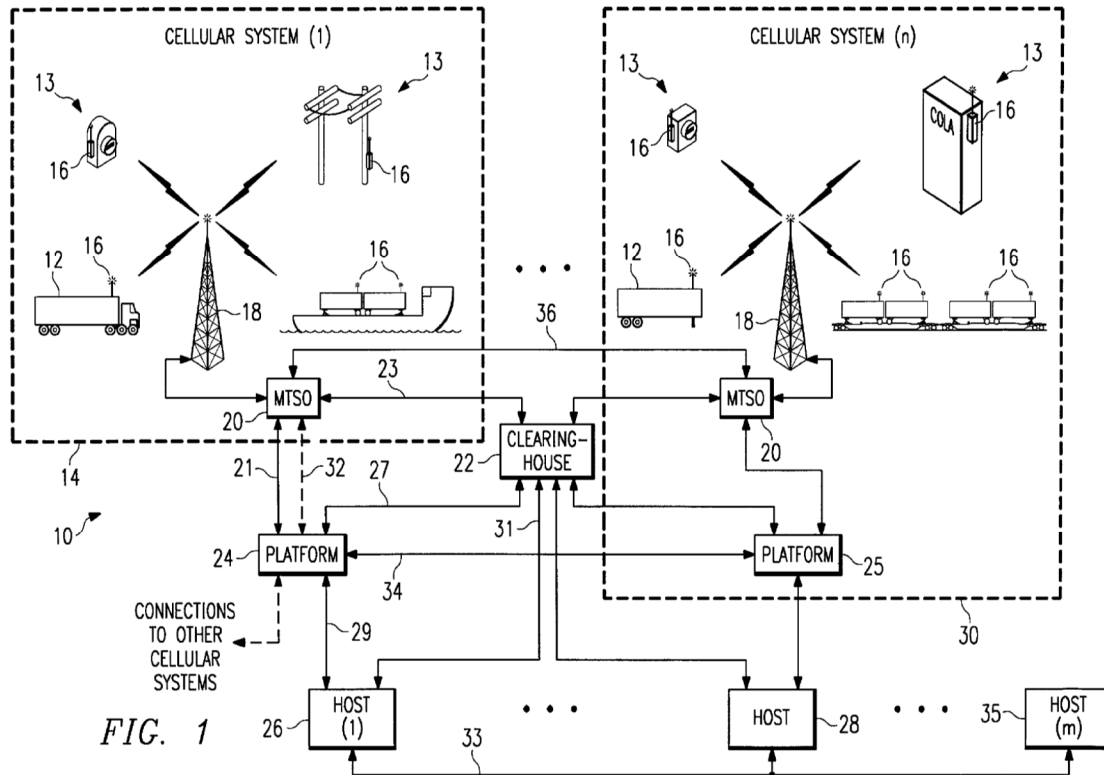


Figure 1, above, shows communications network 10 including cellular system 14 in which truck trailer 12 is carried by a cab, barge, train, or other transportation system. Ex. 1006, 3:8–11. Truck trailer 12 is equipped with messaging unit 16, which contains a cellular transceiver for sending and receiving data messages. *Id.* at 3:31–33. Cellular system 14 includes transmission tower 18 and mobile telecommunications switching office (“MTSO”) 20 coupled to transmission tower 18. *Id.* at 3:35–37.

Figure 2 of Westerlage is reproduced below.

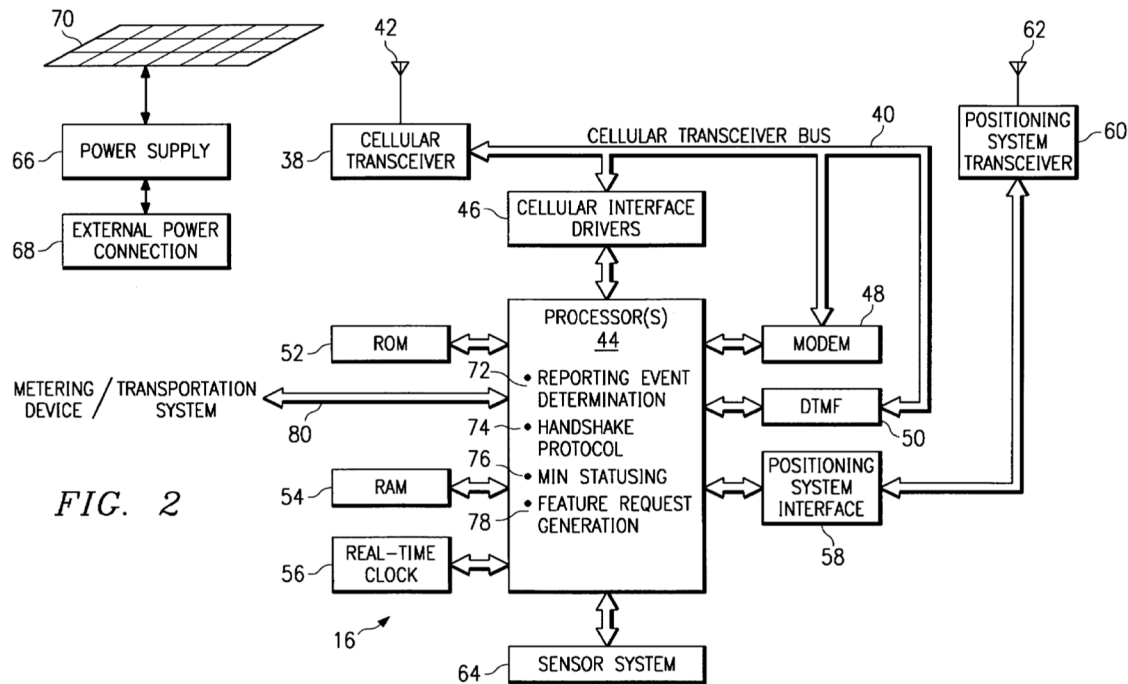


Figure 2, above, is a block diagram of messaging unit 16, which “may be attached to a mobile item, such as truck trailer 12, cargo container, other vehicle, or person.” Ex. 1006, 6:7–11. As shown in Figure 2, messaging unit 16 includes cellular transceiver 38, processor(s) 44, ROM 52, RAM 54, positioning system transceiver 60, and sensor system 64. *Id.* at 6:17–7:16. Westerlage discloses that positioning system transceiver 60 receives location information from, e.g., a GPS system, and provides that information to processor 44 via positioning system interface 58. *Id.* at 6:55–62.

Westerlage discloses that, “[i]n operation, messaging unit 16 generates a data message to be sent over . . . network 10 upon the occurrence of a reporting event,” which is determined by reporting event determination module 72 of processor 44. Ex. 1006, 7:41–47, Fig. 2. According to Westerlage, “[u]pon the occurrence of a reporting event, processor 44 may immediately generate and transmit a data message or generate and store the

data message for later transmission.” *Id.* at 7:47–50. Westerlage describes various reporting events that may trigger the generation of a message, including an external request from MTSO 20, clearinghouse 22, platform 24, or host 26 (*see* Figure 1 above); a signal from sensor system 64, such as an alarm signal indicating that “the cargo temperature in a refrigerated truck trailer exceeds a certain minimum or maximum level;” and geographical information, such as a truck trailer location determined by the positioning system that deviates from an expected location. *Id.* at 7:54–8:29.

2. Woolley

Woolley, titled “Sensing with Active Electronic Tags,” describes monitoring an object in a moving vehicle by attaching an electronic tag to the object and using an electronic device to communicate with the tag and detect the presence of the object while it is being moved by the vehicle. Ex. 1007, codes (54), (57), 1:42–46. Woolley discloses tracking the location of the object, comparing its location to a planned route, and reporting any discrepancy to a user. *Id.* at 1:54–58. According to Woolley, “[e]ach tag stores a unique identification for the object, a description of the object, the object’s shipper and destination and a signature of each possessor of the object.” *Id.* at 2:4–6.

Figure 5 of Woolley is reproduced below.

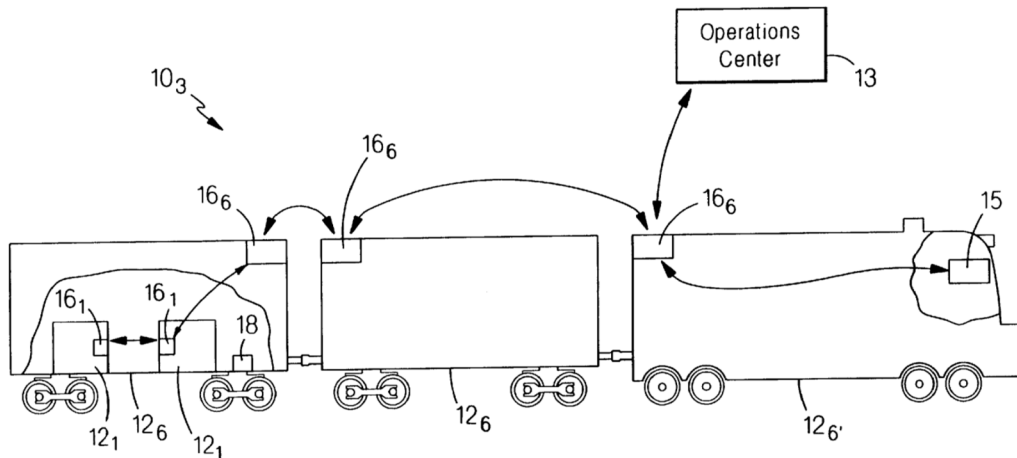


FIG. 5

Figure 5, above, illustrates a system for monitoring railway cargo by mounting tags 16₆ on each railway car 12₆ and on locomotive 12_{6'} and mounting tags 16₁ on each container 12₁ transported in the cars. Ex. 1007, 17:58–61. Sensors 18 are mounted in the railway cars, including a brake release sensor, a temperature sensor, and a fuel level sensor, and a GPS sensor is on the locomotive. *Id.* at 17:66–8:4; *see also id.* at 59:63–62:32 (description of railroad shipping application).

Figure 6 of Woolley is reproduced below.

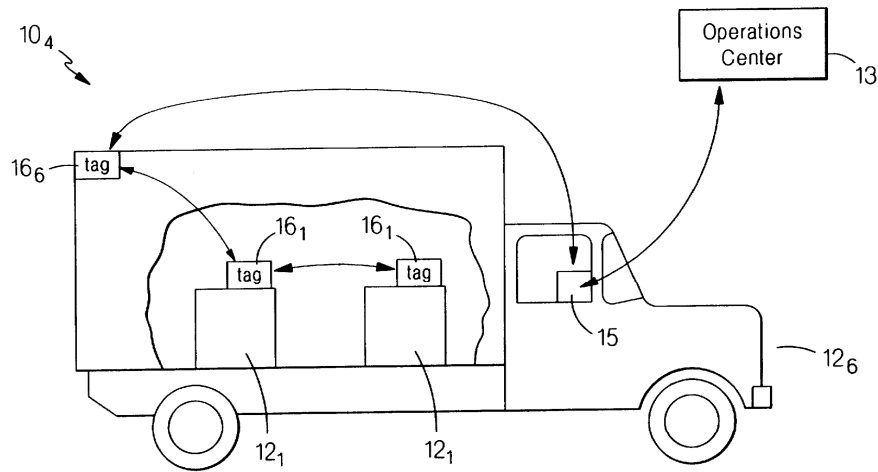


FIG. 6

Figure 6, above, illustrates a system for monitoring the transportation of hazardous waste or other materials by truck 12₆ by fixing tag 16₆ and tags 16₁ to each container 12₁ in the truck. Ex. 1007, 18:5–8; *see also id.* at 53:39–56:57 (description of hazardous waste transportation application).

3. Independent Claims 1, 20, and 21

Petitioner contends that claims 1, 20, and 21 are unpatentable over Westerlage and Woolley. Pet. 57–74, 80–81. In this combination, Petitioner generally maps the teachings of Westerlage to the elements of claims 1, 20, and 21, further relying on Woolley principally for its teachings related to storage of additional “information regarding [a] shipment” as recited in elements [1b-1], [1b-2], and [1b-3] and corresponding elements of claims 20 and 21. For example, Petitioner maps “a shipment conveyance device” (element [1a]) to a cargo container, as disclosed by Westerlage. *Id.* at 58–59 (citing, *inter alia*, Ex. 1006, 3:8–34, 6:7–11). Petitioner contends that Westerlage teaches a “a memory device . . . located in, on, or at, the shipment conveyance device” (element [1b-1]), directing us to Westerlage’s

ROM 52 and RAM 54, which are part of messaging unit 16, which is located in or on truck trailer 12. *Id.* at 59–61 (citing Ex. 1006, 3:31–32, 6:45–54, 8:22–30, Figs. 1, 2). Petitioner maps “a global positioning device . . . located in, on, or at, the shipment conveyance device” (element [1c-1]) to Westerlage’s positioning system transceiver 60. *Id.* at 65–67 (citing Ex. 1006, 2:41–44, 3:31–32, 4:23–24, 6:55–7:3, Figs. 1, 2). Petitioner maps “a processing device” (element [1d-1]) to Westerlage’s processor 44. *Id.* at 68–71 (citing, *inter alia*, Ex. 1006, Fig. 2). Petitioner maps “a transmitter . . . located in, on, or at, the shipment conveyance device” (element [1e-1]) to Westerlage’s cellular transceiver 38. *Id.* at 71–72 (citing Ex. 1006, 5:50–51, 6:17–26, Figs. 1, 2, 5). Finally, Petitioner maps “a communication device” (element [1e-2]) to modem 370 of central host 226, as disclosed by Westerlage. *Id.* at 73–74 (citing Ex. 1006, 24:24–29).

Petitioner also contends that Westerlage teaches the functional limitations recited in elements [1d-1] and [1d-2] and corresponding elements of claims 20 and 21. For example, Petitioner contends that Westerlage teaches “process[ing] at least one of information regarding the shipment and information regarding the shipment conveyance device in response to an occurrence of an event or in response to a request for information regarding the shipment or the shipment conveyance device,” as recited in element [1d-1], arguing that “Westerlage’s processor 44 (processing device) determines ‘reporting events’ by comparing sensed conditions (e.g., the minimum or maximum levels cargo temperature) to stored ‘predetermined limits’” and that “Westerlage’s processor 44 (processing device) determines ‘a reporting event . . . based on geographical information . . . when the truck trailer [or cargo container] deviates from an expected . . . location.’”

Pet. 68–69 (alterations and omissions in original) (emphasis omitted)
(quoting Ex. 1006, 8:9–29). Petitioner also contends that Westerlage teaches

the processing device generates a message containing information regarding the position or location of the shipment or the shipment conveyance device and information regarding at least one of the occurrence of an event, a status of the shipment, a shipment temperature, and an impact or force on the shipment conveyance device,

as recited in element [1d-2], directing us to Westerlage’s disclosures that “[u]pon the occurrence of a reporting event, processor 44 may immediately generate and transmit a data message or generate and store the data message for later transmission” and that “[t]he data messages may contain information that initiated the reporting event, such as a signal indicating connection of the truck trailer to a cab, and also other monitored information, such as the location of the truck trailer at the time of the reporting event.” Ex. 1006, 7:47–50, 8:43–47 (cited at Pet. 71).

Addressing the limitations of claim elements [1b-2] and [1b-3] reciting the types of information stored in the “memory device” of claim 1 and corresponding elements of claims 20 and 21, Petitioner provides alternative mappings based on Westerlage either alone or in combination with Woolley. Pet. 62–65 (citing, *inter alia*, Ex. 1006, 3:31–32, 7:47–50, 8:9–29; Ex. 1007, 55:9–20). Petitioner contends that it would have been obvious to combine Westerlage’s messaging units with Woolley’s teachings regarding data storage. *Id.* at 54 (citing Ex. 1003 ¶ 168). The Petition provides several reasons that Petitioner contends would have motivated a POSITA to make the Westerlage-Woolley combination and cites teachings from both references and its declarant’s testimony as support for those reasons. *Id.* at 54–57; Ex. 1003 ¶¶ 169–174. For example, Petitioner

contends that “Woolley’s teachings about storing a description of the contents of the container . . . would allow a freight customer using Westerlage’s system to determine which specific items are impacted by a particular reporting event, such as a temperature change.” *Id.* at 55–56 (citing Ex. 1003 ¶ 170; Ex. 1007, 2:4–11, 16:46–52, 24:34–42, 55:10–20).

Based on the current record and without any opposition from Patent Owner, we determine that Petitioner’s arguments and evidence challenging claims 1, 20, and 21 based on Westerlage and Woolley meet the threshold for institution.

4. Dependent Claims 5, 9, 11–14, 16, 24, 26, 28, and 29

Claims 5, 9, 11–14, and 16 depend from claim 1, and claims 24, 26, 28, and 29 depend from claim 21. Petitioner contends that the additional limitations of these claims are taught or suggested by Westerlage and Woolley. Pet. 74–81. In view of the absence of a preliminary response and our determination that Petitioner’s challenges to claims 1 and 21 based on Westerlage and Woolley meet the threshold for institution, we do not provide a claim-by-claim analysis for dependent claims 5, 9, 11–14, 16, 24, 26, 28, and 29 at this stage of the proceeding.

IV. CONCLUSION

We determine that the information presented in the Petition establishes a reasonable likelihood that Petitioner would prevail in showing that at least one of claims 1–9, 11–26, and 28–30 of the ’731 patent is unpatentable. Accordingly, we institute an *inter partes* review of all challenged claims on all grounds asserted in the Petition. 37 C.F.R. § 42.108(a). *See* Guidance on the Impact of SAS on AIA Trial Proceedings

(April 26, 2018);⁷ *see also SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

V. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims of claims 1–9, 11–26, and 28–30 of the ’731 patent is instituted commencing on the entry date of this Decision; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of trial.

⁷ Available at <https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial>.

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