

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ELEKTA, INC.,
Petitioner,

v.

VARIAN MEDICAL SYSTEMS, INC.,
Patent Owner.

Case IPR2016-00547
Patent 7,945,021 B2

Before BRIAN J. McNAMARA, PATRICK M. BOUCHER, and
GARTH D. BAER, *Administrative Patent Judges*.

BAER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

Elekta Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 57–59 of U.S. Patent No. 7,945,021 (Ex. 1001, “the ’021 patent”). Pursuant to 35 U.S.C. § 314(a), we determined the Petition showed a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of claims 57–59, and instituted an *inter partes* review of those claims. Paper 9 (“Inst. Dec.”). Patent Owner filed a Patent Owner Response. Paper 14, (“PO Resp.”). Petitioner filed a Reply to Patent Owner’s Response. Paper 21 (“Reply”). An oral hearing was held before the Board. Paper 32.

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Having considered the record before us, we conclude Petitioner has shown by a preponderance of the evidence that claims 57–59 of the ’021 patent are unpatentable. See 35 U.S.C. § 316(e).

I. BACKGROUND

A. RELATED PROCEEDING

The parties assert the ’021 patent is the subject of proceedings before the International Trade Commission. Pet. 1–2; Paper 5, 2.

B. THE ’021 PATENT

The ’021 patent is directed to using an imaging device for radiation therapy. Ex. 1001, 1:8–10. The specification describes a need for “identifying the precise location of the target volume immediately prior to a dose of therapeutic radiation,” and, to that end, discloses a “cone beam computed tomography radiotherapy simulator and treatment machine.” *Id.* at 1:18–20, 46–47.

Figure 3 is reproduced, in part, below:

C. CLAIMS

Claims 57–59 are at issue in this *inter partes* review. Claim 57 depends from independent claim 53, claim 58 depends from claim 57, and claim 59 depends from claim 58. Claims 53 and 57 are illustrative of the claimed subject matter and are reproduced below.

53. An apparatus, comprising:

a clinical radiation treatment system capable of implementing a treatment plan, the system comprising:

a frame;

a rotatable gantry coupled to the frame;

a high-energy radiation source coupled to the rotatable gantry to radiate a patient with therapeutic radiation;

a cone-beam radiation source coupled to the rotatable gantry to radiate the patient; and

a flat-panel imager coupled to the rotatable gantry, wherein the flat-panel imager captures fluoroscopic or cone beam CT imaging image projection data of the patient from the cone-beam radiation source to generate fluoroscopic or cone-beam computed tomography (CT) volumetric image data of the patient.

Ex. 1001, 14:22–36.

57. The apparatus of claim 53, further comprising:

a treatment plan for the clinical treatment machine based on the cone-beam volumetric image data; and

a computing unit, coupled to the rotatable gantry via a communications network, to store the image projection data captured by the flat-panel imager, wherein the computing unit generates the treatment plan based on the image projection data.

Id. at 14:49–56.

D. INSTITUTED GROUNDS OF UNPATENTABILITY

We instituted *inter partes* review on the following grounds of unpatentability.

Reference(s)	Basis	Challenged Claims
Jaffray MICCAI 2001 ¹	§§ 102(a) and (b)	57–59
Jaffray MICCAI 2001, Jaffray 2001 ² , and Jaffray JRO 1999 ³	§ 103(a)	57–59
The Jaffray Publication ⁴	§§ 102(b) and 103(a)	57–59

Inst. Dec. 15.

II. ANALYSIS

A. PRINCIPLES OF LAW

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must establish the facts

¹ Jaffray et al., *Image Guided Radiotherapy of the Prostate*, MICCAI 2001, LNCS 2208 1075–80 (2001) (Ex. 1020, “Jaffray MICCAI 2001”).

² D.A. Jaffray et al., *A Volumetric Cone-Beam CT System Based on a 41x41 cm² Flat-Panel Imager*, 4320 MEDICAL IMAGING 800–807 (2001) (Ex. 1003, “Jaffray 2001”).

³ Jaffray et al., *A Radiographic and Tomographic Imaging System Integrated into a Medical Linear Accelerator for Localization of Bone and Soft-Tissue Targets*, 45:3 INT. J. RADIATION ONCOLOGY BIOL. PHYS. 773–789 (1999) (Ex. 1007, “Jaffray JRO 1999”).

⁴ International Publication No. WO 01/60236 A2 (pub. Aug. 23, 2001) (Ex. 1021, “the Jaffray Publication”).

supporting its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

To anticipate under 35 U.S.C. § 102, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). A patent claim is unpatentable 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 to a person of ordinary skill in the art at the time the invention was made. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). 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) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. CLAIM CONSTRUCTION

1. Applicable Standard

The Board interprets claims using the “broadest reasonable construction in light of the specification of the patent in which [they] appear[.]” 37 C.F.R. § 42.100(b). We presume a claim term carries its “ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question” at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). We construe only those claim terms necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

2. “communications network”

Patent Owner asserts “[a] communications network is ‘a communication system that facilitates communication between many devices and that uses a networking protocol to selectively route messages to their intended devices.’” PO Resp. 9 (internal quotation marks omitted). Petitioner proposes a broader construction: “a link between two or more components of the radiation treatment system that allows information to be shared between them.” Reply 2.

In our Final Written Decision in *Elekta, Inc. v. Varian Medical Systems, Inc.*, IPR2015-01401 (PTAB Dec. 23, 2016) (Paper 56, “IPR2015-01401 FWD”), we construed the same term based on nearly identical arguments and substantially the same evidence. *See* IPR2015-01401 FWD 7–8. In our Decision, we rejected the same argument Patent Owner presents in this case—that a “communications network” requires a networking protocol to selectively route messages to their intended devices. *See id.* We did so because neither the term’s plain language nor the specification supported imposing such a requirement. *See id.* For the same reasons explained in IPR2015-01401, we maintain our agreement with Petitioner. Under the broadest reasonable construction, a communications network is simply a link between two or more components of the radiation treatment system that allows information to be shared between them.

C. ASSERTED PRIOR ART

1. Jaffray MICCAI 2001 (Ex. 1020)

Jaffray MICCAI 2001 is a nonpatent article titled “Image Guided Radiotherapy of the Prostate.” Ex. 1020, 1075. According to Petitioner, Jaffray MICCAI 2001 published in October 2001 in the journal *Lecture Notes in Computer Science* and is prior art under pre-AIA 35 U.S.C.

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§§ 102(a) and (b). Pet. 15. Jaffray MICCAI 2001's Figure 1(a) is reproduced below.



Figure 1(a) depicts a “[p]rototype cone beam CT scanner mounted on the gantry of a commercial medical linear accelerator,” including “[a] diagnostic X-ray tube (right) and a flat panel imager (left) [that] have been added.” Ex. 1020, 1076. Under “Material and Methods,” Jaffray MICCAI 2001 describes the following:

A cone beam CT scan will be acquired on the treatment machine for each treatment fraction (Fig. 1). This 3D CT data set is analyzed automatically to localize the prostate and the treatment prescription is adapted to match the actual position and orientation of the prostate. Finally, the treatment is delivered.

Id.

2. Jaffray 2001 (Ex. 1003)

Jaffray 2001 describes a flat panel cone beam imaging system on a linear accelerator. Ex. 1003, 800. Jaffray 2001's Figure 4(a) is reproduced below.

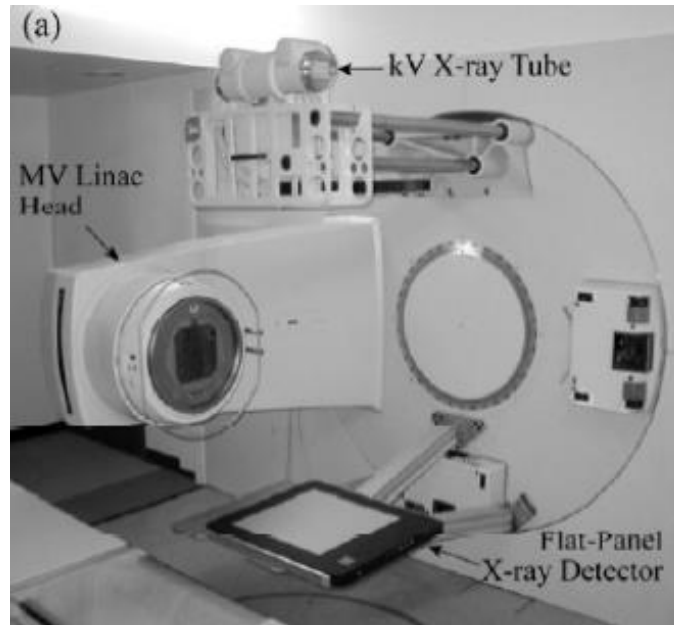
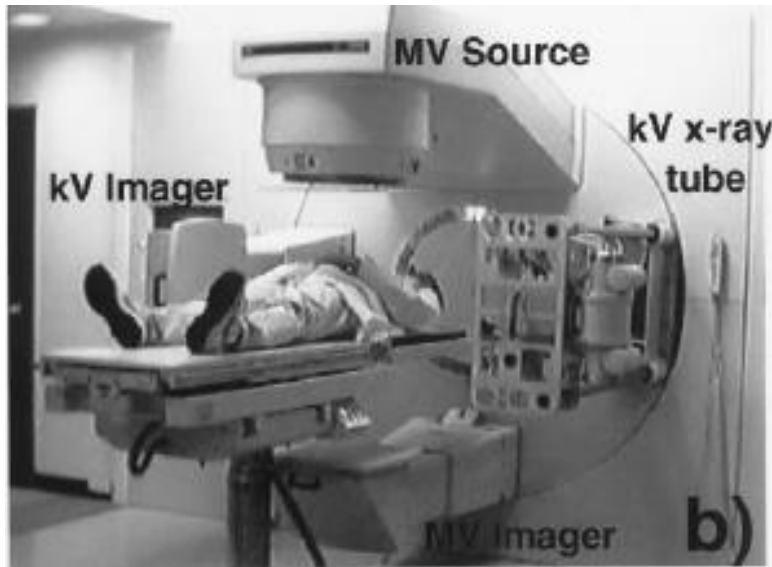


Figure 4(a) depicts a “[f]lat-panel cone-beam CT on a medical linear accelerator.” *Id.* at 805. The device includes a rotatable gantry, a megavoltage (MV) radiation source, and a flat panel imager opposite a kilovoltage (kV) X-ray tube. *Id.* at 804, 805. Jaffray 2001 explains “X-ray exposure, detector read-out and gantry motion is coordinated using [a] Windows-NT based software application” that “monitors gantry angle through a precision potentiometer, directs x-ray exposure, and collects the resulting projections in host memory.” *Id.* at 804.

3. Jaffray JRO 1999 (Ex. 1007)

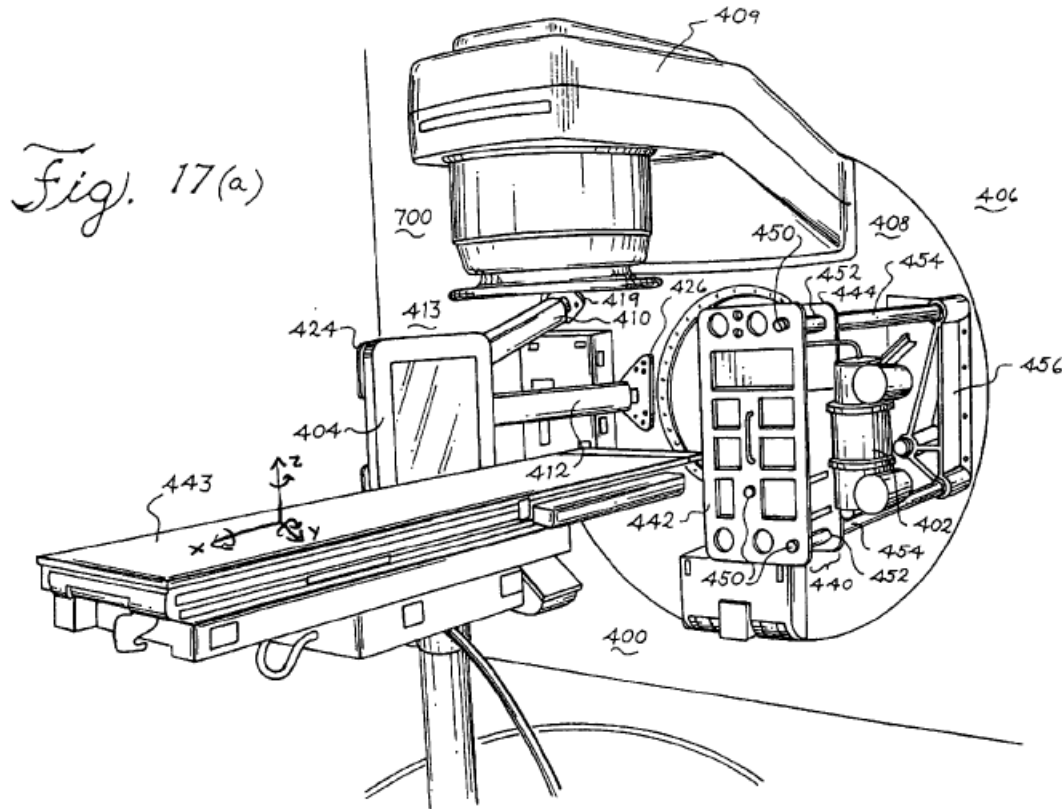
Jaffray JRO 1999 discloses a medical linear accelerator with an integrated CCD imaging system. Ex. 1007, 773. Jaffray JRO 1999's Figure 1(b) is reproduced below.



In Figure 1(b), “[t]wo fluoroscopic imager assemblies are attached to the accelerator; one detects the megavoltage (MV) treatment beam, the other detects the kV beam projected at 90° to the treatment beam axis.” *Id.* at 774 Jaffray JRO 1999 describes that the linear accelerator “is computer controlled and produces 6 and 18 MV photon beams.” *Id.*

4. The Jaffray Publication (Ex. 1021)

The Jaffray Publication is International Publication No. WO 01/60236 A2, published August 23, 2001, and is prior art under pre-AIA 35 U.S.C. § 102(b). Ex. 1021, (43). The Jaffray Publication is titled “Cone Beam Computerized Tomography with a Flat Panel Imager” and discloses “[a] radiation therapy system that includes a radiation source that moves about a path and directs a beam of radiation towards an object and a cone-beam computer tomography system.” *Id.* at (54), (57). The reference explains the system also includes “an x-ray source that emits an x-ray beam in a cone-beam form towards an object to be imaged” and “an amorphous silicon flat-panel imager . . . [for] providing an image of the object.” *Id.* at (57). The Jaffray Publication’s Figure 17(a) is reproduced below.



In Figure 17(a),

the flat-panel imager 404 can be mounted to the face of a flat, circular, rotatable drum 408 of the gantry 406 of a medical linear accelerator 409, where the x-ray beam 407 produced by the x-ray tube 402 is approximately orthogonal to the treatment beam 411 produced by the radiation therapy source 409.

Id. at 34:9–13.

D. INSTITUTED GROUNDS OF UNPATENTABILITY

1. Anticipation of Claims 57–59 Based on Jaffray MICCAI 2001

Petitioner contends that Jaffray MICCAI 2001 anticipates claims 57–59. Pet. 17–36. Based on our review of the arguments and evidence in the Petition, Response, and Reply, we determine Petitioner has demonstrated, by a preponderance of the evidence, that Jaffray MICCAI 2001 anticipates claims 57–59, as explained below.

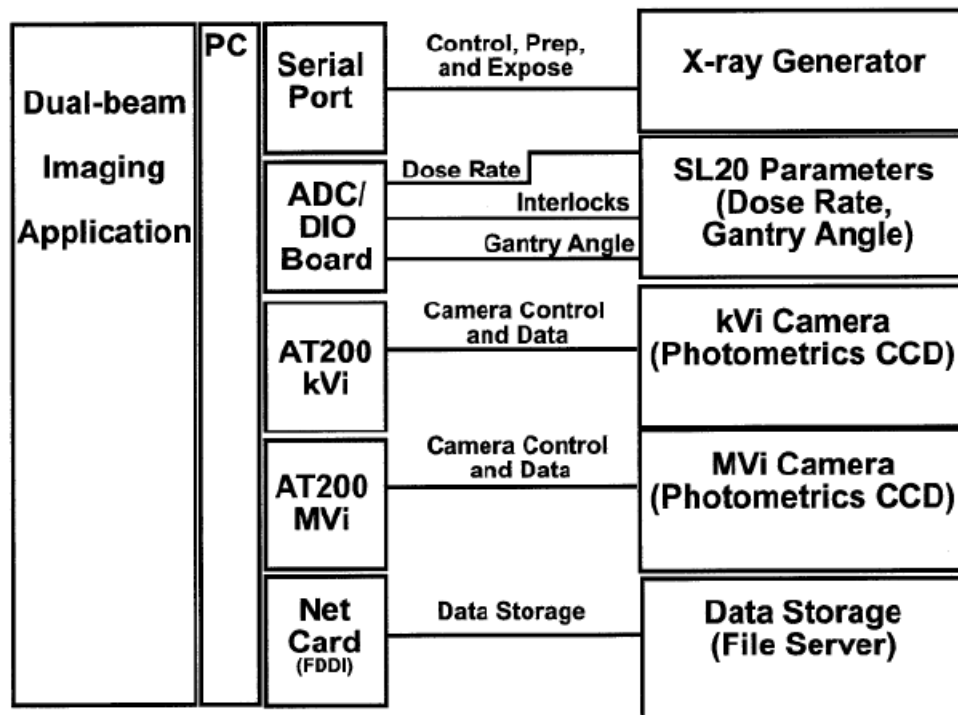
a. Disputed Limitation

- i. Jaffray MICCAI 2001 Teaches “a computing unit, coupled to the rotatable gantry via a communications network, to store the image projection data captured by the flat-panel imager”

Claim 57 (and, by dependence, claims 58 and 59) requires “a computing unit, coupled to the rotatable gantry via a communications network, to store the image projection data captured by the flat-panel imager.” We agree with Petitioner one skilled in the art would understand Jaffray MICCAI 2001 includes this feature. Jaffray MICCAI 2001 teaches “[p]rototypes of the hardware and software of the system have been constructed.” Ex. 1020, 1077. It further describes “[b]ecause the bone matching can be performed accurately on fairly low resolution CT and the prostate matching only requires a small part of the cone-beam CT volume, the complete image analysis can be performed in less than 10 s on a 700 MHz PC.” *Id.* at 1078. As Petitioner’s expert, Dr. Hamilton, explains, because Jaffray MICCAI 2001’s computing unit performs image reconstruction, it “necessarily stores the projection image data captured by the flat-panel imager.” Ex. 1037 ¶ 20 (citing Ex. 1020, 1077; Ex. 1022 ¶ 162). Further, as Dr. Hamilton, explains, “[t]he outcome of [the computing unit’s] analysis is used with treatment planning data to control the treatment delivery,” which “necessarily requires controlling the gantry.” *Id.* (citing Ex. 1020, 1077; Ex. 1022 ¶ 163); *see also* Ex. 1020, 1077 (describing that “[t]he selected treatment plan will be delivered by means of a step-and-shoot intensity delivery technique using 5 beam angles and about 20 treatment segments”).

In addition to Jaffray MICCAI 2001’s express teachings related to the computing unit, Jaffray MICCAI 2001 notes also that “[t]he cornerstone” of the disclosed system “is a kilovoltage cone-beam CT system that is

integrated on the gantry of an Elekta SL-20 linear accelerator,” and cites Jaffray JRO 1999, which further describes the system’s computing unit and that unit’s connections to several components, including the gantry. Ex. 1020, 1076 (citing Ex. 1007); *see* Ex. 1007, 775; Ex. 1022 ¶ 164. In particular, Jaffray JRO 1999 teaches a Pentium-based personal computer that controls the radiation source via an RS-232 port and monitors the gantry’s angle via an accelerator’s analog monitoring channel. Ex. 1007, 775–776, Fig. 3; Ex. 1022 ¶ 164. Jaffray JRO 1999’s Figure 3 is reproduced below and has additional details related to the computing unit’s connections.



Ex. 1007, 776. Figure 3 “shows the mechanisms used to control and monitor the different components of the system,” and depicts network connections between a computing unit (i.e., “PC”) and x-ray generator, kV camera, MV camera, File Server, and “SL20 Parameters.” *Id.* at 776; *see* Ex. 1037 ¶ 21. As Petitioner explains, Figure 3 “shows that the PC is

coupled to the gantry to receive the ‘Gantry Angle’ and is further coupled by a ‘network card’ to a ‘distributed database’ where images are stored.” Reply 7 (citing Ex. 1007, 776, Fig. 3; Ex. 1037 ¶ 21); see Pet. 23 (citing Ex. 1007, 775–776, Fig. 3; Ex. 1022 ¶ 164). In light of Jaffray MICCAI 2001’s express teachings, as well as Jaffray JRO 1999’s disclosures related to the system employed in Jaffray MICCAI 2001, we agree with Petitioner that one skilled in the art would understand Jaffray MICCAI 2001 includes “a computing unit, coupled to the rotatable gantry via a communications network, to store the image projection data captured by the flat-panel imager,” as the challenged claims require.

Patent Owner raises two arguments in challenging this element. First, Patent Owner relies on its proffered construction of communications network (i.e., a communication system that facilitates communication between many devices and that uses a networking protocol to selectively route messages to their intended devices), asserting that “the computer could have been connected by a direct link, which does not constitute a communications network.” PO Resp. 28; see *id.* at 38. We find Patent Owner’s argument unpersuasive because, as explained above, we construe a communications network to require only a link between two or more components that allows information to be shared between them.

Second, Patent Owner contends the Petition “improperly relies on disclosures from outside Jaffray MICCAI 2001” and thus “ignores the clear requirement that anticipation can only be proven with the teachings of a single prior art reference.” *Id.* at 29. We disagree. “[R]ecourse to extrinsic evidence is proper to determine whether a feature, while not explicitly discussed, is necessarily present in a reference.” *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1328 (Fed. Cir. 2001). As noted above,

Jaffray MICCAI 2001 teaches that the “[t]he cornerstone” of the disclosed system is the kilovoltage cone-beam CT system integrated on the gantry of an Elekta SL-20 linear accelerator described in Jaffray JRO 1999. Ex. 1020, 1076. Thus, Petitioner is not relying on features present in an additional reference, as Petitioner suggests. Rather, the additional reference is evidence of features necessarily present in the system disclosed in Jaffray MICCAI 2001.

b. Unchallenged Limitations

Petitioner contends Jaffray MICCAI 2001 discloses the remaining, unchallenged limitations of claims 57–59. *See* Pet. 17–36. Patent Owner does not address the merits of Petitioner’s assertions regarding the remaining limitations. *See* PO Resp. 23–30. We agree with Petitioner’s assertions, as outlined below.

i. Independent Claim 53 and Dependent Claim 57

Petitioner has shown Jaffray MICCAI 2001 discloses “[a]n apparatus, comprising: a clinical radiation treatment system capable of implementing a treatment plan,” as claim 53 requires. *See* Pet. 18, 26–27 (citing Ex. 1020, Fig. 1(a), 1076, 1077; Ex. 1022 ¶¶ 153, 154, 155). Petitioner has shown that Jaffray MICCAI 2001’s system includes “a frame,” “a rotatable gantry coupled to the frame,” “a high-energy radiation source coupled to the rotatable gantry to radiate a patient with therapeutic radiation,” and “a cone-beam radiation source coupled to the rotatable gantry to radiate the patient.” *See id.* at 18–20, 27–29 (citing Ex. 1020, Fig. 1(a), 1076, 1077; Ex. 1022 ¶¶ 153, 154, 155, 156). Petitioner has shown Jaffray MICCAI 2001 discloses “a flat-panel imager coupled to the rotatable gantry, wherein the flat-panel imager captures fluoroscopic or cone beam CT imaging image projection data of the patient from the cone-beam radiation source to

generate fluoroscopic or cone-beam computed tomography (CT) volumetric image data of the patient.” *See id.* at 20–21, 29–30 (citing Ex. 1020, Figs. 1(a), 2(a), 1076; Ex. 1022 ¶ 157). In addition, Petitioner has shown Jaffray MICCAI 2001 discloses “a treatment plan for the clinical treatment machine based on the cone-beam volumetric image data.” *See id.* at 21–42, 30–32 (citing Ex. 1020, 1076, 1077; Ex. 1022 ¶ 161). Last, Petitioner has shown Jaffray MICCAI 2001 discloses a computing unit that “generates the treatment plan based on the image projection data.” *See id.* at 23–24, 33–34 (citing Ex. 1020, 1076–1077; Ex. 1022 ¶¶ 162–165).

ii. Claims 58 and 59

Petitioner has shown Jaffray MICCAI 2001 discloses the additional limitation recited in claim 58: “wherein the computing unit generates a three-dimensional image of a target volume based on the captured image projection data.” *See id.* at 24–25, 34–35 (citing Ex. 1020, Fig. 2(a), 1075, 1076, 1077–1078; Ex. 1022 ¶ 169). Petitioner has shown Jaffray MICCAI 2001 discloses the additional limitation recited in claim 59: “a megavoltage radiation source coupled to the rotatable gantry to radiate the volume with radiation, wherein the megavoltage radiation source comprises a source of between 4 and 25 mega-volts of radiation.” *See id.* at 25–26, 35–36 (citing Ex. 1020, Fig. 1(a), 1075; Ex. 1007, Abstract, 774; Ex. 1022 ¶ 173).

c. Conclusion

For these reasons, having considered the parties’ contentions and supporting evidence, we determine Petitioner has demonstrated, by a preponderance of the evidence, that Jaffray MICCAI 2001 anticipates claims 57–59.

2. Obviousness of Claims 57–59 Based on Jaffray MICCAI 2001, Jaffray 2001, and Jaffray JRO 1999

Petitioner asserts claims 57–59 would have been obvious over Jaffray MICCAI 2001, Jaffray 2001, and Jaffray JRO 1999. Pet. 36–39. As outlined below, based on our review of the arguments and evidence in the Petition, Response, and Reply, we determine Petitioner has demonstrated, by a preponderance of the evidence, that the subject matter of claims 57–59 would have been obvious over Jaffray MICCAI 2001, Jaffray 2001, and Jaffray JRO 1999.

To the extent Jaffray MICCAI 2001 does not disclose the claimed “computing unit, coupled to the rotatable gantry via a communications network, to store the image projection data captured by the flat-panel imager,” we agree with Petitioner that Jaffray JRO 1999 and Jaffray 2001 disclose using a personal computer to collect and transfer image projection data, and to control the rotatable gantry, as claim 57 requires. See Pet. 37 (citing Ex. 1007, 775–776, 787, Fig. 3; Ex. 1003, 804; Ex. 1022 ¶¶ 176, 177). Petitioner also explains, and we agree, that to the extent Jaffray MICCAI 2001 does not teach expressly radiating a target volume with radiation having an energy of 4–25 MV (as claim 59 requires), Jaffray JRO 1999 teaches the Elekta SL20 linear accelerator employed in Jaffray MICCAI 2001 generates therapeutic radiation within the required range. *Id.* at 39 (citing Ex. 1007, Abstract, 774; Ex. 1022 ¶ 182).

In addition to demonstrating these alternative prior-art disclosures, Petitioner identified sufficient reasons that would have prompted a person of ordinary skill in the relevant field to combine the elements as the claimed invention does. See *KSR*, 550 U.S. at 418. Specifically, Petitioner explains—with support from Dr. Hamilton—that one skilled in the art would

have been motivated to combine the computers disclosed in Jaffray MICCAI 2001, Jaffray JRO 1999, and Jaffray 2001 into an interconnected network because doing so would increase the efficiency of delivering radiation therapy to a patient. *See* Pet. 38 (citing Ex. 1022 ¶ 181). In addition, Petitioner explains a person of ordinary skill in the art would have been motivated to combine the claimed radiation energies (as disclosed in Jaffray JRO 1999) with the linear accelerator of Jaffray MICCAI 2001 to achieve a therapeutic response. *Id.* at 39 (citing Ex. 1022 ¶ 181). Thus, in addition to demonstrating the necessary disclosures in the prior art, Petitioner articulated sufficient reasoning with some rational underpinning to support the legal conclusion that its proffered combination would have been obvious to one of ordinary skill in the art.

In disputing obviousness based on Jaffray MICCAI 2001, Jaffray 2001, and Jaffray JRO 1999, Patent Owner relies on its narrow construction for “communications network” as requiring a networking protocol and message routing. *See* PO Resp. 35–38, 43–45. In particular, Patent Owner asserts that, given added complexity associated with addressing data, communications networks are slower and more complex than dedicated physical connections, so one skilled in the art would not have been motivated to use a communications network as opposed to a direct connection. *See id.* at 43–44. We find Patent Owner’s arguments unpersuasive because, as explained above, we do not construe a communications network as requiring a networking protocol to selectively route messages to their intended devices, as Patent Owner contends. Instead, a communications network requires only a link between two or more components that allows information to be shared between them.

Based on our review of the arguments and evidence in the Petition, Response, and Reply, we determine Petitioner has shown, by a preponderance of the evidence, that claims 57–59 are unpatentable under 35 U.S.C. § 103(a) over Jaffray MICCAI 2001, Jaffray 2001, and Jaffray JRO 1999.

3. Anticipation of Claims 57–59 Based on the Jaffray Publication

Petitioner contends the Jaffray Publication anticipates claims 57–59. Pet. 17–36. Based on our review of the arguments and evidence in the Petition, Response, and Reply, we determine Petitioner has demonstrated, by a preponderance of the evidence, the Jaffray Publication anticipates claims 57–59, as explained below.

a. Disputed Limitation

i. The Jaffray Publication Teaches “a computing unit, coupled to the rotatable gantry via a communications network, to store the image projection data captured by the flat-panel imager”

Claim 57 (and, by dependence, claims 58 and 59) requires “a computing unit, coupled to the rotatable gantry via a communications network, to store the image projection data captured by the flat-panel imager.” As Petitioner’s expert, Dr. Hamilton, explains, the Jaffray Publication teaches a “‘control/acquisition computer’ that among other things, reads out ‘a plurality of 2-D images . . . from the flat panel imager 404’ and controls the ‘timing of x-ray exposures, gantry rotation, and flat panel imager readout.’” Ex. 1037 ¶ 59 (quoting Ex. 1021, 41:4–5, 9–12). In light of the Jaffray Publication’s teachings, we agree with Petitioner one skilled in the art would understand the Jaffray Publication discloses a system that includes “a computing unit, coupled to the rotatable gantry via a

communications network, to store the image projection data captured by the flat-panel imager” as the challenged claims require.

Patent Owner raises two arguments in disputing whether the Jaffray Publication teaches the claimed communications network. First, Patent Owner reiterates the Jaffray Publication does not teach a communications network under Patent Owner’s proffered construction of the term—i.e., “a communication system that facilitates communication between many devices and that uses a networking protocol to selectively route messages to their intended devices.” See PO Resp. 31. We find Patent Owner’s argument unpersuasive because, as explained above, we construe a communications network to require only a link between two or more components that allows information to be shared between them. Second, Patent Owner argues that the passages Petitioner relies on in the Jaffray Publication relate to a bench-top system, whereas the claim limitation at issue requires a communications network coupling the computing unit to a rotatable gantry. *Id.* at 30–31. We disagree with Patent Owner’s characterization of the Jaffray Publication’s disclosure. Although the Jaffray Publication describes a benchtop embodiment, it also describes an embodiment mounted on an actual medical linear accelerator. See Ex. 1021, 33:16–22. We agree with Petitioner a skilled artisan would understand the relevant computer-related teachings apply to that embodiment, as well as the benchtop prototype. See Ex. 1037 ¶ 62.

b. Unchallenged Limitations

Petitioner contends the Jaffray Publication discloses the remaining, unchallenged limitations of claims 57–59. See Pet. 39–54. Patent Owner does not address the merits of Petitioner’s assertions regarding the remaining

limitations. *See* PO Resp. 30–32. We agree with Petitioner’s assertions, as outlined below.

i. Independent Claim 53 and Dependent Claim 57

Petitioner has shown the Jaffray Publication discloses “[a]n apparatus, comprising: a clinical radiation treatment system capable of implementing a treatment plan,” as claim 53 requires. *See* Pet. 40, 46–47 (citing Ex. 1021, 7:15–19, 33:29–30, 42:5–6, 46:2–15, Fig. 26; Ex. 1022 ¶¶ 189–190).

Petitioner has shown the Jaffray Publication’s system includes “a frame,” “a rotatable gantry coupled to the frame,” “a high-energy radiation source coupled to the rotatable gantry to radiate a patient with therapeutic radiation,” and “a cone-beam radiation source coupled to the rotatable gantry to radiate the patient.” *See id.* at 41, 47–48 (citing Ex. 1021, 33:22–24, 33:29–34:2, 34:9–11, 46:20–24, Fig. 17(a); Ex. 1022 ¶¶ 192, 193, 194).

Petitioner has shown the Jaffray Publication discloses “a flat-panel imager coupled to the rotatable gantry, wherein the flat-panel imager captures fluoroscopic or cone beam CT imaging image projection data of the patient from the cone-beam radiation source to generate fluoroscopic or cone-beam computed tomography (CT) volumetric image data of the patient.” *See id.* at 42, 48–49 (citing Ex. 1021, 5:15–18, 6:28–30, 34:9–11, 39:1–4, 39:28–40:3; Ex. 1022 ¶¶ 195–196). In addition, Petitioner has shown the Jaffray

Publication discloses “a treatment plan for the clinical treatment machine based on the cone-beam volumetric image data.” *See id.* at 42–44, 49–52 (citing Ex. 1021, 5:15–18, 8:1–5, 39:1–4, 38:24–32, 41:21–30, 44:29–45:10, 46:20–27; Ex. 1022 ¶¶ 200–202). Last, Petitioner has shown the Jaffray Publication discloses a computing unit that “generates the treatment plan based on the image projection data.” *See id.* at 44, 52–23 (citing Ex. 1021, 13:19–29, 41:9–16, 41:21–30, 44:9–21, 46:20–24; Ex. 1022 ¶¶ 203–204).

ii. Claims 58 and 59

Petitioner has shown the Jaffray Publication discloses the additional limitation recited in claim 58: “wherein the computing unit generates a three-dimensional image of a target volume based on the captured image projection data.” *See id.* at 44–45, 53–54 (citing Ex. 1021, 17:1–2, 18:30–32, 19:1–2, 19:9–11, 27:22–24; Ex. 1022 ¶ 208). Petitioner has shown the Jaffray Publication discloses the additional limitation recited in claim 59: “a megavoltage radiation source coupled to the rotatable gantry to radiate the volume with radiation, wherein the megavoltage radiation source comprises a source of between 4 and 25 mega-volts of radiation.” *See id.* at 45, 54 (citing Ex. 1021, 4:21–27, 33:29–34:2; Ex. 1022 ¶ 212).

c. Conclusion

For these reasons, having considered the parties’ contentions and supporting evidence, we determine Petitioner has demonstrated, by a preponderance of the evidence, that the Jaffray Publication anticipates claims 57–59.

4. Obviousness of Claims 57–59 Based on the Jaffray Publication

Petitioner contends “[t]o the extent they are not found to be anticipated by the Jaffray Publication, claims 57–59 are unpatentable because they would have been obvious over the Jaffray Publication in view of the general knowledge of a person of ordinary skill in the art.” Pet. 54–55. In light of our findings on anticipation based on Jaffrey Publication, and absent any assertions of secondary considerations supporting non-obviousness, we are persuaded Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claims 57–59 would have been obvious over the Jaffray Publication. *See In re McDaniel*, 293 F.3d 1379, 1385 (Fed. Cir. 2002) (“It is well settled that ‘anticipation is the

epitome of obviousness.”); *cf. Cohesive Techs., Inc. v. Waters Corp.*, 543 F.3d 1351, 1364 (Fed. Cir. 2008) (distinguishing anticipation from obviousness because “obviousness requires analysis of secondary considerations of nonobviousness, while secondary considerations are not an element of a claim of anticipation”).

III. CONCLUSION

Based on our review of the arguments and evidence in the Petition, Response, and Reply, we determine Petitioner has shown, by a preponderance of the evidence (1) claims 57–59 are unpatentable under 35 U.S.C. §§ 102(a) and (b) over Jaffray MICCAI 2001; (2) claims 57–59 are unpatentable under 35 U.S.C. § 103(a) over Jaffray MICCAI 2001, Jaffray 2001, and Jaffray JRO 1999; (3) claims 57–59 are unpatentable under 35 U.S.C. § 102 (b) over the Jaffray Publication; (4) claims 57–59 are unpatentable under 35 U.S.C. § 103(a) over the Jaffray Publication.

IV. PETITIONER’S CHALLENGE TO PATENT OWNER’S DECLARANT

Petitioner argues we should give no weight to Dr. Mutic’s testimony in light of Dr. Mutic’s “long professional history with Patent Owner involving substantial monetary compensation.” Reply 25–26. According to Petitioner, “Dr. Mutic’s prior, and likely future, compensation from Patent Owner renders his expert testimony biased and questionable.” *Id.* at 25.

We see nothing wrong or unusual with Patent Owner compensating Dr. Mutic for work in this case, or in future ones. In assessing the merits of this case, we have considered the proffered testimony from Dr. Mutic, as well as Petitioner’s Declarant Dr. Hamilton, and accorded weight based on the testimony’s substantive persuasiveness. We see no reason why Dr.

Mutic's past compensation—or his speculative future compensation—makes his testimony unhelpful in understanding the evidence. *See* Fed. R. Evid. 702(a).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has shown by a preponderance of the evidence that claims 57–59 of the '021 patent are unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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