Trials@uspto.gov
571-272-7822

Paper 8
Date: December 11, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VUSIONGROUP SA,
Petitioner,

v.

HANSHOW TECHNOLOGY CO., LTD,
Patent Owner.

IPR2024-00963
Patent 10,701,321 B2

Before BRIAN J. McNAMARA, TERRENCE W. McMILLIN, and GARTH D. BAER, *Administrative Patent Judges.*

McNAMARA, *Administrative Patent Judge*.

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

I. INTRODUCTION

VusionGroup SA ("Petitioner") filed a petition, Paper 2 ("Petition" or "Pet."), to institute an *inter partes* review ("IPR") of claims 1–21 (the "challenged claims")[1] of U.S. Patent No. 10,701,321 B2 ("the '321 patent"). 35 U.S.C. § 311. Hanshow Technology Co., Ltd. ("Patent Owner") filed a Preliminary Response, Paper 6 ("Prelim. Resp."), contending that the Petition should be denied as to all challenged claims. We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted unless the information presented in the Petition "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition."

A decision to institute under § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). In addition, per Board practice, if the Board institutes trial, it will institute "on all of the challenged claims and on all grounds of unpatentability asserted for each claim." *See* 37 C.F.R. § 42.108(a).

Having considered the arguments and the associated evidence presented in the Petition and the Preliminary Response, for the reasons described below, we institute *inter partes* review.

II. REAL PARTIES IN INTEREST

Petitioner identifies itself (VusionGroup SA) as its real party-in-interest. Pet. 83. Petitioner also identifies VusionGroup GmbH and Captana GmBH as potential real parties-in-interest. *Id.*

Patent Owner identifies itself (Hanshow Technology Co., Ltd.) as its real party-in-interest. Paper 4, 1.

[1] Claims 22 and 23 of the '321 patent are not challenged.

III. RELATED MATTERS

Petitioner and Patent Owner state that the '321 patent is involved in the following district court litigation: *Hanshow Technology Co., Ltd. v. SES-imagotag SA, et al.*, Case No. 2:23-cv-00617 (E.D. Tex.) ("the District Court Litigation"). Pet. 84; Paper 4, 1.

IV. EXERCISE OF DISCRETION

A. Discretion Under 35 U.S.C. § 314(a)- Fintiv

In the Preliminary Response, Patent Owner contends that we should exercise our discretion to deny the Petition in favor of the parallel District Court Litigation. Prelim. Resp. 35–36. The Board has held that the advanced state of a parallel district court action is a factor that may weigh in favor of denying a petition under § 314(a). *See NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential); Trial Practice Guide, 58 & n.2. We consider the following factors to assess "whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding":

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits.

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"). In evaluating these factors, we "take[] a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Id.* at 6.

On June 21, 2022, the Director of the USPTO issued several clarifications concerning the application of the *Fintiv* Factors. *See Interim Procedure For Discretionary Denials In AIA Post-Grant Proceedings With Parallel District Court Litigation,* issued June 21, 2022 ("Guidance Memo)[2]. The Director's memo states that "the precedential import of *Fintiv* is limited to the facts of that case." Guidance Memo 2.

The Guidance memo further states

> [c]onsistent with *Sotera Wireless, Inc*., the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB.

Guidance Memo, 3[3]. *See Sotera Wireless, Inc. v. Masimo Corp.,* IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A).

The Guidance memo also states

> when considering the proximity of the district court's trial date to the date when the PTAB final written decision will be due, the PTAB will consider the median time from filing to disposition of the civil trial for the district in which the parallel litigation resides.

[2] Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.
[3] *See* https://www.uscourts.gov/statistics-reports/analysis-reports/federal-court-management-statistics.

Guidance Memo 8–9[4]. With these factors and guidance in mind, we consider Patent Owner's contentions.

Patent Owner contends we should exercise discretion to deny institution because the court has not considered a motion to stay (Factor 1), jury selection in the District Court Litigation is scheduled to begin on February 17, 2026 (Factor 2), the parties have invested substantially in discovery by exchanging a high volume of documents and conducting extensive source code reviews (Factor 3), there is a high overlap between the challenged claims and those involved in the District Court Litigation (Factor 4), the parties are the same (Factor 5), and Petitioner's arguments are meritless (Factor 6). Prelim. Resp. 35–36.

Patent Owner acknowledges that jury selection in the District Court Litigation will not begin until two months after a Final Written Decision is scheduled to issue in this proceeding. Prelim. Resp. 35. On October 17, 2024, Petitioner offered the following *Sotera* Stipulation: "VusionGroup will not pursue an invalidity defense in *Hanshow Tech. Co., Ltd. et al. v. SES-imagotag SA et al.*, Case No. 2:23-cv-00617 (E.D. Tex.) that the patent claims subject to the instituted IPR are invalid based on the same grounds as in the petition or any grounds that could have reasonably been raised in the petition." Ex. 1031.

In view of all the circumstances, including the scheduled trial date and Petitioner's *Sotera* stipulation, we decline to exercise discretion to deny institution.

[4] *See* https://www.uscourts.gov/statistics-reports/analysis-reports/federal-court-management-statistics.

V. THE '321 PATENT

The '321 patent describes systems that separate object detection functions from object analysis functions as a way to reduce costs and bandwidth requirements of video surveillance systems that send image data over networks for further processing. *See* Ex. 1001, 1:1–2:10. An object detection system integrated with a surveillance camera or a gateway detects objects (or classes of objects) of interest within image data, and reduces bandwidth demand by sending only image data relevant to such objects to an object analysis system that is located remotely, e.g., on a node of an enterprise network or in a cloud analytics system. *Id.* at 2:10–47, 2:55–64, 3:20–22, 7:8–18. The object analysis system can use filtering, image compression, deblurring, and contrast enhancement to compare an image to reference images stored in a database, recognize patterns, and use deep learning features to analyze the image. *Id.* at 2:21–36, 6:65–7:3, 7:19–36.

The object detection system can further reduce bandwidth demand by creating and sending across a network cropped images that include only detected objects of interest for further analysis. *Id.* at 2:48–54, 3:1–7, 9:3–. The object detection system can rank detected objects according to a variety of factors, e.g., an object's proximity to a surveillance camera, picture quality, and image contrast. *Id.* at 3:8–13, 9:3–37.

VI. ILLUSTRATIVE CLAIM

Challenged claims 1 and 13 are independent. Challenged claim 1 is drawn to a system; challenged claim 13 is drawn to a method that includes an object analysis system. Ex. 1001, 11:43–12:4; 12:46–13:10. Independent claim 1, reproduced below with paragraph designations used in the Petition (*see* Pet. vi), is illustrative of the subject matter claimed.

[1.pre.] A video surveillance system, comprising:

[1.1] one or more surveillance cameras that capture image data;

[1.2] an object detection system that detects objects of interest within the image data and extracts portions of frames that include the detected objects of interest and sends the extracted portions of the frames; and

[1.3.1] a video analytics system that receives only the extracted portions of the frames of the image data, transmitted over a network, from the object detection system,

[1.3.2] the image data received by the video analytics system corresponding to objects of interest detected by the object detection system, the video analytics system analyzing the objects of interest;

[1.4.1] wherein the video analytics system receives the image data from multiple object detection systems after being transmitted over the network; and

[1.4.2] the video analytics system is operated by a different business entity than the one or more surveillance cameras; and

[1.5.1] wherein the image data corresponding to objects of interest detected by the object detection system are ranked by the object detection system according to factors including close proximity of the objects of interest to the one or more surveillance cameras, picture quality of the objects of interest, and/or contrast of the objects of interest to create a ranking and

[1.5.2] the ranking is saved in metadata with the image data and

[1.5.3] an object analysis system of the video analytics system reads the rankings within the metadata and decides whether or not to analyze the image data.

VII. ASSERTED GROUNDS

Petitioner asserts that claims 1–21 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1–5, 7–21	103[5]	Laganiere363,[6] Laganiere817,[7] Laganiere461[8]
4, 6, 16	103	Laganiere363, Laganiere817, Laganiere461, Chen[9]
1–21	103	Bedros[10]

As testimonial evidence supporting its contentions, Petitioner cites the Declaration of Dr. Henry Houh (Ex. 1003, Houh Decl.).

VIII. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner describes a person of ordinary skill ("POSITA" or "ordinarily skilled artisan") as having "a bachelor's degree in electrical engineering, computer engineering, computer science, or a related field, and two or more years of work experience or research related to computer vision, image analytics or automated object recognition methods and systems. Pet. 6 (citing Ex. 1003, Houh Decl. ¶¶ 18–19). Petitioner also states that "[a]dditional education in a relevant field or relevant industry experience may compensate for a deficit in one of the other aspects of the requirements stated above." *Id.* For purposes of this proceeding, Patent Owner does not dispute Petitioner's description of an ordinarily skilled artisan. Prelim. Resp. 7.

[5] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. §§ 102, 103 that became effective on March 16, 2013. Because the '321 patent issued from an application filed after March 16, 2013, we apply the AIA statutory basis for unpatentability.
[6] U.S. Patent Application Publication No. 2012/0195363 (Ex. 1005)
[7] U.S. Patent No. 8,139,817 (Ex. 1006)
[8] U.S. Patent Application Publication No. 2011/0113461 (Ex. 1007)
[9] U.S. Patent Application Publication No. 2014/0044348 (Ex. 1009)
[10] U.S. Patent No. 8,634,601 (Ex. 1008)

The level of ordinary skill in the art usually is evidenced by the references themselves. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978). As Petitioner's undisputed description of the level of ordinary skill appears commensurate with the scope of the subject matters claimed and the references, we apply Petitioner's description in this proceeding.

IX. CLAIM CONSTRUCTION

We interpret claim terms using "the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b) (2019). In this context, claim terms "are generally given their ordinary and customary meaning" as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (citations omitted) (en banc). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317 (citations omitted). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

"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)); *see also Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011). Petitioner asserts that "[n]o formal claim constructions are necessary in this proceeding." Pet. 6. Nevertheless, Petitioner also proposes constructions of certain "system" limitations, should the Board determine that the claims recite "means plus function" limitations, and argues that interpreted this way, such claims would be indefinite because they lack disclosure of sufficient algorithms for the claimed functions. Pet. 6–7. Petitioner acknowledges that, because the claims do not use the term "means," there is a presumption against their being interpreted as means plus function limitations and that purported indefiniteness does not preclude the Board from addressing the patent patentability of the claims on sections 102 and 103 grounds. *Id.* (citing *Sony Elecs. Inc. v. Jawbone Innovations, LLC*, IPR2023-01352, Paper 7, 47 (PTAB Mar. 6, 2024); Ex. 1003 Houh Decl. ¶¶ 51–52); *see also Williamson v. Citrix Online, LLC,* 792 F.3d 1339, 1348 (Fed. Cir. 2015). Patent Owner argues the claims do not recite means plus function limitations and agrees with Petitioner that no claim construction is required. Prelim. Resp. 7–8.

The standard is whether the words of the claim are understood by person of ordinary skill in the art to have a sufficiently definite meaning as the name for structure. *Williamson* F.3d at 1349, *Dyfan LLC v Target Corp.*, 28 F.4th 1360, 1365–1366 (Fed. Cir. 2022); *see also Zeroclick LLC v. Apple Inc.*, 819 F.3d 1003, 1008–1009 (Fed. Cir 2018). Having reviewed the claims and the Specification, for purposes of institution, we determine that an ordinarily skilled artisan would have understood the subject matter that is claimed to have a sufficiently definite meaning as the name for structure so

that the claims do not contain means-plus-function limitations. Thus, no additional claim construction is required.

X. ANALYSIS

A. Introduction

"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) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

The question of obviousness is resolved on the basis of 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. *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")); *see In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

An obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). Petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Instead, Petitioner must articulate a reason why a person of ordinary skill in the art would have combined the prior art references. *In re NuVasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016).

A reason to combine or modify the prior art may be found explicitly or implicitly in market forces; design incentives; the "'interrelated teachings of multiple patents'"; "'any need or problem known in the field of endeavor at the time of invention and addressed by the patent'"; and the background knowledge, creativity, and common sense of the person of ordinary skill. *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328–29 (Fed. Cir. 2009) (quoting *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418–21 (2007)).

In determining whether a claim is obvious in light of the prior art, when in evidence, we consider any relevant objective evidence of non-obviousness. *See Graham*, 383 U.S. at 17. Notwithstanding what the teachings of the prior art would have suggested to one of ordinary skill in the art at the time of the invention, the totality of the evidence submitted, including objective evidence of non-obviousness, may lead to a conclusion that the challenged claims would not have been obvious to one of ordinary skill. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). At this stage of the proceeding Patent Owner does not present evidence of such objective considerations

We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden to establish a reasonable likelihood of success at trial.

B. Petitioner's Contentions That Claims 1–5 and 7–21 Would Have Been Obvious Over Laganiere363, Laganiere817, and Laganiere 461

1. *Laganiere363 (Ex. 1005)*

Laganiere363 discloses a system that reduces bandwidth requirements by preprocessing video (other than by using compression) at its source end to reduce the data transmission requirements of video transmitted over a network to a server. Ex. 1005, code 57. Laganiere363 describes such pre-processing as including "(i) formatting differently a first portion of the video data in which the event of interest is detected compared to a second other portion of the video data in which the event of interest is other than detected and, (ii) reducing the bandwidth requirement for transmitting the video data." *Id.* ¶ 21. Laganiere363 identifies the following "non-limiting example of pre-processing:" cropping regions of the video data that do not relate to the event of interest, blanking out or varying the color depth of portions of the video that do not relate to the event of interest, and transmitting portions of the video that do not relate to the event of interest at a lower resolution and/or a lower frame rate. *Id.*

2. *Laganiere817 (Ex. 1006)*

Laganiere817 concerns video surveillance systems that create face image logs from captured video. Ex. 1006, 1:5–7. Laganiere817 notes that conventional face image validation systems use numeric quality scores to determine the suitability of input images and detect images that do not meet criteria established by International Civil Aviation Organization, but that

such systems are limited because they are based on images acquired in a relatively controlled manner and because their decisions are inherently binary. *Id.* at 1:45–49.

3. *Laganiere461 (Ex. 1007)*

Laganiere461 discloses a central server using video analytics to selectively reduce portions of video data to be stored in a video storage device. Ex. 1007 ¶ 2. In one embodiment, video data concerning an event of interest is captured at a source end, retrievably stored in a video storage device, and transmitted to a central server; the central server identifies a subset of the video data that contains predetermined information relating to the event of interest and causes the deletion of video data other than the identified subset. *Id.* ¶ 9.

4. *Claim 1*

a) Limitations 1.pre–1.4.2

As designated by Petitioner, claim limitations 1.pre and 1.1 recite a video surveillance system with one or more surveillance cameras that capture image data. Pet. vii. Petitioner cites Laganiere363 as teaching such systems with video sources such as cameras that monitor a field of view, e.g., a parking lot or ATM machine, and systems that can detect and read license plates or perform facial recognition. *Id.* at 12–13 (citing Ex. 1005 ¶¶ 25, 28, 30, 33–34, Figs 1, 2; Ex. 1003, Houh Decl. ¶¶ 69–72).

As designated by Petitioner, claim limitation 1.2 recites "an object detection system that detects objects of interest within the image data and extracts portions of frames that include the detected objects of interest and sends the extracted portions of the frames." Pet. vii. As designated by Petitioner, claim limitations 1.3.1 and 1.3.2 recite a video analytics system that receives only extracted portions of the frames transmitted over a

network from the object detection system and analyses the objects of interest. Pet. vii. Petitioner cites Figure 5 of Laganiere363 as disclosing, at steps 502 and 504, a first processor (the claimed object detection system) performing video analytics of video data at the source end to detect an event of interest and transmitting that portion of the video data to a central location. *Id.* at 14–15 (citing Ex. 1002 ¶¶ 40–41, Fig. 5). As evidence of transmitting extracted portions of the frames over a network, Petitioner cites Laganiere363's disclosure of an application in which an image is cropped such that only the region of video data that the contains the identified license plate is transmitted to a processor at the central location, i.e., central server 108 (the claimed video analytics system), over a network, i.e., Wide Area Network 104. *Id.* at 15–18 (citing Ex. 1005 ¶¶ 25–30, 40–41, Fig. 2 (showing multiple video sources); Ex. 1003, Houh Decl. ¶¶ 85–89). Petitioner also cites Figure 5 of Laganiere363 as disclosing, at step 506, a second processor at the central server 108 (the claimed video analytics system), performing second video analytics for determining information relating to the event of interest, e.g., a license plate number after receiving only the video data that contains the identified license plate. *Id.* at 19–21 (citing Ex. 1005, ¶¶ 40–41; Ex. 1003, Houh Decl. ¶¶ 90–93).

As designated by Petitioner, claim limitations 1.4.1 and 1.4.2 recite that the video analytics system receives image data from multiple object detection systems and is operated by a business entity that is different from that of the surveillance cameras. Pet. vii. As evidence that Laganiere363 disclosed these limitations, Petitioner cites video sources 102/106, which can be associated with different clients, transmitting video data over WAN 106 to a shared processing facility whose operation can be "farmed out" to a

third party. *Id.* at 21–22 (citing Ex. 1005, ¶¶ 23–24, 28, 30; Ex. 1003, Houh Decl. ¶¶ 94–97).

Patent Owner does not respond explicitly to Petitioner's contentions concerning limitations 1.pre–1.4.2. Having considered the evidence and arguments of record, we determine that Petitioner has demonstrated that Laganiere363 would have disclosed or suggested limitations 1.pre–1.4.2 to a person of ordinary skill in the art.

b) Limitations 1.5.1–1.5.2

As designated by Petitioner, claim limitation 1.5.1 recites "wherein the image data corresponding to objects of interest detected by the object detection system are ranked by the object detection system according to factors including close proximity of the objects of interest to the one or more surveillance cameras, picture quality of the objects of interest, and/or contrast of the objects of interest to create a ranking." Pet. vii. Claim limitation 1.5.2 recites "the ranking is saved in metadata with the image data." *Id.*

Petitioner cites the combination of Laganiere363 and Laganiere817 as teaching limitations 1.5.1 and 1.5.2. Pet. 23–27. Noting that Laganiere363 discloses transmitting metadata with image data and a license plate image application transmitting one or a few suitable frames, Petitioner acknowledges that Laganiere363 does not discuss how the frames are selected, what metadata is used, or how the central server uses the metadata. *Id.* at 23 (citing Ex. 1003 ¶¶ 30, 37, 41; Ex. 1003, Houh Decl. ¶¶ 100–102). Petitioner cites Laganiere817's disclosure of creating from image data a face log for subsequent use in facial recognition by selecting face images based on characteristics, such as resolution, pose, illumination, skin content, and sharpness and storing in the log only those images of sufficient quality based

on a quality score (ranking). *Id.* at 23–24 (citing Ex. 1006, 2:20–57, 2:59–63, 3:35–42, 4:52–7:10, 7:55–10:32, Figs. 7–11; Ex. 1003, Houh Decl. ¶¶ 103–104). Petitioner also notes "[e]ach face image in the face log is stored with 'metadata with the quality score associated with the images.'" *Id.* at 25 (citing Ex. 1006, 8:51–54). Petitioner asserts that a person of ordinary skill would have had reason to combine the teachings of Lagnaiere363 and Laganiere817 to ensure that only high-quality images are used for subsequent license plate or facial recognition, noting that Laganiere363 and Laganiere817 share inventors, contents, and field of use, and seek to reduce the amount of data transmitted over networks without compromising performance. *Id.* at 26.

Patent Owner does not respond explicitly to Petitioner's contentions concerning limitations 1.5.1 and 1.5.2.

c) Limitation 1.5.3

Petitioner identifies as limitation 1.5.3 the recitation "an object analysis system of the video analytics system reads the rankings within the metadata and decides whether or not to analyze the image data." Pet. vii. Petitioner notes that Laganiere363 discloses a central server performing operations based on metadata, e.g., a face log, and Laganiere817 discloses higher quality images are better for performing facial recognition, and contends that an ordinarily skilled artisan would have found it obvious to configure a central server to start with the highest quality images when performing facial recognition by reading rankings within the metadata to decide whether or not to analyze an image with the same structure. *Id.* at 28 (citing Ex. 1005 ¶¶ 37, 41; Ex. 1006, 1:24–26; Ex. 1003, Houh Decl. ¶ 114). Petitioner further cites Laganiere817's disclosure of purging lower quality images from an image log once a face has been recognized, thereby deciding

not to analyze those images based, at least in part, on their quality rankings because they would not have been analyzed to perform the recognition. *Id.* (citing Ex. 1006, 10:50–54; Ex. 1003, Houh Decl. ¶ 115).

Petitioner also argues that Laganiere461 discloses reducing the amount of video data storage space using a central server that selectively deletes video data that is not relevant to the subset of video data concerning the event of interest. Pet. 29 (citing Ex. 1007 ¶¶ 2, 24–25).

According to Petitioner, a person of ordinary skill in the art would have had reason to combine the related teachings of Laganiere363, Laganiere817, and Laganiere461 because they all seek to reduce the amount of data for a central server to process. *Id.* at 29 (citing Ex. 1005 ¶¶ 34, 38, 41; Ex. 1006 2:51–63, Ex. 1007 ¶¶ 9, 28; Ex. 1003, Houh Decl. ¶¶ 119–120). Petitioner further argues that, to an ordinarily skilled artisan, the combination involves using known, conventional techniques, i.e., processing data based on quality indicating metadata, to achieve a predictable result, i.e., reducing the amount of data to be processed by a server. *Id.*

Patent Owner contends that Petitioner fails to demonstrate the combination of references would have disclosed or taught limitation 1.5.3 to an ordinarily skilled artisan. Prelim. Resp. 9–24. Patent Owner states that Laganiere363 discloses using metadata either to describe an event of interest or to specify a video analytics engine to perform additional video analytics of preprocessed data, but argues that Laganiere363's central server "*always* provides the image data to the plurality of video analytics engines for analysis, and it at most uses the metadata to decide *which* video analytics engine to use," not to decide whether or not to analyze the data. *Id.* at 12 (citing Ex. 1005 ¶¶ 29, 37).

Patent Owner contends that, because Laganiere363's pre-filtering process (performed by first video analytics at a source end) occurs before the image leaves the object detection system, Laganiere363 is fundamentally different from the claimed process, where filtering occurs after the image arrives at the video analytics system. Prelim. Resp. 12. According to Patent Owner, Laganiere363's central server does not need to decide whether or not to analyze the data; instead, the central server can simply proceed to process the image because a first video analytics system (the object detection system) at the source end pre-filters the image, such that every received frame has already been determined to be suitable. *Id.* at 13 (citing Ex. 1005 ¶ 41). Patent Owner characterizes Lagniere363's process as opposite of that taken in the claimed system, where the object detection system bundles ranking information with the image data, so that the video analysis system can read that information and decide whether or not to process the image data. *Id.*

Limitation 1.5.3 concerns data "image data corresponding to objects of interest," i.e., data that has been filtered by the object detection system recited in limitation 1.2 to exclude objects that are not of interest, so that only extracted portions of frames that include detected objects of interest are received by the video analytics system (limitation 1.3.1). The '321 patent Specification states that the claimed object detection system "can analyze the image data using many different analysis methods," e.g., using reference images, image processing functions, patterns, and object classifications functions. Ex. 1001, 2:21–26. The claimed object detection system also ranks the image data (limitation 1.5.1) and saves the ranking in metadata (limitation 1.5.2) so that a sub-system of the video analysis system, i.e., an

object analysis system, reads the rankings assigned by the object detection system and decides whether or not to analyze the data.

Both Petitioner and Patent Owner cite paragraph 41 of Laganiere363 as supporting their contentions. Patent Owner references paragraph 41 of Laganiere363 to support its contentions that the reference discloses a pre-filtering process in which all images received at the central processor are suitable for processing, so that no ranking is required. Prelim. Resp. 12–13. Petitioner cites Paragraph 41 of Laganiere363 as disclosing a "non-limiting example" of license plate video processing in which first video analytics captures an image and transmits a predetermined number of frames to a central location where second video analysis is performed to determine the license plate number. Pet. 28 (citing Ex. 1005 ¶ 41). The first video analytics selects for transmission "one or a few frames having a suitable quality relative to the other frames." *Id.*

Laganiere363's disclosure of transmitting one or a few frames having suitable quality relative to other frames does not preclude ranking the images associated with those transmitted frames, nor does Petitioner assert such a position. Petitioner notes that, although Laganiere363 does not describe how an image of suitable quality is selected, Laganiere363 explicitly discloses "including[ing] metadata about the pre-processing along with the video data to be processed to inform the central server how to handle the data." Pet. 23 (citing Ex. 1005 ¶ 37). Petitioner's ground is based on the combined teachings of Laganiere363, which teaches transmitting pre-filtered frames and corresponding metadata, and Laganiere817, which teaches scoring video data. Petitioner cites Laganiere817 for its quality score teachings, including purging low quality images from a log (e.g., a face log or license plate log), so that less useful data is not used in performing facial

recognition. The principles taught by Laganiere817 are not constrained to systems that score data at the object identification stage; Langaniere817's teachings can be applied to metadata received at the central server, as Petitioner notes is taught by Laganiere363. Pet. 28 (citing Laganiere363 ¶ 37 as teaching the central server reads and performs operations based on the metadata).

Patent Owner's argument that Laganiere363 teaches selecting a video analytics engine also does not rebut Petitioner's contentions. Laganiere363 discloses one alternative use of metadata is to select a video analytics engine to be used to perform additional video analytics processing of preprocessed data. Ex. 1005 ¶ 37. Laganiere363's additional disclosures that "different monitoring or surveillance applications require different video analytics engines" and that each engine performs a different function is evidence that an ordinarily skilled artisan would have known functions can be separated into different "systems" or components as a matter of design choice. *See id.* ¶ 30. Referencing Figure 2, Laganiere363's disclosure that "each of the different video analytics engines 120–124 performs a different video analytics function" in the context of a license plate identification as a "specific non-limiting example" is illustrative. *Id.* ¶ 30. Laganiere363 discloses a functional distribution in which one video detection engine functions to detect a vehicle with a data frame, and another video engine functions to detect the vehicle's license plate. *Id.* Thus, Laganiere363 not only teaches a "system" that selects among alternative video analytics engines, it also teaches a "system" in which discrete functions can be performed by distinct functional components.

Having considered evidence and arguments of record, we determine that Petitioner has demonstrated that the combined teachings of

Laganiere363, Laganiere817, and Laganiere461 would have disclosed or suggested all the limitations of claim 1 to a person of ordinary skill in the art.

5. *Claim 13*

Independent claim 13, drawn to method, recites limitations that correspond substantively to the limitations of claim 1. Ex. 1001, 12:49–13:11, Pet. 30–31. For the same reasons as those we addressed in our analysis of claim 1, we determine that Petitioner has demonstrated that the combined teachings of Laganiere363, Laganiere817, and Laganiere461 would have disclosed or suggested all the limitations of claim 13 to a person of ordinary skill in the art.

6. *Claims 2 and 14*

Claims 2 and 14 depend from claim 1 and 13, respectively and recite that the object detection system creates cropped images from the image data that include the detected objects of interest and sends the cropped images to the video analytics system. Ex. 1001, 12:5–8, 13:12–14. Petitioner cites Laganiere363 as disclosing video sources 102 (the claimed object detection system) as creating a cropping image data to an area of interest and transmitting the region of video data that contains the event of interest to the central location. Pet. 31–32.

7. *Claims 3 and 15*

Claims 3 and 15 depend from claim 1 and 13, respectively, and recite that the image data include video data and the object detection system provides frames from the video data that include the detected objects of interest and sends the frames to the video analytics system as the image data. Ex. 1001, 12:9–14, 13:15–19. Petitioner argues that an ordinarily skilled artisan would have known that image data constitutes frames of video data

and that cropped frames of data could be extracted to contain an event of interest for further processing. Pet. 32–33.

8. *Claims 4 and 16*

Claims 4 and 16 depend from claim 1 and 13, respectively, and recite that the video analytics system includes an object analysis system that analyzes the image data corresponding to objects of interest detected by the object detection system by comparing the image data to reference images to identify the objects of interest, by recognizing patterns in the image data, and/or by applying image processing functions, neural network functions, deep learning functions, and/or object classification functions to the image data. Ex. 1001, 12:15–23, 13:20–27. Petitioner cites Laganiere363 in combination with Laganiere817 as disclosing video analytics engines that perform different video analytics functions, e.g., comparing, recognizing and applying different processing functions. Pet. 34–35 (citing Ex. 1005 ¶30).

9. *Claim 5 and 18*

Claims 5 and 18 depend from claim 1 and 13, respectively, and recite that the object detection system is integrated within the one or more surveillance cameras. Ex. 1001, 12:24–26, 13:30–32 as teaching central server 108 includes analytics engines that analyze portions of data. Petitioner cites Laganiere363 as disclosing multiple source ends including video sources (cameras) that contain a processor performing video object detection of events of interest. Pet. 35–36 (citing Ex. 1005 ¶ 40; Ex. 1003, Houh Decl. ¶¶ 139–140).

10. *Claim 7 and 17*

Claims 7 and 17 depend from claim 1 and 13, respectively, and recite a database that receives metadata associated with the identified objects of interest from the video analytics system. Ex. 1001, 12:31–33, 13:28–30.

Petitioner cites Laganiere363's as disclosing a license plate identification program in which license plate numbers are metadata that describe a license plate image and are stored in a non-volatile database, e.g., as tables, for associating image data with a license plate. Pet. 36 (citing Ex. 1005 ¶¶ 35, 38, 41; Ex. 1003, Houh Decl. ¶¶ 142–144).

11. *Claims 8 and 19*

Claims 8 and 19 depend from claim 1 and 13, respectively, and recite a gateway system that provides access to the video analytics system over a public network. Ex. 1001 12:34–36, 13:33–35. Petitioner cites Laganiere363 as disclosing video source 102 communicating with central server 108 via gateway 104 and WAN 106. Pet. 37–38 (citing Ex. 1005 ¶¶ 21, 25, Fig. 2l Ex. 1003 Houh Decl. ¶¶ 147–149).

12. *Claims 9 and 20*

Claims 9 and 20 depend from claim 1 and 13, respectively, and recite the object detection system is integrated within the gateway system. Ex. 1001, 1237–38, 13:36–37. Petitioner argues that Laganiere363's disclosure of video pre-processing does not require the processor to be within video source 102 and that an ordinarily skilled artisan would have had reason to integrate such a processor in the gateway to leverage encoding capabilities of such computerized gateway systems. Pet. 39 (citing Ex. 1005 ¶¶ 10, 25, 29, 40; Ex. 1003, Houh Decl. ¶¶ 150–152).

13. *Claims 10 and 21*

Claims 10 and 21 depend from claims 1 and 13, respectively, and recite that the one or more surveillance cameras each include a gateway system that provides access to the video analytics system over a public network. Ex. 1001, 12:39–42, 13:38–41. Noting that Laganiere363 discloses an embodiment in which video source 102 is a network IP camera

with onboard video analytics, e.g., an AXIS 211M Network Camera, Petitioner contends that an ordinarily skilled artisan would have understood that such a camera could incorporate gateway functions for direct connection to a LAN and the Internet. Pet. 40 (citing Ex. 1005, ¶¶ 25, 28–29, 33; Ex. 1003, Houh Decl. ¶¶ 153–156).

14. *Claim 11*

Claim 11 depends from claim 1 and recites that the video analytics system receives image data after being transmitted over an enterprise network. Ex. 1001, 12:43–45. Petitioner notes that in Laganiere363 server 108 receives data from a source end over a WAN. Pet. 41. Petitioner asserts that an ordinarily skilled artisan would have understood a WAN to be an example of an enterprise network, because a WAN is a group of computer devices that shares resources within a limited geographical area for small to medium size businesses. *Id.* (citing Ex. 1003, Houh Decl. ¶¶ 157–159).

15. *Claim 12*

Claim 12 depends from claim 1 and is similar to claim 11, but recites that the video analytics system receives image data after being transmitted over a cloud network. Ex. 1001, 12:46–48. Petitioner cites Laganiere363 as disclosing that cloud computing is a general term for anything that involves delivering services over the internet. Pet. 42 (citing Ex. 1005 ¶ 23). On that basis, Petitioner asserts that an ordinarily skilled artisan would have understood argues that Laganiere363 to teach server 108 (video analytics system) receiving image data through a cloud network.

16. *Conclusion Concerning Claims 1–5 and 7–21*

Patent Owner does not explicitly respond to Petitioner's contentions concerning dependent claims 2–5, 7–12, and 14–21. Having considered the evidence and arguments of record, for purposes of institution, we determine

that Petitioner has demonstrated that a person of ordinary skill would have had reason to combine the teachings of Laganiere363, Laganiere817, and Laganiere461 and that in combination, in combination, these references would have disclosed or suggested the limitations of claims 1–5 and 7–21 to an ordinarily skilled artisan.

C. Petitioner's Contentions That Claims 4, 6, and 16 Would Have Been Obvious over Laganiere363, Laganiere817, Laganiere461, and Chen

1. *Chen*

Noting the face recognition system disclosed by Chen includes a surveillance camera, computer, and external storage, Petitioner cites Chen as analogous art and contends that an ordinarily skilled artisan would have had reason to combine the teachings of Laganiere363 with those of Chen because they both concern pre-processing video data and selecting high quality images to form a subset of images for facial recognition. Pet. 42–44 (citing Ex. 1003 ¶¶ 30, 37; Ex. 1009 ¶¶ 90–92; Ex. 1003, Houh Decl. ¶¶ 168–169). Petitioner notes that Chen is directed to amassing a set of captured face images (operation 604), and selecting a suitable face matching method (operation 610) based on how well aligned the face images are aligned with gallery images 612. Pet. 43 (citing Ex. 1009 ¶¶ 90–92, Figs 5–6; Ex. 1003, Houh Decl. ¶¶ 165–167)

2. *Claims 4 and 16*

Noting that in Laganiere363 each of analytics engines 120–124 performs a different video analytics function on the data frames, Petitioner cites Chen as disclosing comparing a received subset of face images (the claimed image data) to galley images (the claimed reference images) to determine the alignment across the two sets of images (i.e., the determine the

identity of the face). Pet. 45–46 (citing Ex. 1005 ¶ 37; Ex. 1009 ¶ 91–92 Ex. 1003, Houh Decl. ¶¶ 174–175).

3. *Claim 6*

Similar to its analysis of claims 4 and 16, Petitioner cites Chen as disclosing comparing face images (the claimed image data) to gallery images (the claimed reference images) to determine the identity of the face (identify the objects of interest). Pet 46 (citing Ex. 1003, Houh Decl. ¶¶ 176–177).

4. *Conclusion Concerning Claim 4, 6, and 16*

Patent Owner does not explicitly respond to Petitioner's contentions concerning dependent claims 4, 6, and 16. Having considered the evidence and arguments of record, for purposes of institution, we determine that Petitioner has demonstrated that a person of ordinary skill would have had reason to combine the teachings of Laganiere363, Laganiere817, Laganiere461, and Chen and that, in combination, these references would have disclosed or suggested the limitations of these dependent claims to an ordinarily skilled artisan.

D. Petitioner's Contentions That Claims 1–21 Would Have Been Obvious Over Bedros

1. *Bedros*

Bedros discloses a video surveillance-based facial recognition system used to confirm identities of people in a monitored environment. Ec. 1008, 1:6–8. Figure 3 of Bedros, reproduced below, is a block diagram of an example system embodiment. *Id.* at 8:13–14.

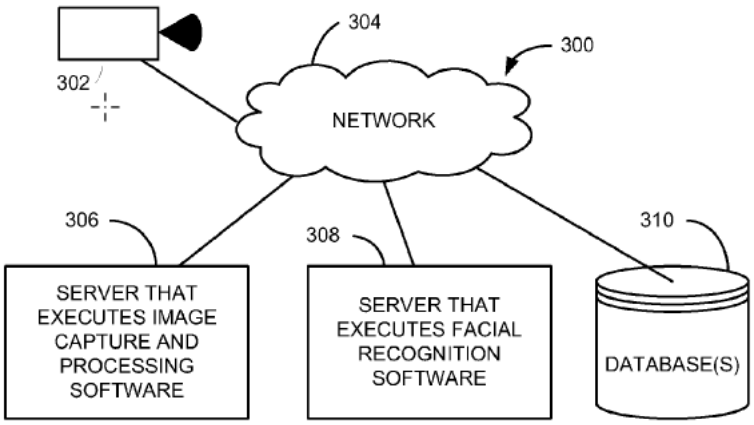


FIG. 3

Ex. 1008, Fig. 3. In operation, server 306 receives digital images or video streams from camera 302 over network 304, extracts a portion of a captured image to obtain a facial image, and submits the facial image for facial recognition by facial recognition software. *Id.* at 8:13–20, 8:32–49. The same server 306 or other servers 308 may execute the facial recognition software. *Id.* at 8:22–24.

Bedros describes a method of acquiring a facial image, i.e., method 150, that includes acquiring an image transmitted by a scene monitoring camera and processing the transmitted image to locate, isolate, and extract a facial image that can be submitted to a facial recognition process. Ex. 1008, 2:36–46, *see id.* at 2:36–4:22. Rather than sending every extracted facial image to the facial recognition program, Bedros discloses an additional method, i.e., method 200, that filters and prioritizes the extracted facial images. *Id.* at 4:23–29. In some embodiments, the step of submitting a facial image to a queue awaiting facial recognition processing may include removing or reordering facial images. *Id.* at 7:19–25.

2. *Claim 1*

a) Limitations 1.pre–1.4.2

Petitioner cites Bedros' surveillance based-high resolution facial recognition process, implemented in a system having camera 302 connected to network 304 and servers 306, 308, as disclosing a video surveillance system (limitations 1.pre, 1.1). Pet. 50–51. As to the claimed object detection system extracting portions of frames that include detected objects of interest (limitation 1.2), Petitioner cites method 150 of Bedros. *See id.* at 51–57. Petitioner states that method 150, implemented using server 306 (the claimed object detection system), extracts facial image 116 from first image 110 (i.e., extracts portions of frames, as claimed) that include a person 102's face (the claimed detected objects of interest). *Id.* at 55. Petitioner further argues that in step 230 of method 200 Bedros sends facial image 116 (i.e., sends the extracted image, as claimed) to a facial recognition program by submitting the image to a facial image queue to be submitted to server 308 that executes facial recognition software. *Id.* (citing Ex. 1008, 4:24–26, 7:19–21, 8:13–20, 8:46–49); *see also id.* at 57 (citing Ex. 1003, Houh Decl. ¶ 203).

As to the claimed video analytics portion that receives the extracted portions of the frames (limitation 1.3.1), Petitioner cites server 306 submitting image 116 to server 308 (the claimed video analytics system) through network 304. Pet. 57–58. As to limitation 1.3.2, Petitioner notes that queue processing 240 includes submitting images from the queue to the facial recognition software executed on server 308 (step 242), and in step 244 receiving facial recognition data in response. *Id.* at 59 (citing Ex. 1008, 3:19–41, 8:46–49). The received data 244 typically includes data indicative

of the person who is the subject of facial image 116 and may include an accuracy probability. Pet. 58; Ex. 1008, 7:33–39; Fig. 2.

As to the video analytics system receiving image data from multiple object detections systems (limitation 1.4.1), Petitioner cites Figure 4 of Bedros and argues that it would have been obvious to an ordinarily skilled artisan to utilize multiple computers with connected cameras to send image data to server 308 to implement a facial recognition system that monitors multiple locations. Pet. 60–63. As to the video analytics system being operated by a business entity different from the entity operating the surveillance cameras, (limitation 1.4.2), Petitioner cites Bedros as disclosing the facial recognition software being accessible through virtual private network or a public network. *Id.* at 63. Petitioner maintains that an ordinarily skilled artisan would have recognized that in such systems an entity that operates surveillance cameras could rely on a facial recognition service operated by a different entity. *Id.* (citing Ex. 1003, Houh Decl. ¶ 214).

Patent Owner does not respond to Petitioner's contentions concerning limitations 1.pre–1.4.2. Having considered the arguments and evidence of record, for purposes of institution, we determine that Petitioner has demonstrated Bedros would have disclosed limitations 1.pre–1.4.2 to a person of ordinary skill in the art.

b) Limitations 1.5.1–1.5.3

Limitations 1.5.1 and 1.5.2 concern the ranking of objects of interest by the object detection system (limitation 1.5.1) and the saving of that ranking in metadata with the image data (limitation 1.5.2). Pet. vii. Petitioner cites Bedros' method 200 as including optional processing layer 220 that filters and prioritizes facial images before they are submitted to an

image queue and before they are processed for facial recognition at step 240. *Id.* at 64 (citing Ex. 1008, 6:59–64, 7:19–30, Fig. 2; Ex. 1003, Houh Decl. ¶ 216). Petitioner states that, in Bedros "the prioritization process on facial image 116 is performed in server 306 ('object detection system') before the images are submitted to server 308 ('video analytics system') for facial recognition." *Id.* Petitioner argues that, because Bedros discloses evaluating such characteristics as image sharpness, texture, and brightness and assigning a score to facial image 116, an ordinarily skilled artisan would have understood that images are ranked. *Id.* at 64–65 (citing Ex. 1008, 6:6–9, 6:13–16, 6:20–22; Ex. 1003 Houh Decl. ¶¶ 217–218. Petitioner also notes Bedros' explanation that the quality measure score may be stored and argues that because the quality score is a measure describing the quality of the image data, the quality score is metadata, as recited in limitation 1.5.2. Patent Owner does not respond substantively to Petitioner's contentions concerning limitations 1.5.1 and 1.5.2.

As to the claimed object analysis system of the video analytics system reading image ranking data within the metadata to decide whether or not to analyze the image data (limitation 1.5.3), Petitioner cites operation 230 of method 200. Pet. 68–69. Petitioner notes that submitting operation 230 includes removing and re-ordering images 116 within a queue awaiting submission to the facial recognition program. *Id.* at 69 (citing Ex. 1008, 7:21–25). Noting that ranked images are received from multiple servers 306, Petitioner states that the queue resides on and is managed by the recognition software on server 308. *Id.* (citing Ex. 1008, 7:21–25). According to Petitioner, an ordinarily skilled artisan would have understood that reordering of the queue would have occurred at the server where facial recognition takes place, i.e., server 308, because that is where all quality

scored images from multiple servers 306 would be stored together for processing using the same structure. *Id.* (citing Ex. 1003, Houh Decl. ¶ 226). Petitioner further argues that, even if Bedros is considered not to teach processing the facial image queue at server 308, an ordinarily skilled artisan would have had reason to do so because all facial images are ultimately processed at server 308 and each server 306 would not know the ranking other servers assigned to the images they send. *Id.*

Patent Owner argues that the discarding of images "happens in server 306 (mapped by Petitioner to the claimed "object detection system), not in server 308 (mapped by Petitioner to the claimed "video analytics system")." Prelim. Resp. 32, *see also id.* at 32 ("whatever the submitting 230 represents, it happens in server 306 . . . not in server 308 . . . so it cannot disclose limitation 1.5.3."). To the extent Patent Owner's argument relies on image discarding software residing and executing in server 306 and facial recognition software residing and executing in a different server, i.e., server 308, Patent Owner's argument fails because Bedros explicitly discloses that the discarding software and the facial recognition software can reside and execute in the same server. Ex. 1008, 8:22–24 (disclosing that server 306 executes one or both of methods 150 and 200 and "[t]he same server 306 or one or more other servers 308 execute facial recognition software").

Patent Owner further argues that removing or reordering facial images from a queue awaiting submission to the facial recognition program is "not related to determining whether or not to have the facial recognition program analyze the image, since such determination was already made during the discarding 222 . . . and there is no reason to make another determination." Prelim. Resp. 32–33.

Claim 1 recites an object detection system (limitation 1.2), a video analytics system (limitation 1.3.1) and an object analysis system (limitation 1.5.3) of a video analytics system that receives extracted portions of frames of image data transmitted over a network. Although claim 1 recites that the video analytics network is operated by a business entity other than the operator of the surveillance cameras, claim 1 does not limit the form of network, e.g., claim 1 does not exclude a local area network.

Neither party proposes a construction of the term "system." *See* Section IX herein. The Specification states that "the present invention concerns a model for the processing of the image data by separating the analysis into separate object detection and object analysis functions or systems." Ex. 1001, 2:8–10. This disclosure in the Specification indicates that the limitations reciting a "system" are limitations drawn to a structure that performs the recited function. For example, in Figures 1 and 2, object analysis system 123-1 is shown as part of a local video analytics system 112 that receives video over a network of devices that includes cameras 103-1, 103-2 having object detection systems 108-1 and 108-2, respectively, local data base 132, gateway system 110-1, video control system 114, and network video recorder 130. Ex. 1001, Fig. 1, 2. Figure 1 also illustrates object analysis system 123-2 as part of object analysis system 122 in cloud service 180 that receives video data over network cloud 60. *Id.* at Fig. 1. Figures 3 and 5 do not show object analysis system 123-1; object analysis system 123-2 is shown as part of remote video analytics system 122 in cloud service 180 that receives video data over network cloud 60. *Id.* at Figs. 3, 5.

In claim 1 the object detection system assigns rankings and the object analysis system of video analysis system that receives video data transmitted over a network reads the rankings and decides whether or not to analyze the

image data. Bedros explicitly discloses software that receives image data and, based on image quality, filters (including removes) and prioritizes images, and places those images that have not been removed into a facial recognition queue for submission to a facial recognition program for further analysis. Ex. 1008, 7:19–25, Fig. 2. Bedros distinguishes method 150, i.e., capturing and extracting images (*see id.* at 2:40–43), from method 200, i.e., filtering and prioritizing the facial images for submission to the facial recognition program (*see id.* at 4:27–29). In Bedros optional processing layer 220 of method 200 includes prioritizing facial images submitted to the facial recognition program. *Id.* at 6:23–26, Fig. 2 (step 224). Images can be removed from or reordered in a queue awaiting submission to the facial recognition program. *Id.* at 7:21–25, Fig. 2 (showing optional processing layer 220 that includes discarding low quality images (step 222) and prioritizing images based on an existing track or other factors (steps 224, 226)). Whether low quality images are removed from the queue before or after establishing priority appears to be a matter of design choice and not a patentably distinguishing feature. Contrary to Patent Owner's argument, Bedros does not suggest a demarcation of systems that requires deleting the same images a second time. In the context of the "systems" recited in claim 1 of the '321 patent, the steps Bedros carries out to perform extraction and prioritizing (ranking) can be characterized as object detection system functions and the steps Bedros carries out to delete and reorder images for submission to the queue for facial recognition process can be characterized as video analysis system functions.

Bedros thus discloses an object analysis system, e.g., a system executing the processing of optical processing layer 220 of method 200, that performs the functions of reading the rankings and reordering or removing

images them from the queue, i.e., deciding whether or not to analyze certain image data. Further processing of the video includes queue processing 240, which submits images that have not been removed to the facial recognition program and receives back facial recognition data, e.g., the identity of the person in the image. *Id.* at 7:26–35, Fig. 2.

Having considered evidence and arguments of record, we determine that Petitioner has demonstrated that the teachings of Bedros would have disclosed or suggested all the limitations of claim 1 to a person of ordinary skill in the art.

3. *Claim 13*

Independent claim 13, drawn to method, recites limitations that correspond substantively to the limitations of claim 1. Ex. 1001, 12:49–13:11, Pet. 71. For the same reasons as those we addressed in our analysis of claim 1, we determine that Petitioner has demonstrated that the teachings of Bedros would have disclosed or suggested all the limitations of claim 13 to a person of ordinary skill in the art.

4. *Claims 2 and 14*

Petitioner cites Bedros as disclosing that in method 150 facial image 116 is a cropped image created from first image 100 in identifying box 114. Pet. 72 (citing Ex. 1008 3:28–55, Fig. 1; Ex. 1003, Houh Decl. ¶ 240). Petitioner argues that image extraction is performed in an object detection system (e.g., server 306), which sends facial images to a video analytics system (e.g., server 308). Pet. 72–73 (citing Ex. 1008, 8:46–49; Ex. 1003, Houh Decl. ¶ 240). Petitioner contends that same arguments apply to claim 14.

5. *Claims 3 and 15*

Petitioner cites Bedros as disclosing server 306 ("object detection system") extracts cropped portions of frames of video data ("portions of the frames") containing a person's face ("detected objects of interest") and sends those frames to server 308 ("video analytics system") for subsequent processing. Pet. 73. Petitioner argues that Bedros teaches claim 3 because an ordinarily skilled artisan would have understood the recited "provides frames of video data that include the detected objects of interest" to refer to the "extracted portions of frames" recited in claim 1. *Id.* Petitioner contends that same arguments apply to clam 15.

6. *Claims 4, 6, and 16*

Petitioner asserts that claim 4, 6, and 16 recite the same substantive subject matter. Pet.75. As evidence that Bedros teaches comparing the image data to reference images and applying image processing functions, as claimed, Petitioner cites Bedros as disclosing facial recognition program determines a person's identity by "compar[ing] facial features from the received image with a facial database" that "typically includes a database of known facial feature landmarks of a known subject faces." *Id.* at 74 (citing Ex. 1008, 7:66–8:2; Ex. 1003, Houh Decl. ¶¶ 247–248).

7. *Claim 5 and 18*

Petitioner cites Bedros as disclosing that camera 104 is equipped with suitable optics to capture images and makes adjustments to the optics based on commands determined by a control system, e.g., computer 410, which can be server 306, as parts of the same camera system. Pet. 76. (citing Ex. 1008, 2:54–60, 9:14–17; Ex. 1003, Houh Decl. ¶ 250). To the extent Bedros does not explicitly disclose a system, Petitioner contends it would have been obvious to an ordinarily skilled artisan to integrate these functions

performed by camera 104 and server 306 of Bedros because it was well known at the time to integrate camera controlling hardware and software with image processing components into surveillance cameras. *Id.* at 76–77 (citing Ex. 1003, Houh Decl. ¶ 251). Petitioner contends the same arguments apply to claims 5 and 18. *Id.*

8. *Claims 7 and 17*

Petitioner cites Bedros as disclosing the database recited in claim 7, noting the Bedros discloses a facial recognition program operating, e.g., on server 308, responds with the identity of an individual matching the face from the received image and that identity information may be stored as metadata in a record in an image database table. Pet. 77–78 (citing Ex. 1008, 3:58–4:3, 7:45–49, 7:63–66; Ex. 1003, Houh Decl. ¶ 254). Petitioner contends the same arguments apply to claims 7 and 17. *Id.* at 78.

9. *Claims 8 and 19*

As evidence that Bedros teaches the claimed gateway, Petitioner cites Bedros as disclosing images 302 are sent to computer server 306 before being sent to server 308 and that computer 410 (server 306) can be directly connected to the camera and a network via connection 120. Pet. 78–79. According to Petitioner an ordinarily skilled artisan would have recognized server 306 as a gateway system because router are routinely recognized as gateways or nodes. *Id.* (citing Ex. 1008, 8:32–49, 9:14–17). Petitioner also contends the same arguments apply to claims 8 and 19. *Id.* at 79.

10. *Claims 9 and 20*

Referencing the arguments Petitioner advanced concerning claim 1 and claims 8 and 19, Petitioner cites Bedros as disclosing that the object detection system can be integrated with the gateway system, citing server 306 as performing the requisite functions. Pet. 79 (citing Ex. 1003, Houh

Decl. ¶ 259). Petitioner also contends the same arguments apply to claims 9 and 20. *Id.*

11. *Claims 10 and 21*

Referencing its arguments concerning claim 7, Petitioner contends that a person of ordinary skill would have recognized Bedros' camera 104/302 and server 306 as part of the same camera system or would have been motivated to integrate server 306 into camera 104, that network-connectable cameras were well-known in the art at the relevant time, and it was well within level of ordinary skill to incorporate object detection into the camera. Pet. 80 (citing Ex. 1003, Houh Decl. 262). Noting that Bedros' server 306 ("gateway system") provides access to servers 308 ("video analytics system") and both are connected to the Internet ("public network"), Petitioner contends that the limitations of claim 10 would have been obvious to an ordinarily skilled artisan. *Id.* Petitioner also contends the same arguments apply to claims 10 and 21. *Id*

12. *Claim 11*

As evidence Bedros teaches the enterprise network recited in claim 11, Petitioner cites Bedros' disclosure that network 304 can be an internal network. Pet. 81 (citing Ex. 1008, 8:24–27).

13. *Claim 12*

As evidence that Bedros teaches the cloud network recited in claim 12, Petitioner contends that a person of ordinary skill would have understood that the Internet includes a cloud network and that server 308 could implement facial recognition as a cloud service. Pet. 81 (citing Ex. 1008, 8:27–31; Ex. 1003, Houh Decl. ¶¶ 266–267).

14. *Conclusion Concerning Claims 1–21*

Patent Owner does not explicitly respond to Petitioner's contentions concerning dependent claims 2–12 and 14–21. Having considered the evidence and arguments of record, for purposes of institution, we determine that Petitioner has demonstrated that Bedros would have disclosed or suggested to a person of ordinary skill the limitations of claims 1–21.

XI. CONCLUSION

For the reasons discussed above, we determine that Petitioner has demonstrated a reasonable likelihood that it will succeed on each of its challenges to patentability and we institute *inter partes* review.

XII. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a) an *inter partes* review of the '321 Patent is hereby instituted, commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

FURTHER ORDERED that the trial is authorized on all grounds set forth in the Petition; and.

FURTHER ORDERED that the trial will be conducted in accordance with a corresponding separately issued Scheduling Order.

FOR PETITIONER:

Jessica Kaiser
Matthew Moffa
Chris Moulder
Yuanfeng Gao
Tyler Knox
Patrick McKeever
PERKINS COIE LLP
kaiser-ptab@perkinscoie.com
moffa-ptab@perkinscoie.com
moulder-ptab@perkinscoie.com
gao-ptab@perkinscoie.com
knox-ptab@perkinscoie.com
mckeever-ptab@perkinscoie.com

FOR PATENT OWNER:

Hao Tan
Shen Wang
ARCH & LAKE LLP
haotan@archlakelaw.com
shenwang@archlakelaw.com