

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SMAXTEC INC. and SMAXTEC ANIMAL CARE GMBH,
Petitioner,

v.

ST REPRODUCTIVE TECHNOLOGIES, LLC,
Patent Owner.

IPR2024-00875
Patent 9,844,206 B2

Before SHARON FENICK, JAMIE T. WISZ, and
ANDREAS BALTATZIS, *Administrative Patent Judges*.

BALTATZIS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Dismissing Patent Owner's Motion to Exclude
35 U.S.C. § 318(a); 37 C.F.R. § 42.64

I. INTRODUCTION

smaXtec Inc. and smaXtec Animal Care GmbH (collectively, “Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–4, 6, and 17–20 (the “challenged claims”) of U.S. Patent No. 9,844,206 B2 (Ex. 1001, “the ’206 patent”). Paper 1 (“Pet.”). ST Reproductive Technologies, LLC (“Patent Owner”) filed a preliminary response. Paper 8 (“Prelim. Resp.”). With our authorization, Petitioner filed a preliminary reply (Paper 12, “Prelim. Reply”) and Patent Owner filed a preliminary sur-reply (Paper 15, “Prelim. Sur-Reply”). We instituted *inter partes* review under 35 U.S.C. § 314(a). Paper 18 (“Inst. Dec.”).

Patent Owner filed a response. Paper 22 (“PO Resp.”). Petitioner followed with a reply (Paper 30, “Pet. Reply”) and Patent Owner followed with a sur-reply (Paper 34, “PO Sur-Reply”). Patent Owner filed a motion to exclude. Paper 38. We held an oral hearing on September 9, 2025, a transcript of which is in the record. Paper 48 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). Having reviewed the complete trial record, we determine that Petitioner has shown, by a preponderance of the evidence, that the challenged claims are unpatentable.

II. BACKGROUND

A. *Real Parties in Interest*

Petitioner identifies smaXtec Inc. and smaXtec Animal Care GmbH as the real parties-in-interest. *See* Pet. xiii. Patent Owner identifies ST Reproductive Technologies, LLC and Inguran, LLC as the real parties-in-interest. Paper 17, 1.

B. *Related Matters*

The parties identify the following district court litigation involving the '206 patent: *ST Reproductive Technologies, LLC d/b/a STInsight v. Smaxtec Inc. and smaXtec Animal Care GmbH*, No. 24-cv-00037 (W.D. Wis.), filed on January 18, 2024. Pet. xiii; Paper 17, 1.

Petitioner further identifies “a concurrent *Inter Partes* Review Petition challenging the patentability of U.S. Patent No. 8,823,515, from which [the '206 patent] was filed as a continuation.” Pet. xiii; *see also* IPR2024-00885, Paper 1.

C. *The '206 Patent*

The '206 patent relates to “a computer implemented animal management method which matches animal information retrieved from a radiofrequency identification device implanted in an animal with animal information retrieved from a database of at least one computer.” Ex. 1001, 1:16–21. The '206 patent describes the “radiofrequency identification device (‘RFID’ or ‘RFID device’)” as “an object that can be attached to or incorporated into a product, animal, or person typically for the purpose of locating and identif[y]ing . . . that object using radio waves.” *Id.* at 1:25–29. According to the '206 patent, conventional RFIDs contain at least “an integrated circuit for storing and processing information, modulating and demodulating a radio frequency (RF) signal and perhaps other specialized

functions,” and “an antenna for receiving and transmitting the radio signal.”
Id. at 1:36–41.

Figure 1 of the '206 patent illustrates a system including an RFID and is reproduced below.

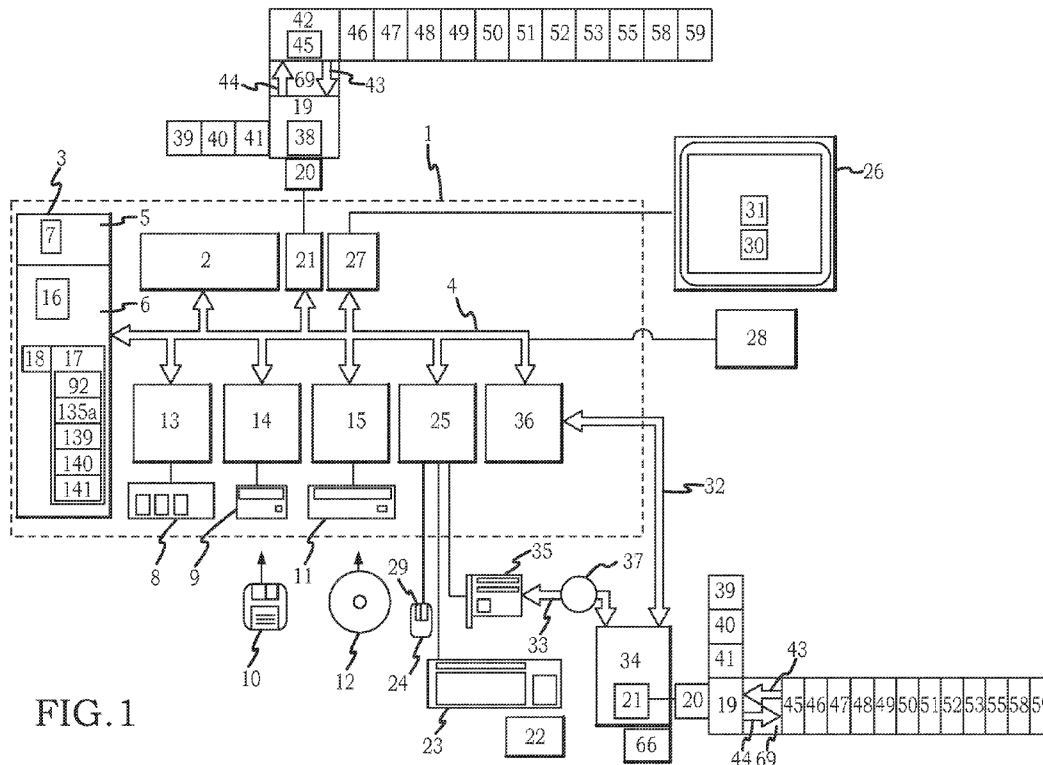


Figure 1 shows a block diagram of an animal management system including an RFID. *Id.* at 3:10–12.

The animal management system is shown as server computer (1) interacting with two RFIDs (19). *Id.* at 6:31–37. Server computer (1) includes at least one processing unit (2) and memory element (3). *Id.* at 5:51–59. Server computer (1) also includes “animal management application (17) which . . . can include a radiofrequency identification (‘RFID’) encoder-decoder application (18) which functions to encode and decode RFID data (38) to and from a RFID device (19).” *Id.* at 6:31–47. “The term RFID (19) for the purposes of this invention can be any type of

radiofrequency identification device as [above-]described or otherwise which can be attached, incorporated, implanted, imprinted, or held (individually and collectively referred to herein as ‘implanted’) on or within an RFID object (39).” *Id.* at 8:8–13.

The animal management system also includes RFID reader (42), which may transmit radio-frequency carrier signal (43) to RFID (19). *Id.* at 8:29–34. RFID (19) “may respond to the radio-frequency carrier signal (43) with a RFID data signal (44) to send and receive an amount of RFID information (45) from the RFID (19), or the like.” *Id.* at 8:34–37.

Figure 3 illustrates further details of the system and is reproduced below.

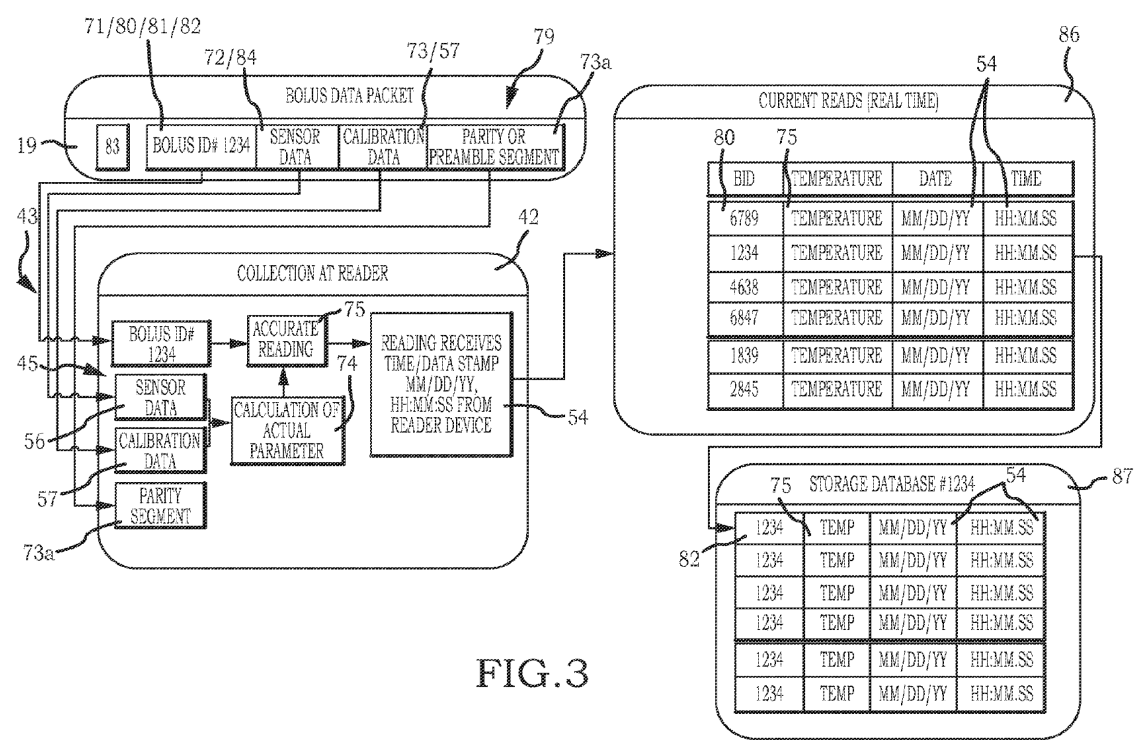


Figure 3 shows a block diagram including an RFID and an RFID reader. *Id.* at 3:16–21.

RFID (19) is “located in the hollow inside of a bolus (79).” *Id.* at 10:30–33. “Certain configurations of the bolus (79) can be ingested by . . . cattle and be retained in a part of the stomach.” *Id.* at 10:33–35. According to the ’206 patent:

A first bit segment (71) of the RFID device (19) implanted in an animal (40) can be encoded or re-encoded with an amount of RFID object identification information (80) (which can be a bolus identification number (81), animal identification number (82), or the like). A second bit segment (72) of the RFID (19) can be encoded or re-encoded from time to time with sensed RFID object characteristics (84) received from a sensor (83) which can be located within the bolus (79) or otherwise implanted within the RFID object (39) whether an animal (40) or an asset (41). For the purposes of this invention, sensed RFID object characteristics (84) can include without limitation a sensed characteristic of the RFID object (39), animal (40) or asset (41), for example, any one or more of location, temperature, pH, or the like, or any one or more of physiological characteristics of an animal (40) such as temperature, pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like.

Id. at 10:36–53. RFID object identification information (80) and sensed RFID object characteristics (84) can be collected from RFID (19) by RFID reader (42) “when the RFID object (39) passes within sufficiently close proximity of the RFID reader (42).” *Id.* at 11:3–9. The RFID information and sensed object characteristics are then “separated, sorted and loaded into a current reads database table (86) stored in the first RFID memory (52) or in the server computer (1) or in the remote computer (34) memory (as to certain embodiments).” *Id.* at 11:25–30.

D. Illustrative Claims

Petitioner challenges claims 1–4, 6, and 17–20 of the '206 patent. Pet. 1–3. Claims 1 and 17, the challenged independent claims of the '206 patent, are illustrative of the challenged claims, and are reproduced below¹:

1. [Pre] A computer implemented animal management system, comprising:
 - [A] a processor communicatively coupled to a non-transitory computer readable media containing program instructions executable to:
 - [B] retrieve animal identification information from an RFID device;
 - [C] retrieve sensed animal information from said RFID device, said sensed animal information generated by a sensor coupled to said RFID device;
 - [D] match said sensed animal information retrieved from said RFID device to animal information of said animal stored in a database including an amount of milk production or a number of days in milk;
 - [E] enter said sensed animal information retrieved from said RFID device and said animal information stored in said database as logical variables into at least one logical expression; and
 - [F] solve said at least one logical expression to obtain a corresponding at least one logical value.

Ex. 1001, 18:22–41.

17. [Pre] A computer implemented animal management system, comprising:

¹ We adopt Petitioner's bracketed identifiers.

- [A] a processor communicatively coupled to a non-transitory computer readable media containing program instructions executable to:
- [B] retrieve animal identification information from an RFID device implanted in an animal;
- [C] retrieve sensed animal information from said RFID device;
- [D] retrieve date-time information from said RFID device;
- [E] match said sensed animal information retrieved from said RFID device to animal information stored in a database;
- [F] enter said sensed animal information retrieved from said RFID device and said animal information stored in said database as logical variables into at least one logical expression; and
- [G] solve said at least one logical expression to obtain a corresponding at least one logical value.

Id. at 20:23–41.

Challenged claims 2–4 and 6 depend from claim 1, either directly or indirectly. Challenged claims 18–20 depend from claim 17, either directly or indirectly.

E. Asserted References

Petitioner relies on the following references in its asserted grounds of unpatentability:

Name	Reference	Ex. No.
Brune	US 6,059,733 (May 9, 2000)	1008
Laitinen	US 7,059,275 B2 (June 13, 2006)	1006
Buchanan	WO 2006/059916 A2 (June 8, 2006)	1011
Liao	WO 2007/089184 A1 (Aug. 9, 2007)	1010
Trevarthen	Trevarthen, <i>The Importance of Utilising Electronic Identification for Total Farm Management: A Case Study of Dairy Farms</i>	1005

Name	Reference	Ex. No.
	<i>on the South Coast of NSW</i> (Bachelor Thesis, University of Wollongong) (Oct. 24, 2005)	

F. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–4, 6, and 17–20 of the '206 patent are unpatentable in view of the following grounds. Pet. 2–3.

Ground	Claim(s) Challenged	35 U.S.C. § ²	Reference(s)/Basis
1	1–4, 6	103(a)	Trevarthen
2	17–20	103(a)	Trevarthen, Brune
3	1–4, 6	103(a)	Laitinen, Buchanan, Liao
4	17–20	103(a)	Laitinen, Brune

Petitioner supports its contentions with the Declarations of Tami M. Brown-Brandl, Ph.D. (Ex. 1003; Ex. 1055) and June Munford, M.L.I.S. (Ex. 1031), among other evidence. Patent Owner supports its contentions with the Declarations of Timothy J. Bowser, Ph.D. (Ex. 2001; Ex. 2009) and Meredith Knoff, M.L.I.S. (Ex. 2011), among other evidence.

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (2011), amended 35 U.S.C. §§ 102 and 103, was effective on March 16, 2013. The '206 patent claims priority to an application that has a filing date before March 16, 2013, and Petitioner applies the pre-AIA versions of §§ 102 and 103. *See* Pet. 7, 29, 37, 39, 40 (arguing that the asserted references are prior art under pre-AIA § 102(b)). Thus, for purposes of this Decision, we apply the pre-AIA versions of §§ 102 and 103. We note that our analysis in this Decision would not change under AIA law.

III. ANALYSIS

A. *Legal Standards*

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner must explain with particularity how the prior art would have rendered the challenged claims unpatentable. 35 U.S.C. § 312(a)(3); 37 C.F.R. § 42.104(b)(4) (“The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.”).

A claim is unpatentable under 35 U.S.C. § 103 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 having ordinary skill in the art to which said subject matter pertains. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). 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 skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary

considerations.³ *See Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

“The level of skill in the art is a factual determination” that provides a primary guarantee of objectivity in an obviousness analysis. *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999) (citing *Graham*, 383 U.S. at 17–18; *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)).

Petitioner asserts that a person of ordinary skill in the art (“POSA”) as of the claimed priority date would have “had at least a bachelor’s degree in animal science, biological engineering, electrical engineering, or computer science, or a related or equivalent field, and three or more years of experience researching, developing, designing and/or evaluating RFID tracking and sensor systems for livestock management.” Pet. 6 (citing Ex. 1003 ¶¶ 24–25).

Patent Owner does not oppose Petitioner’s definition of a person of ordinary skill in the art. *See* PO Resp. 4; Ex. 2001 ¶ 16.

On the full record, we determine Petitioner’s proposed level of skill, with the exception of the open-ended phrases “at least” and “or more,” which we remove from Petitioner’s proposal, comports with the qualifications a person would have needed to understand and implement the teachings of the ’206 patent and the prior art of record.

³ Neither party presents arguments or evidence relating to secondary considerations.

C. Claim Construction

We construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc), i.e., as construed in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R.

§ 42.100(b). Under *Phillips*, claim terms are afforded “their ordinary and customary meaning.” *Id.* at 1312. “[T]he ordinary and customary meaning of a claim term 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.” *Id.* at 1313.

“Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

In our Institution Decision, we identified two potential claim construction issues: (1) the interpretation of limitations 1[E] and 17[F] relating to entering sensed and stored information into “at least one logical expression,” and (2) “implanted in an animal.” Inst. Dec. 19. We are persuaded by Petitioner’s argument that it would have been obvious to combine sensed and stored information into the same “at least one logical expression,” for the reasons set forth below. Accordingly, we need not construe limitations 1[E] and 17[F], relating to “at least one logical expression.”⁴ We discuss our construction of “implanted in an animal” below.

⁴ *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”))

Independent claim 17 includes the limitation “retrieve animal identification information from an RFID device *implanted in* an animal.” Ex. 1001, 20:28–29 (emphasis added). Dependent claim 2 includes the limitation “a plurality of RFID devices *implanted in* a plurality of animals.” *Id.* at 18:44–45 (emphasis added).

We preliminarily construed the plain and ordinary meaning of “implanted in an animal,” as implanted *within* the animal rather than *on* the animal. Inst. Dec. 23.

1. Patent Owner’s Position

Patent Owner argues that “the Board should adopt the construction” of implanted *within* the animal as “consistent with the claims, the specification, and testimony from both parties’ technical experts.” PO Resp. 5. As to the plain meaning, Patent Owner argues that “even a layperson would understand that ‘implanted *in* an animal’ means implanted within that animal and is distinct from ‘implanted *on* an animal.’” *Id.* at 5. Next, Patent Owner argues that this interpretation is consistent with the ’206 patent Specification. *See id.* at 5–6. For example, the ’206 patent Specification describes an RFID “as one that ‘can be attached, incorporated, implanted, imprinted, or held (individually and collectively referred to herein as ‘implanted’) on or within an RFID object.’” *Id.* at 6 (citing Ex. 1001, 8:8–13). Patent Owner argues that this sentence “*distinguishes* devices that are implanted ‘on’ an RFID object from those that are implanted ‘within’ an RFID object.” *Id.* at 7. Finally, Patent Owner argues that declarant testimony indicates one skilled in the art would have understood “implanted in an animal” as distinguishable from an external device. *See id.* at 7–8 (citing Ex. 1003 ¶¶ 130, 193–194; Ex. 2009 ¶¶ 42–51).

2. Petitioner's Position

Prior to institution, Petitioner argued that one skilled in the art “would understand from the [S]pecification that being ‘attached’ to the ear is being ‘implanted;’ further, the device is ‘in’ the ear in the same sense that an earring is also placed ‘in’ the ear.” Prelim. Reply 3 (citing Ex. 1001, 8:8–13). Petitioner does not address our interpretation in the Institution decision, nor Patent Owner’s response thereto. *See* Pet. Reply 23–25.

3. Claim Construction

We adopt Patent Owner’s construction of implanted *in* an animal as meaning implanted *within* an animal. We agree with Patent Owner that this construction is consistent with the plain and ordinary meaning of the claim language, and the Specification. Specifically, we find that the Specification defines “implanted” as encompassing RFIDs attached or implanted “on or within” an animal, but the plain language of the claim expressly recites the subset “in,” which we determine corresponds to “within” as described by the ’206 patent. *See* Ex. 1001, 8:8–13.

D. Asserted Obviousness of Claims 1–4 and 6 over Trevarthen

Petitioner contends that claims 1–4 and 6 are rendered obvious by Trevarthen. Pet. 11–28. Patent Owner disputes Petitioner’s contentions, arguing that Trevarthen does not qualify as a printed publication under 35 U.S.C. § 102(b) (pre-AIA) (PO Resp. 8–21) and Trevarthen does not render obvious the challenged claims (*id.* at 21–44). We address these issues in turn below.

1. Trevarthen (Ex. 1005)

Trevarthen relates to utilizing RFID technology on dairy farms “to enhance total farm management.” Ex. 1005, Abstr. As an example, Trevarthen describes a case study of the Cochrane dairy farm, which “has a

strong use of RFID technology” and “is well known in the region as one of the most advanced RFID setups.” *Id.* at 69.⁵ Each cow in the farm’s herd has an RFID tag attached to its right ear and “[t]his RFID tag is utilised to aid in farm management operations from early in a cow[’]s life.” *Id.* The Cochrane dairy farm uses a software package to aid in herd management and “to also provide the basis for their RFID operations.” *Id.* at 71. For example, “[a]s each cow passes through the RFID reader,” its individual information “is drawn from the central herd management database.” *Id.* at 78. The individual information identifies cows with specific attributes, e.g., “slow milking cows,” and “freshly calved cows.” *Id.* at 78–79. Trevarthen discloses that the Cochrane farm is considering implementing “milking meters for every milking bail . . . to record the amount of milk each cow has provided at every milking session” because “[a]ttaining milk production figures for every cow from every milking session will provide vastly more information for the farmers to utilise in their farm management decisions.” *Id.* at 98.

Beyond the case study, Trevarthen proposes future enhancements for RFID use at dairy farms. *Id.* at 99. RFIDs may include “RFID tags, boluses, or microchips” that “provide the same functionality, reliability and accuracy” so that individual farmers can select the device that best suits their requirements. *Id.* As to RFID enhancements, Trevarthen discloses “that it is possible to incorporate temperature sensing abilities into RFID microchips currently . . . which may soon be extended to the livestock industry. Such a device will provide the temperature of the cow along with the cow[’]s unique identification number every time the tag is read by an RFID reader.”

⁵ Petitioner’s exhibits include Bates Numbering, but both parties cite to the original document page numbers. For consistency with the parties’ citations, we refer to the documents’ original page numbers unless otherwise noted.

Id. at 121. According to Trevarthen, “reading this temperature will allow a more rapid response to aid in detection and subsequent treatment of any illnesses that a cow may have attracted.” *Id.* Trevarthen discloses that “when temperature fluctuations are recognised by the system, functionality could be incorporated to allow the system to alert the farmer of such fluctuations via means such as a beeper device that the farmer may carry, sending a text message to their mobile phone, or by similar rapid alert device.” *Id.* at 122.

2. *Whether Trevarthen Is a Prior Art Printed Publication*

Petitioner asserts that Trevarthen qualifies as pre-AIA 35 U.S.C. § 102(b) art because it was publicly available as a printed publication before September 15, 2008. Pet. 7–9; Pet. Reply 1–6. Petitioner supports its contention with the declarations of Dr. Brown-Brandl (Exs. 1003, 1055); Ms. Munford (Ex. 1031); and Nathaniel Frank-White (Ex. 1030), a records request processor at the Internet Archive (Wayback Machine). *See* Pet. 7–9.

Patent Owner argues that Petitioner fails “to prove by a preponderance of the evidence that Trevarthen qualifies as prior art.” PO Resp. 8–21. Petitioner supports its contention with the declarations of Dr. Bowser (Ex. 2009) and Ms. Knoff (Ex. 2011). *See id.*

a) *Legal Standards for Printed Publications*

For a reference to qualify as a printed publication, it “must have been sufficiently accessible to the public interested in the art.” *In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009) (quoting *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989)). The touchstone is “public accessibility,” and this “is determined on a case-by-case basis based on the ‘facts and circumstances surrounding the reference’s disclosure to members of the public.’” *Id.* (quoting *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004)); *see also Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir.

2019) (In some cases “public accessibility depends on a careful, case-by-case examination of how a particular reference was disseminated, to whom, for how long, and under what circumstances.”). “A given reference is ‘publicly accessible’ upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art[,] exercising reasonable diligence, can locate it.” *SRI Int’l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008) (quoting *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1378 (Fed. Cir. 2006)).

“When a reference is uploaded to a website or deposited in a library, the fact that the reference is indexed or cataloged in some way can indicate that it is publicly accessible.” *Samsung*, 929 F.3d at 1369. “But indexing is not ‘a necessary condition for a reference to be publicly accessible’; it is but one among many factors that may bear on public accessibility.” *Voter Verified, Inc. v. Premier Election Sols., Inc.*, 698 F.3d 1374, 1380 (Fed. Cir. 2012) (quoting *Lister*, 583 F.3d at 1312). “[W]hile often relevant to public accessibility, evidence of indexing is not an absolute prerequisite to establishing online references . . . as printed publications within the prior art.” *Id.*

b) Analysis

Public accessibility is a legal conclusion based on underlying factual determinations. *Voter Verified*, 698 F.3d at 1380. We determine that Petitioner shows by a preponderance of the evidence that Trevarthen qualifies as a printed publication and thus is prior art to the ’206 patent. In doing so, we weigh evidence both for and against this determination.

(1) *Trevarthen was available on the University of Wollongong's online depository*

The parties agree that the evidence supports at least the “technical accessibility” of Trevarthen. *See* Pet. 7–8; PO Resp. 17–18. That is, the Internet Archive (Wayback Machine) shows that Trevarthen was available on the University of Wollongong’s Research Online website on September 7 and 12, 2007, and March 22, 2008. Ex. 1031 ¶¶ 27–33; *see also* Ex. 1030, Ex. B. Patent Owner argues that Trevarthen’s mere availability on the Research Online website is not enough to show public accessibility. PO Resp. 18. We agree. But Petitioner does not rely solely on this evidence. *Compare First Solar Inc. v. Rovshan Sade*, IPR2023-00827, Paper 13 at 18–19 (PTAB Nov. 16, 2023).

As additional evidence of public accessibility, Petitioner shows that Research Online’s purpose is to “promote[] the scholarly output of the University of Wollongong,” allowing “‘easy discovery’ of uploaded publications ‘via Google and Google Scholar’” thereby increasing their visibility. Pet. 8 (citing Ex. 1027, 150). Petitioner supports this argument with declaratory testimony (e.g., Exs. 1030, 1031) and documentary evidence (Exs. 1027, 1028, 1029). Our reviewing court has held “that where a publication’s purpose is ‘dialogue with the intended audience,’ that purpose indicates public accessibility.” *Valve Corp. v. Ironburg Inventions Ltd.*, 8 F.4th 1364, 1374 (Fed. Cir. 2021) (quoting *Suffolk Techs., LLC v. AOL Inc.*, 752 F.3d 1358, 1365 (Fed. Cir. 2014)).

Patent Owner argues that we “should discount Munford’s ultimate opinion of accessibility because it depends entirely on taking the University’s description of its preferred practice as ‘fact,’ and “expert testimony should be given little to no weight where it simply adopts the

statements of others and presents them as opinion.” PO Resp. 12 (citing *Wi-LAN Inc. v. Sharp Elecs. Corp.*, 992 F.3d 1366, 1374–75 (Fed. Cir. 2021)). Additionally, Ms. Knoff testifies that “during the relevant time period of 2008 and 2009, online institutional repositories were not an effective tool for disseminating research” as compared to more traditional methods of publishing. Ex. 2011 ¶ 18.

We are not persuaded that we should discount Petitioner’s declarant testimony because it is supported by extrinsic evidence. Rather, we credit Petitioner’s evidence that the University of Wollongong used Research Online as an open access digital archive and institutional repository to support scholarly output, such as the Trevarthen thesis. Ex. 1031 ¶ 18; Ex. 1027, 149–150. Even if that repository was not an effective tool as compared to traditional publishing (Ex. 2011 ¶ 18), Research Online’s stated purpose to promote scholarly output weighs in favor of Trevarthen’s public accessibility. *See Valve*, 8 F.4th at 1374.

(2) *Trevarthen’s download statistics*

Petitioner asserts that “Trevarthen was downloaded hundreds of times before September 2008.” Pet. 8 (citing Ex. 1031 ¶¶ 21–26; Ex. 1030, Ex. A). In reply to Patent Owner’s response, Petitioner specifies that “[t]he evidence shows 324 downloads of Trevarthen by September 7, 2007, and 569 downloads by March 22, 2008.” Pet. Reply 4 (citing Ex. 1030, 13, 15).

Patent Owner responds that Petitioner “provides no evidence regarding how many unique individuals downloaded the reference, who those individuals are, how those individuals located the reference, or whether the download count is reliable.” PO Resp. 19. Instead, Patent Owner argues that “download counts tracked by institutional repositories are known to be unreliable, and even if they were reliable, all downloads could have

resulted from Research Online directly, which has no bearing on Trevarthen's findability on Google." *Id.* (citing Ex. 2011 ¶ 21; Ex. 2009 ¶ 116).

We are not persuaded that we should entirely discount the download statistics in the absence of evidence of unique downloads or individuals. Even if the download numbers do not exactly represent unique downloads by unique individuals, the evidence shows that Trevarthen was downloaded to some extent, and therefore distributed, prior to the filing date of the '206 patent. Accordingly, we find this evidence weighs in favor of Trevarthen's public accessibility.

(3) The parties' date-limited Internet searches

Patent Owner argues that even if Trevarthen was made available on Research Online, it would not have been accessible or indexed by a search engine, e.g., Google. PO Resp. 11–13; Ex. 2011 ¶¶ 18–25. Patent Owner's two declarants performed date-limited Google searches, "using the search terms Petitioners contend a POSA would have used." PO Resp. 13–15. Patent Owner's declarants did not locate Trevarthen searching with Google and limiting the publication date prior to September 15, 2009. Ex. 2009 ¶¶ 95–111; Ex. 2011 ¶¶ 32–48. Accordingly, Patent Owner argues that "[e]ven if Trevarthen was technically 'on' Google, its absence from search results means that Trevarthen would not have been located with reasonable diligence." PO Resp. 15.

In reply, Petitioner submits declarant testimony describing the "same searches on Google Scholar that Patent Owner's expert performed on Google, and in each instance Trevarthen was within the first few pages of results." Pet. Reply 3 (citing Ex. 1055 ¶¶ 11–13). Patent Owner challenges Petitioner's search results for failing "to cite any evidence showing that

Trevarthen was even made available to Google Scholar before 2009.” PO Sur-Reply 6.

The evidence of record shows that Trevarthen was not found using date-limited Google searches, but was found using Google Scholar. Ex. 2009 ¶¶ 95–111; Ex. 2011 ¶¶ 32–39; Ex. 1055 ¶¶ 11–13. As such, we find the date-limited searching less helpful in determining whether Trevarthen was publicly accessible as of September 15, 2009. Even if we weigh Patent Owner’s Google-search evidence against indexing by the Google search engine, we do not find this evidence dispositive as “indexing is not ‘a necessary condition for a reference to be publicly accessible’; it is but one among many factors that may bear on public accessibility.” *Voter Verified*, 698 F.3d at 1380.

(4) International Search Report lists Trevarthen

Petitioner further argues that other evidence corroborates “Trevarthen’s public accessibility.” Pet. 9. Specifically, Petitioner cites an International Search Report (“ISR”) dated March 18, 2008 in PCT/NZ2007/000286 that lists Trevarthen as a relevant document. *Id.* (citing Exs. 1028, 1029). Petitioner asserts that the ISR “confirms the pre-September 2008 public accessibility of Trevarthen to the POSA searching publicly available databases using keywords including ‘cattle’ and ‘RFID.’” *Id.* (citing Ex. 1028; Ex. 1031 ¶¶ 34–39; Ex. 1003 ¶ 68).

Patent Owner argues that “the International Search Report cannot overcome Bowser’s demonstration that a POSA would not have located Trevarthen as Petitioners suggest.” PO Resp. 20. Patent Owner further argues that “the search report does not specify which database or search terms, if any, actually led the examiner to Trevarthen, nor does it specify the effort required to find Trevarthen.” *Id.* (citing Ex. 1028, 1). Patent Owner

distinguishes *Valve*, in which “the Court noted that an examiner’s ability to access a reference was probative of public accessibility where the examiner had located the reference through a ‘brief’ internet search.” *Id.* (citing *Valve*, 8 F.4th at 1373–76). In contrast, according to Patent Owner, “Petitioners provide no evidence or argument that the Australian examiner located Trevarthen with an internet search engine, let alone whether such a search was ‘brief.’ Without any evidence showing that the examiner found Trevarthen with reasonable diligence, the International Search Report cannot independently establish Trevarthen’s public accessibility.” *Id.*

Petitioner replies that “[a]ccording to the ISR, the examiner searched ‘DWPI, internet, AusPat, Patent Lens, PCT Gazette, Esp@cenet, [and] GetThePatent.’ Of these sources, the only one that would likely include thesis such as Trevarthen is the internet.” Pet. Reply 5 (citing Ex. 1055 ¶ 16–17) (internal citation omitted, second alteration by Petitioner). Further, Petitioner argues that “[c]itation of a reference in an ISR with the full URL of the reference is persuasive evidence of public accessibility.” *Id.*

We find the ISR identifying Trevarthen prior to the filing of the ’206 patent to be “highly probative evidence of public accessibility.” *Valve*, 8 F.4th at 1376. Although the ISR does not provide the same level of detail as the declarants’ Internet searches, we find the ISR is persuasive evidence that Trevarthen was located using an Internet search. Specifically, the ISR lists the Internet as an electronic database and identifies Trevarthen by its URL, i.e., its location on the Internet. *See* Ex. 1028, 1. And although the *Valve* court highlighted the examiner’s “brief . . . search,” we disagree with Patent Owner’s implication that, to find the ISR probative of public accessibility, we must look to whether the examiner found the relevant document after only a brief search. *Valve*, 8 F.4th at 1376. Rather, we refer

to the *Valve* court’s general principle, “[i]f an examiner could access the article before the priority date, so could the general public.” *Id.*

(5) *Conclusion*

We find that a preponderance of the evidence supports Petitioner’s argument that Trevarthen was publicly available. Specifically, the evidence shows that the University’s online repository—whose purpose was to promote scholarly output—published Trevarthen, Trevarthen was downloaded from the online repository, and a patent examiner found Trevarthen searching the Internet prior to the filing date. We balance Petitioner’s evidence against Patent Owner’s evidence that date-limited Google searches could not identify Trevarthen. Weighing the evidence, we conclude that Trevarthen was “sufficiently accessible to the public interested in the art” and therefore qualifies as a “printed publication.” *Voter Verified*, 698 F.3d at 1380.

3. *Independent Claim 1*

a) *Preamble*

The preamble of claim 1 recites “[a] computer implemented animal management system.” Ex. 1001, 18:22–23.

Petitioner asserts that “Trevarthen describes a system using herd management software, which the POSA would have understood to be a computer-implemented animal management system.” Pet. 11–12 (citing Ex. 1003 ¶ 89; Ex. 1005, 100).

Patent Owner does not dispute that Trevarthen teaches the preamble of claim 1. *See* PO Resp. We agree with Petitioner that Trevarthen discloses

the preamble of claim 1; thus, we need not decide whether the preamble is limiting.⁶ *See* Ex. 1003 ¶ 89; Ex. 1005, 100.

b) Limitation 1[A]

Limitation 1[A] recites “a processor communicatively coupled to a non-transitory computer readable media containing program instructions executable to.” Ex. 1001, 18:24–26.

Petitioner asserts that Trevarthen teaches that an operator may interface with the herd management software using a computer, which one skilled in the art would have understood to meet the processor element. Pet. 12 (citing Ex. 1005, 101, 104). Petitioner further asserts that one of ordinary skill in the art “would have understood that Trevarthen’s herd management ‘software’ . . . *necessarily* comprises executable program instructions stored on computer-readable media that runs on a processor.” *Id.* (citing Ex. 1003 ¶¶ 90–91 (citing Ex. 1013, 13:6–9; Ex. 1014 ¶¶ 44–45, 81)) (emphasis added). In its Reply, Petitioner elaborates that both inherency and “the general knowledge in the field” show that one skilled in the art “would understand that the herd management software comprises executable program instructions, and that such instructions are run on a processor to retrieve information from the RFID.” Pet. Reply 12–13 (citing Ex. 1005, 100, 106–107; Ex. 1003 ¶¶ 90–91).

Patent Owner argues that Petitioner has failed “to establish that Trevarthen discloses or renders obvious one or more processors or storage media that include *all* of the recited “executable program instructions.” PO Resp. 32. Generally, Patent Owner argues that Petitioner fails to show the claimed program instructions are inherently taught by Trevarthen. *Id.* at 32–

⁶ *See Nidec*, 868 F.3d at 1017.

33. In its Sur-Reply, Patent Owner argues that Petitioner impermissibly relies on “expert testimony to supply claim limitations.” PO Sur-Reply 11. Patent Owner further argues that “Petitioners’ new obviousness argument fails because the cited testimony is conclusory, and Petitioners fail to explain why Trevarthen would be configured to include *each* instruction, let alone with a reasonable expectation of success.” *Id.* at 12.

On the full record, we are persuaded by Petitioner’s argument and evidence that Trevarthen teaches using herd management software, which one skilled in the art would have understood as executable program instructions stored on computer-readable media that runs on a processor. *See* Pet. 12 (citing Ex. 1005, 100; Ex. 1014 ¶¶ 44–45, 81); Pet. Reply 12–13 (citing Ex. 1005, 101, 106–107); Ex. 1003 ¶¶ 90, 91. Trevarthen further describes specific herd management software functions, i.e., program instructions to: automatically enter data using digital devices (Ex. 1005, 100), analyze and view the entered data (*id.* at 101), and identify problems and generate alerts (*id.* at 115). Accordingly, we find that Trevarthen teaches or suggests a processor coupled to computer readable media containing program instructions, including those necessary to perform the individual steps referenced in the limitations 1[B]–1[F] below.

c) Limitation 1[B]

Limitation 1[B] recites “retrieve animal identification information from an RFID device.” Ex. 1001, 18:27–28.

Petitioner asserts that Trevarthen discloses a dairy farm RFID system including an RFID reader for identifying every cow with RFID tags. Pet. 13 (citing Ex. 1005, 102; Ex. 1003 ¶ 93). Petitioner argues that the devices may include RFID tags, boluses, or microchips. *Id.* (citing Ex. 1005, 99–100; Ex. 1003 ¶ 92). According to Petitioner, Trevarthen further discloses the

RFID reader is placed at the dairy entrance “to serve as the basis for a wide range of optional operations to be conducted within the dairy that require *individual identification of cows*.” *Id.* (citing Ex. 1005, 103, 106, 121).

Patent Owner does not dispute that Trevarthen teaches limitation 1[B], apart from its arguments as to limitation 1[A] that Trevarthen does not teach a computer or software containing program instructions to “retrieve.” *See* PO Resp. 32. Specifically, Patent Owner argues that Petitioner’s relied upon “‘software’ . . . does not *necessarily* include program instructions that ‘retrieve’ information from an RFID device because ‘[d]ata can be entered into this software application manually.’” *Id.* at 33 (citing Ex. 1005, 100). According to Patent Owner, the manual data-entry option negates the standard for inherency. *See id.* (citing Ex. 2009 ¶ 167; *PAR Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1195–96 (Fed. Cir. 2014)) (second alternation by Petitioner).

In its Reply, Petitioner argues that Trevarthen’s teaching of manually entering data into the software application, “does not detract from Trevarthen’s teaching of retrieving information through a computer or PDA.” Pet. Reply 13 (citing Ex. 1005, 100). Rather, Petitioner argues that “a POSA would understand that the herd management software comprises executable program instructions, and that such instructions are run on a processor to retrieve information from the RFID.” *Id.* at 12–13 (citing Ex. 1003 ¶¶ 90–91).

On the full record, we are persuaded by Petitioner’s argument and evidence that Trevarthen teaches or suggest limitation 1[B]. Ex. 1005, 102, 103, 106, 121; Ex. 1003 ¶ 93. For example, Trevarthen expressly teaches the herd management software, when linked with an RFID reader, “allows data to be *automatically recorded* regarding the time and date that each cow

enters the milking parlour,” thereby retrieving identification information from an RFID. *See* Ex. 1005, 103 (emphasis added). Trevarthen’s manual data-entry alternative does not negate retrieving the data automatically. Rather the evidence supports Petitioner’s argument that one skilled in the art would understand Trevarthen as expressly teaching or suggest software including program instructions to automatically retrieve identification information from an RFID. *See* Ex. 1005, 100, 103; Ex. 1003 ¶¶ 93, 94.

d) Limitation 1[C]

Limitation 1[C] recites “retrieve sensed animal information from said RFID device, said sensed animal information generated by a sensor coupled to said RFID device.” Ex. 1001, 18:29–31.

Petitioner asserts that “Trevarthen discloses retrieving sensed animal temperature from an RFID device coupled to a temperature sensor.” Pet. 14–15 (citing Ex. 1003 ¶ 96). Petitioner relies on Trevarthen’s disclosure “that it is possible to incorporate temperature sensing abilities into RFID microchips currently . . . Such a device will provide the temperature of the cow along with the cow[’]s unique identification number every time the tag is read by an RFID reader.” *Id.* at 13–14 (citing Ex. 1005, 121) (emphasis omitted, alternations by Petitioner). Petitioner further argues that Trevarthen “discloses that ‘RFID temperature sensing is a currently available technology’” citing “the Bio-thermo RFID as an example of an implanted RFID device with temperature sensing capability.” *Id.* at 14 (citing Ex. 1005, 123, 24–25). Further, according to Petitioner, numerous prior art references described retrieving sensed temperature from implanted RFIDs. *Id.* (citing Ex. 1003 ¶ 95).

Petitioner also cites to Trevarthen’s disclosure that the RFID readers retrieve the sensed temperature information from the RFID device:

[A] temperature sensing RFID device could be read by fixed RFID readers at the entry to the dairy. Such an arrangement would ensure that each cow has their temperature read at a regular interval at least twice a day [I]t is proposed that RFID readers also be placed at other high congregation areas throughout the farm Under this approach, more temperature readings can be gained between milkings, thus providing an enhanced ability to detect temperature variations

Pet. 14–15 (citing Ex. 1005, 122) (emphasis omitted, alternations by Petitioner). Thus, Petitioner concludes that Trevarthen discloses retrieving sensed animal temperature from an RFID coupled to a temperature sensor. *Id.* at 15 (citing Ex. 1003 ¶ 96).

Patent Owner argues that “implanted devices were uncommon at the time of the invention, and POSAs would not have had reason to modify Trevarthen to incorporate them.” PO Resp. 31 (citing Ex. 2009 ¶¶ 158–159). According to Patent Owner, the only temperature-sensing RFID that Trevarthen refers to is the “bio-thermo RFID microchip,” which is “injected into the animal (under the skin).” *Id.* at 29 (citing Ex. 1005, 24). Patent Owner contends that Trevarthen acknowledges that such devices were not commercially available or suitable for livestock and that, while it may be “possible to incorporate temperature sensing abilities into RFID microchips” in other applications, that practice had not yet been “extended to the livestock industry.” *Id.* (citing Ex. 1005, 121, 123 (noting it was “being investigated”); Ex. 2009 ¶¶ 151–156). Patent Owner also argues that there are several reasons why POSAs would not have used these under-the-skin microchips for livestock, including because they “involve a surgery” and are susceptible to “migrating.” *Id.* at 29–30 (citing Ex. 2010, 63:8–18, 65:2–9).

Apart from Trevarthen, Patent Owner contends that Petitioner’s “numerous prior art references” “show that temperature sensing RFID devices were uncommon and that POSAs would not have used them in herd management systems.” PO Resp. 30–31. For example, Patent Owner cites Dr. Brown-Brandl’s own paper to show that “several changes needed to be made” to a temperature-sensing bolus before it could be used in a commercial livestock setting. *See id.* at 31 (citing Ex. 1020, 13); *see also id.* (citing Ex. 1015, 4671–72; Ex. 1016, 434; Ex. 1021, 11; Ex. 1017, 63; Ex. 2009 ¶¶ 158–159).

In its Reply, Petitioner asserts that “Trevarthen discloses that ‘RFID temperature sensing is a currently available technology,’ ‘the application of which may soon be extended to the livestock industry.’” Pet. Reply 11 (citing Ex. 1005, 24, 121, 123). According to Petitioner, “a POSA would have been well-aware of animal-implantable temperature-sensing RFID devices.” *Id.* at 11–12 (citing Pet. 14, 29, 44; Ex. 1003 ¶¶ 33–41, 95; Ex. 1008, 2:4–21; Ex. 1009 ¶¶ 2, 39, 41; Ex. 1014, Fig. 1, ¶¶ 58, 65, 71; Ex. 1021, 4–5; Ex. 1037, 61:14–62:10, 63:19–64:3, 123:17–124:5).

We find that a preponderance of the evidence supports Petitioner’s argument that Trevarthen teaches or suggests retrieving sensed information, e.g., temperature, from an RFID. Ex. 1005, 24, 121, 123. Although some cited references may recommend improvements to known temperature-sensing RFIDs, that does not negate Trevarthen’s express disclosure of their use and importance in herd management. *See Acorda Therapeutics, Inc. v. Roxane Labs., Inc.*, 903 F.3d 1310, 1333 (Fed. Cir. 2018) (no “[c]onclusive proof of efficacy” required for obviousness) (alternations in original). Rather, the art confirms the availability and benefits of temperature-sensing RFIDs, prior to the filing of the ’206 patent. *See* Ex. 1015, 4671–72 (“these

results are encouraging for the use of newly available technologies for monitoring [Reticular temperature]”); Ex. 1016, 434 (“When ingested by a cow, the sensor allows for a continuous, relatively non-invasive, accurate means of monitoring temperature as it travels through the digestive tract. It is expected that an ingested sensor will eventually come to rest in the cow’s reticulum.”); Ex. 1021, 11 (“the rumen bolus is an effective means of continuously measuring body temperature “).

e) Limitation 1[D]

Limitation 1[D] recites “match said sensed animal information retrieved from said RFID device to animal information of said animal stored in a database including an amount of milk production or a number of days in milk.” Ex. 1001, 18:32–35.

Petitioner asserts that “Trevarthen discloses retrieving sensed temperature information from the RFID device ‘along with the cow[’]s unique identification number every time the tag is read by an RFID reader,”” as discussed above. Pet. 16 (citing Ex. 1005, 121). Accordingly, Petitioner asserts that Trevarthen discloses storing temperature readings, associated with the cow’s identification number, in a herd management software database. *Id.* (citing Ex. 1005, 100; Ex. 1003 ¶ 99).

Petitioner further asserts that Trevarthen discloses recording milk production for each individual cow using milk meters and storing that information in the herd management system database. Pet. 15 (citing Ex. 1005, 102, 112, 100, 109; Ex. 1003 ¶¶ 97–98). According to Petitioner, “[b]ecause Trevarthen discloses that its database stores both milk production and temperature information for each cow, the POSA would have understood that the sensed temperature information for a cow would have

been matched to the stored milk production information for that cow using the cow's identification information.” *Id.* at 16 (citing Ex. 1003 ¶ 100).

Patent Owner does not dispute that Trevarthen teaches limitation 1[D], apart from its arguments as to limitation 1[A] that Trevarthen does not teach a computer or software containing program instructions to “match,” and to the extent Petitioner's argument relies on limitation 1[C]). *See* PO Resp. 28–34. Rather, Patent Owner disputes whether one skilled in the art would have combined the art to enter the information into a logical expression, which we address below.

On the full record, we are persuaded by Petitioner's argument and evidence that Trevarthen teaches or suggests matching sensed temperature information and stored milk information using the cow's identification information. Specifically, Trevarthen teaches the benefits of combining an RFID with herd management software to automatically record milk production and temperature so that “farmers are able to easily and immediately view information on individual cattle.” Ex. 1005, 101, 104, 112, 121.

f) Limitation 1[E]

Claim 1 recites “enter said sensed animal information retrieved from said RFID device and said animal information stored in said database as logical variables into at least one logical expression.” Ex. 1001, 18:36–39.

Petitioner argues that “Trevarthen describes entering sensed temperature information as logical variables into a logical expression, and also entering stored milk production information as logical variables into a logical expression.” Pet. 17. Petitioner further argues that one skilled in the art would have been motivated to enter both sensed temperature and stored milk production as logical variables into the same logic expression “in

Trevarthen to enhance the system’s ability to detect illness, which is an express objective.” *Id.* (citing Ex. 1003 ¶¶ 102–103).

Patent Owner argues that “Trevarthen does not disclose any system incorporating both types of information into a single integrated system. Rather, its discussions of milk production and temperature sensing devices reflect disparate teachings without providing a reason to combine them.” PO Resp. 24 (citing *In re Stepan Co.*, 868 F.3d 1342, 1346 n.1 (Fed. Cir. 2017)).

We first address whether Petitioner has shown one of ordinary skill would have had a motivation to combine the different cited portions of Trevarthen with a reasonable expectation of success, *see Stepan*, 868 F.3d at 1346 n.1, before turning to Petitioner’s application of the art to limitation 1[E].

(1) Combining Trevarthen’s case study with its disclosed RFID enhancements

As discussed above in section III.D.1., Trevarthen describes an RFID-use case study (Chapter 5) followed by a proposal for enhanced RFID-use at dairy farms (Chapter 6). *See* Pet. 9–10 (citing Ex. 1005, 10, 69–71, 78–79, 88); *see* Pet. Reply 6–7. For example, the enhanced RFID-use may include combining temperature-sensing RFIDs and milk meters to track milk and temperature. Pet. 10–11 (citing Ex. 1005, 98, 100, 111–12, 115, 121–23). As to limitation 1[E] specifically, Petitioner asserts that “the POSA would have been motivated to input both the sensed temperature information and stored milk production information as logical variables into the same logical expression to enhance the ability to detect sick animals.” *Id.* at 19 (citing Ex. 1003 ¶¶ 111–116). And Petitioner explains how one skilled in the art would have accomplished the combination using various algorithms and “the

application of straightforward algebra that was well within the skill of the POSA.” *Id.* at 20–21 (citing Ex. 1003 ¶¶ 117–118). In its Reply, Petitioner frames Trevarthen as a “cohesive disclosure of specific improvements to existing dairy farms,” including combining RFID tagging with milk meters and temperature monitoring. *See* Pet. Reply 6–8 (citing Ex. 1005, 69–71, 98, 99, 100, 102, 103, 112–113, 115, 121, 122; Ex. 1003 ¶¶ 55–65).

Patent Owner argues that “Petitioners fail to sufficiently explain why a POSA would combine elements from different discussions in Trevarthen, and do not even address expectation of success.” PO Resp. 22 (citing Pet. 13–27; Ex. 1005). More specifically, Patent Owner argues that Trevarthen discloses standalone sections for its RFID-use case study, milk meters, and temperature monitoring, thereby indicating “separate and unrelated” systems with “no suggestion to use them together.” *See id.* at 23–26.

We are persuaded by Petitioner’s argument that one skilled in the art would have viewed Trevarthen as a cohesive disclosure of specific improvements to existing dairy farms, as opposed to disparate teachings of unrelated systems. Trevarthen itself proposes “a framework for the use of RFID on dairy farms” including “enhancements and ideas which could be considered as future additions to further add value” for utilizing RFIDs in farm management beyond the Cochrane farm ear-tag RFIDs. Ex. 1005, 99. The enhancements include RFID boluses (*id.*), milk meters to detect illness (*id.* at 115), and temperature monitoring by RFID (*id.* at 121–122). Considering the entire record, Trevarthen itself describes improvements that apply “the predictable use of prior art elements according to their established functions.” *See KSR*, 550 U.S. at 417. Accordingly, we find that Petitioner has shown a that one skilled in the art would have been motivated to

combine Trevarthen's teachings in an improved RFID-integrated farm management system.

(2) *Entering sensed and stored information into at least one logical expression*

Petitioner argues that Trevarthen teaches or suggests entering "sensed" temperature information and "stored" milk information as logical variables. *See* Pet. 16–19. First, for "sensed" animal information, Petitioner argues that "Trevarthen discloses entering logical variables of sensed temperatures into a logical expression designed to detect 'fluctuations in the body temperature of a cow [that] can indicate that the cow may be *falling ill*' and to issue an appropriate 'alert.'" *Id.* at 16–17 (alteration by Petitioner; citing Ex. 1003 ¶¶ 121–122). Petitioner further argues that one skilled in the art would have understood that detecting illness with temperature information would include entering sensed temperature information as logical variables into a logical expression, e.g., "an expression that determines the magnitude, rate of change, or variability of a sequence of temperature measurements and compares these values to corresponding thresholds." *Id.* at 18 (citing Ex. 1003 ¶ 105; Ex. 1005, 122).

Second, for "stored" animal information, Petitioner argues that "Trevarthen describes a logical expression that can detect issues with a cow's milk production that may indicate illness or another issue." Pet. 18 (citing Ex. 1003 ¶¶ 108–109). Specifically, Petitioner argues that Trevarthen describes correlating changes in calculated milk average to illness, deriving an average milk production, and analyzing milk production history to recognize certain patterns. *Id.* at 18–19 (citing Ex. 1005, 98, 115, 109). Petitioner argues that one skilled in the art "would have understood Trevarthen's calculation of a milk production average, the comparison of

recent production to usual output, and the recognition of patterns, necessarily required use of one or more logical expressions having milk production information as logical input variables.” *Id.* at 19 (citing Ex. 1003 ¶ 109).

Having identified the two variables, Petitioner argues that “the POSA would have been motivated to” to enter these variables into at least one logical expression “to enhance the system’s ability to detect illness.” Pet. 17 (citing Ex. 1003 ¶¶ 102–103). Petitioner first argues that “Trevarthen expressly teaches that *both* temperature and reduced milk production are indicators of illness.” *Id.* at 20 (citing Ex. 1005, 98, 115, 121). Second, Petitioner argues that one skilled in the art “would have been motivated to modify Trevarthen’s logical expression to input both temperature and milk production information as logical variables.” *Id.* (citing Ex. 1003 ¶ 113; Ex. 1023, 4:13–25). Petitioner asserts that combining two different logical variables “would improve Trevarthen’s illness detection capabilities.” *Id.* (citing Ex. 1003 ¶¶ 114–116). Petitioner further asserts that modifying “Trevarthen’s expressions, or introduc[ing] . . . an entirely new expression, to include both temperature and milk production as input variables would have been easily accomplished” by applying “straightforward algebra that was well within the skill of the POSA.” *Id.* at 20–21 (citing Ex. 1003 ¶¶ 117–118).

In its Reply, Petitioner elaborates that “a POSA would have understood that using two or more different variables improves illness detection over single variable expressions.” Pet. Reply 8. Petitioner cites to van Berg⁷, that explains:

⁷ US 5,568,788 (Oct. 29, 1996) (Ex. 1023).

. . . a more reliable indication signal of heat or illness is obtainable from parameters including one or more of the following: the milk rate of flow, the temperature of a milk flow, the milk yield, and/or the number of times per given time period that an animal pays a visit to the milking parlor or the food quantity consumed in the milking parlor.

Id. at 8–9 (citing Ex. 1023, 4:13–17). Petitioner also cites de Mol⁸, that “describes expressions using both temperature and milk yield to detect illness and estrus” *Id.* at 10–11 (citing Pet. 21–22; Ex. 1033).

Patent Owner responds that “there is nothing in the record to support that [combining] temperature and milk production enhances illness detection.” PO Resp. 26 (citing Pet. 19; Ex. 1003 ¶¶ 111–116). Patent Owner argues that Petitioner misplaces its reliance on van Berg, that does not refer to illness detection but instead teaches more accurate temperature measurement. *Id.* at 27 (citing Ex. 1023, 4:20–25; Ex. 2009 ¶¶ 140–144; Ex. 2010, 201:15–20). Patent Owner further argues that “de Mol expressly cautions against using his theoretical model in any ‘practical application’ because it generates too many ‘false positive alerts,’” thereby leading to an expectation of failure, not success. *Id.* at 28 (citing Ex. 1033, 184; Ex. 2009 ¶¶ 148–150; Ex. 2010, 145:11–13).

Considering the entire record, we agree with Petitioner that Trevarthen teaches or suggests entering sensed temperature information and stored milk information as logical variables into the same logical expression. Pet. 16–22 (citing Ex. 1003 ¶¶ 110–119; Ex. 1005, 1, 18, 98, 109, 115, 121,

⁸ R.M. de Mol et al., *Description of a Detection Model for Oestrus and Diseases in Dairy Cattle Based on Time Series Analysis Combined with a Kalman Filter*, 22 Computers and Electronics in Agriculture 171–185 (1999) (Ex. 1033).

122). We also agree with Petitioner that a person of ordinary skill in the art would have had a reason to combine these values into a logical expression to more accurately predict illness. Ex. 1003 ¶¶ 113–118; *KSR*, 550 U.S. at 416 (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”).

We have considered but are not persuaded by Patent Owner’s argument that Petitioner has not shown a reasonable expectation of success. For example, considering van Berg as a whole, we agree with Petitioner that van Berg suggests assessing multiple parameters for identifying illness. *See* Ex. 1023, 4:13–44. Likewise, we find de Mol supports the conclusion that one skilled in the art would have had a reasonable expectation of success in creating a logical expression for detecting illness incorporating animal temperature and milk production, even if de Mol’s specific model required additional improvement to reduce false positive alerts. *See* Ex. 1033, 180–184; Ex. 1055 ¶ 19. We do not agree that de Mol’s invitation to improve the model teaches away or otherwise would have discouraged one of ordinary skill from following the path set out in Trevarthen. *See In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

g) Limitation 1[F]

Claim 1 recites “solve said at least one logical expression to obtain a corresponding at least one logical value.” Ex. 1001, 18:40–41.

Petitioner asserts that “Trevarthen discloses solving its logical expressions, wherein the solutions comprise values indicating whether the animal is ill so that an alert may be generated.” Pet. 22 (citing Ex. 1005, 122, 115). Petitioner specifically identifies Trevarthen’s alerts based on “temperature fluctuations” and significantly lower milk output. *Id.* According to Petitioner, “[i]t follows that if sensed temperature and stored

milk production for a cow are outside the range of the expected values (e.g., higher than expected temperature and lower than expected milk production), Trevarthen’s system identifies a potential illness and alerts the operator.” *Id.* at 22–23 (citing Ex. 1003 ¶¶ 123–124).

Patent Owner does not dispute that Trevarthen teaches limitation 1[F], apart from its arguments as to limitation 1[A] that Trevarthen does not teach a computer or software containing program instructions to “solve,” and to the extent Petitioner’s argument relies on limitation 1[E]. *See* PO Resp. 33.

On the full record, we are persuaded by Petitioner’s argument that Trevarthen teaches or suggests limitation 1[F]. *See* Ex. 1005, 115, 122; Ex. 1003 ¶¶ 123–124.

h) Conclusion as to Claim 1

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that independent claim 1 would have been obvious over Trevarthen.

4. Claims 2 and 3

Petitioner presents evidence that Trevarthen teaches or suggests the limitations of claims 2 and 3. Pet. 23–24 (citing Ex. 1005, 99, 100, 102, 122; Ex. 1003 ¶¶ 129–131). Patent Owner does not separately argue claims 2 and 3. Based on the evidence presented in the Petition and for the reasons discussed above for claim 1, we determine that Petitioner has shown by a preponderance of evidence that claims 2 and 3 of the ’206 patent would have been obvious over Trevarthen.

5. Claim 4

Claim 4 depends from claim 1 and adds “wherein said sensed animal information comprises sensed physiological information of said animal, and wherein said animal information stored in said database comprises health

information associated with said animal, and wherein said logical value indicates an occurrence of an illness of said animal.” Ex. 1001, 18:50–55.

Petitioner asserts that Trevarthen discloses herd management software that stores individual physiological information, such as temperature, and “cow health information, such as ‘treatments.’” Pet. 25 (citing Ex. 1005, 101, 93 (treatments include penicillin); Ex. 1003 ¶¶ 132–134). Petitioner further asserts that “Trevarthen renders obvious solving a logical expression by entering temperature and milk production information into a logical expression that solves for a logical value indicating an occurrence of illness.” *Id.* (citing Ex. 1003 ¶ 135). In its Reply, Petitioner elaborates that “a record of medical treatment, including administration of medications, is ‘health information’ under any reasonable interpretation of that term.” Pet. Reply 13–14 (citing Ex. 1043 ¶ 91; Ex. 1037, 161:11–163:2; Ex. 1055 ¶ 21).

Patent Owner responds that “a skilled artisan would not equate treatment history in Trevarthen with ‘health information’ data for use in the claimed logical expression.” PO Resp. 36 (citing Ex. 2009 ¶¶ 173–175). Instead, Patent Owner argues that Trevarthen logs historical treatment information, such as medications provided, that is not suited for use in a logical expression. *Id.* at 36–37 (citing Ex. 2009 ¶ 175; Ex. 2010, 82:20–83:5). Patent Owner further argues that there is no “suggestion to combine Trevarthen’s high-level description of herd management software on page 101 and separate description of temperature monitoring twenty pages later to determine an occurrence of illness.” *Id.* at 37 (citing Ex. 2009 ¶ 176).

We are persuaded by Petitioner’s argument that Trevarthen teaches or suggests claim 4. “[T]he question under 35 U.S.C. § 103 is not merely what the references expressly teach but what they would have suggested to one of

ordinary skill in the art at the time the invention was made.” *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989). Specifically, Trevarthen teaches farmers using herd management system “to easily and immediately view information on individual cattle, view an entire cow[’]s history (calving date, artificial insemination dates, treatments etc.), produce reports on individual cows, selected cows or the herd as a whole.” Ex. 1005, 101. We agree with Petitioner that one skilled in the art would understand “treatments” as including health history. *See id.* at 93 (treatment with penicillin).

As discussed above as to limitations 1[E] and 1[F], we find that the evidence supports Petitioner’s argument that one skilled in the art would have been motivated, in view of Trevarthen, to provide a logical expression for identifying illness as a logical value, using sensed and stored animal information as variables. *See supra*. We further find that the evidence supports the conclusion that one skilled in the art would include stored animal health information in the logical expression for identifying animal illness. *See* Ex. 1003 ¶¶ 133–135; Ex. 1005, 1, 18, 115, 121.

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that claim 4 would have been obvious over Trevarthen.

6. Claim 6

Claim 6 depends from claim 4 and adds

wherein said animal identification information further comprises said animal identification information correspondingly generated by a plurality of RFID devices implanted in a plurality of animals, wherein said sensed animal information comprises said sensed animal information generated by said plurality of RFID devices implanted in said

plurality of animals, wherein said at least one logical expression solves as to a selected period of time as to said plurality of animals correspondingly associated with said animal identification information if a greater than selected number of said illness have occurred.

Ex. 1001, 18:61–19:4.

Petitioner refers to its prior arguments regarding sensed animal information generated by plurality of RFIDs implanted in a plurality animals, and used in a logical expression that solves for the occurrence of illness. Pet. 26–28 (citing Ex. 1003 ¶¶ 136–138). Petitioner then asserts that Trevarthen provides a motivation “to implement RFID cattle tracking to control the outbreak of diseases.” *Id.* at 26 (citing Ex. 1005 1, 3, 17–18). According to Petitioner, “Trevarthen’s system would have permitted a farm to identify cows who may be at risk of contracting an infection because they were in contact with an infected cow during a specific period of time.” *Id.* (citing Ex. 1003 ¶ 139; Ex. 1005, 18). To do so, Petitioner asserts that “[t]he POSA would have understood that these calculations necessarily involve calculations on measurements taken over a period of time.” *Id.* at 26–27 (citing Ex. 1003 ¶ 140; Ex. 1033, 180–181; Ex. 1005, 109). Finally, Petitioner argues that “the POSA would have been motivated to configure Trevarthen’s herd management system to solve the logical expression and issue an alert when a threshold number of illnesses (i.e., a selected number of illnesses) is met or exceeded.” *Id.* at 28 (citing Ex. 1003 ¶¶ 142–144).

Patent Owner responds that “Trevarthen does not disclose a system capable of (a) detecting illness over a selected period of time or (b) calculating when a threshold number of illnesses has been exceeded,” nor any reason to modify Trevarthen’s system to do so. PO Resp. 40 (citing Ex. 2009 ¶ 187). First, Patent Owner argues that Petitioner combines two

distinct approaches in Trevarthen: a basic system for measuring temperatures at regular intervals, and an advanced system for identifying patterns. *See id.* at 41 (citing Ex. 2009 ¶¶ 191–192; Ex. 1005, 122). Patent Owner argues that neither of these systems are capable of detecting illnesses in the herd as to a selected period of time. *See id.* at 42 (citing Ex. 2009 ¶¶ 194, 195).

Second Patent Owner argues that a skilled artisan would not understand Trevarthen’s objective as early disease outbreak detection. PO Resp. 44 (citing Ex. 2009 ¶¶ 200, 201). Rather, “Trevarthen was aimed at improving individual farms, not detecting global disease outbreaks as Petitioners contend.” *Id.* (citing Ex. 2009 ¶¶ 201–202). Accordingly, Patent Owner argues that there was no reason in view of Trevarthen to generate an alert if a number of illnesses exceed a threshold. *See id.*

We are persuaded by Patent Owner’s argument that Trevarthen does not teach or suggest claim 6. Specifically, we agree with Patent Owner that Trevarthen does not teach or suggest “solv[ing] as to a selected period of time as to said plurality of animals correspondingly associated with said animal identification information if a greater than selected number of said illness have occurred for a plurality of animals thereby a greater than selected number of said illness have occurred.” Instead, Trevarthen discusses identifying illness in individual cows, and controlling disease by identifying cows in contact with other infected cows. *See* Ex. 1005, 18. Accordingly, Petitioner’s proposed modification of Trevarthen relies on unsupported expert testimony, and is not supported by a preponderance of the evidence. *See* Ex. 1003 ¶¶ 142–144.

Based on our review of the complete trial record, we determine that Petitioner does not show that claim 6 would have been obvious over Trevarthen.

E. Asserted Obviousness of Claims 17–20 over Trevarthen and Brune

Petitioner contends that claims 17–20 would have been obvious over the combination of Trevarthen and Brune. Pet. 28–37. Patent Owner disputes Petitioner’s contentions. PO Resp. 45–50.

1. Brune (Ex. 1008)

Brune relates to “a method of determining a physiological state of a ruminant animal by mathematically analyzing at least one portion of a history of data representing sensed temperatures within a stomach of the ruminant animal.” Ex. 1008, 1:63–67. Brune describes measuring animal temperature by placing a bolus, including a temperature sensor and a transmitter, in the ruminant animal’s stomach. *Id.* at 2:1–5. The bolus senses a plurality of temperatures in the stomach, “with each temperature representing a temperature at a respective discrete point in time over a time period.” *Id.* at 2:5–9. The bolus then transmits a plurality of air-borne signals to a remote receiver, “with each air-borne signal representing at least one of the sensed temperatures.” *Id.* at 2:9–11. The sensed “temperatures are mathematically analyzed at discrete points in time over the time period” to determine the ruminant animal’s physiological state. *Id.* at 2:12–16.

2. Independent Claim 17

a) Claim 17 preamble and limitations 17[A]–[C], [E]–[G]

Claim 17 recites similar limitations to claim 1. *See* Ex. 1001, 20:23–41. Accordingly, Petitioner cites Trevarthen for teaching the preamble of claim 17, and limitations 17[A]–17[C], 17[E]–17[G]. Pet. 30 (citing Pet. 11–23; Ex. 1003 ¶¶ 146–149, 156–160).

b) Limitation 17[D]

Limitation 17[D] recites: “retrieve date-time information from said RFID device.” Ex. 1001, 20:32. Petitioner combines Trevarthen with Brune for this limitation. *See* Pet. 31–33.

According to Petitioner, Trevarthen discloses that “fixed readers may be utilized for the purposes of identifying a cow as she enters the milking parlour, and subsequently **recording the time and date** of this read to the central herd management database” *Id.* at 31 (citing Ex. 1005, 102; 103 (“[P]lacing the RFID in this position allows data to be automatically recorded regarding the time and date that each cow enters the milking parlour, and should at least be arranged so as to display cow information (displayed via relevant interface of the herd management software) on a computer screen at the end of the dairy.”)) (alternation by Petitioner). Petitioner also points to Trevarthen’s disclosure of identifying temperature “fluctuations” and “anomalies” and contends that “[t]he POSA would therefore have understood that a time-series of time-date stamped temperature measurements are needed.” *Id.* (citing Ex. 1003 ¶ 150 (citing Ex. 1005, 102–3, 121–22)).

Petitioner combines Trevarthen’s date-time information with Brune’s disclosure of an RFID that sends “a message in the form of an air-borne signal which is transmitted from a bolus implanted within the stomach of a cow.” Pet. 31 (citing Ex. 1008, 4:1–3). Petitioner contends that Brune further explains:

The message or signal is preferably in the form of a data packet For each message, the data packet includes temperature data representing the **sensed temperature** within the stomach, identification data such as an **identification number which is unique to the specific cow**, and **date and/or time stamp data**

corresponding to the *discrete point in time at which the temperature was sensed* by the bolus.

Id. at 31–32 (citing Ex. 1008, 4:3–11, 2:1–16). Therefore, according to Petitioner, “identification information, sensed temperature information, and time-date information is retrieved from Brune’s device.” *Id.* at 32 (citing Ex. 1003 ¶¶ 152–153).

Petitioner further contends that, “[g]iven the importance of time-stamping to Trevarthen, it would have been obvious for the POSA to modify the RFID device of Trevarthen to include the date-time stamping capability disclosed in Brune” and that, “[a]t a minimum, it would have been obvious to try having the RFID device time-stamp the retrieved information rather than the RFID reader.” *Id.* at 32. According to Petitioner, “the POSA would have reasonably expected the date-time stamping feature of Brune[]’s device to work with Trevarthen’s herd management system, at least because the same types of information are being retrieved from a similar implanted bolus.” *Id.* (citing Ex. 1003 ¶ 154; *KSR*, 550 U.S. at 416 (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”)).

c) Patent Owner’s Arguments

Patent Owner alleges that Petitioner does “not provide a reason to combine Trevarthen and Brune to retrieve date-time information *from said RFID device*,” as required by claim 17. PO Resp. 47. According to Patent Owner, Trevarthen retrieves *all* of its data from an “RFID reader” rather than retrieving *any* date-time information from an “RFID device” and Petitioner relies on Brune’s alleged disclosure of an RFID device that provides all of the date-time information to supply this limitation. *Id.* (citing Pet. 28–33).

Patent Owner further contends that the only reason Petitioner provides for incorporating Brune’s time-stamping technique into Trevarthen’s system is an alleged “importance of time-stamping” to Trevarthen, but Trevarthen already has a time-stamping technique that the experts agree works better for his proposed systems. *Id.* (citing Pet. 32). According to Patent Owner, there would have been no reason to swap Brune’s device-based time stamping technique with Trevarthen’s RFID reader-based technique because they “independently accomplish similar functions.” *Id.* at 47–48 (citing *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1369 (Fed. Cir. 2012); Ex. 2009 ¶ 210). Patent Owner also argues that there were specific reasons not to swap Brune’s technique for Trevarthen’s because, in systems like Trevarthen’s where measurements are read “as the cow enters a milking parlour,” the “time-date stamp would be *ideal* to be read at the reader.” *Id.* at 48 (citing Ex. 2010, 150:8–21, 152:4–14).

Patent Owner further contends that Petitioner has not established obviousness based on their single unsupported statement that “it would have been obvious to try having the RFID device time-stamp the retrieved information rather than the RFID reader” because establishing the “obvious to try” rationale requires showing that “there is a design need or market pressure to solve a problem” and that “there are a finite number of identified, predictable solutions.” *Id.* at 49 (citing Pet. 32; *Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1338–39 (Fed. Cir. 2020) (quoting *KSR*, 550 U.S. at 421). According to Patent Owner, nothing in the art suggests a “design need,” “market pressure,” or “problem” that would prompt a POSA to try Brune’s time-stamping method in Trevarthen because “POSAs would have considered the RFID-reader-based method preferable in Trevarthen’s system.” *Id.* (citing Ex. 2009 ¶ 212). Patent Owner and their declarant

further contend that “the system with the device-based timers is more complex and more prone to failure due to issues such as limited battery life, unsynchronized timers, and the need to communicate with the reader.” *Id.* (citing Ex. 2009 ¶ 212)).

d) Analysis

On the full record, we determine Petitioner has shown by a preponderance of the evidence that claim 17 would have been obvious over the combination of Trevarthen and Brune. First, we find that Trevarthen teaches or suggests the preamble of claim 17 and limitations 17[A]–17[C], 17[E]–17[F], for the reasons presented as to claim 1 above.

As to limitation 17[D], we find that a person of ordinary skill in the art would have been motivated to use Brune’s time-stamping in Trevarthen’s system. Trevarthen discloses analyzing temperature “fluctuations,” “patterns” and “anomalies,” which requires a time-series of measurements where the date and time of each measurement is known. *See* Ex. 1005, 121–122. We are persuaded by the testimony of Dr. Brown-Brandl that there are advantages to retrieving such information from the RFID device, rather than the RFID reader. For example, Dr. Brown-Brandl testifies that obtaining the data from the RFID device “ensures that the temperature data is accurately recorded at the moment it is taken (as opposed to when it was reported), providing precise and reliable health monitoring for the cow,” which “is crucial for tracking changes in the cow’s condition over time and identifying any potential health issues promptly.” Ex. 1055 ¶ 24. Dr. Brown-Brandl explains that “retrieving date-time information from the device allows multiple measurements to be taken and stored in the device, and then collectively transmitted to the reader” and that “[t]aking multiple

measurements between reporting furthers the purpose of Trevarthen to detect illness based on a time-series of measurements.” *Id.*

Regarding the perceived deficiencies of obtaining data from the RFID devices, Brune does not mention low battery life as an issue with its device but, rather, indicates that its bolus provides data over “an extended period of time.” Ex. 1008, 3:37–43, cls. 4–9. We also credit the testimony of Dr. Brown-Brandl that synchronicity between devices is not required to detect disease in each animal because it is the individual animal’s time-series of measurements which is important in this scenario. *See* Ex. 1055 ¶ 25. Even assuming that there are some disadvantages in obtaining data from the RFID device, these potential weaknesses do not negate the advantages of retrieving such data from the RFID device itself. “[J]ust because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes.” *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012). Therefore, we find that one of ordinary skill in the art would have been motivated to use either one of (or a combination of) these measurement methods in order to obtain the most comprehensive picture of a cow’s health.

e) Conclusion as to Claim 17

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that independent claim 17 would have been obvious over Trevarthen and Brune.

3. Claims 18–20

Petitioner presents evidence that the combination of Trevarthen and Brune teaches the limitations of claims 18–20. Pet. 34–37 (citing Ex. 1003 ¶¶ 162–169). Patent Owner does not separately argue claims 18–20, instead relying on its prior argument against claim 1. *See* PO Resp. 45–47.

Based on the evidence presented in the Petition and for the reasons discussed above for claims 1 and 17, we are persuaded by Petitioner's arguments and evidence showing that the combination of Trevarthen and Brune teaches the limitations of claims 18–20.

F. Asserted Obviousness of Claims 1–4 and 6 over Laitinen, Buchanan, and Liao

Petitioner contends that claims 1–4 and 6 would have been obvious over Laitinen, Buchanan, and Liao. Pet. 37–56. Patent Owner disputes Petitioner's contentions. PO Resp. 50–62.

1. Overview of the Asserted References

a) Laitinen (Ex. 1006)

Laitinen relates to a surveillance system used in animal husbandry. Ex. 1006, 2:32–34. “The system consists of three technology levels . . . referred to as local, global and pico level.” *Id.* at 3:21–27.

The three levels are shown in Laitinen Figure 1, reproduced below.

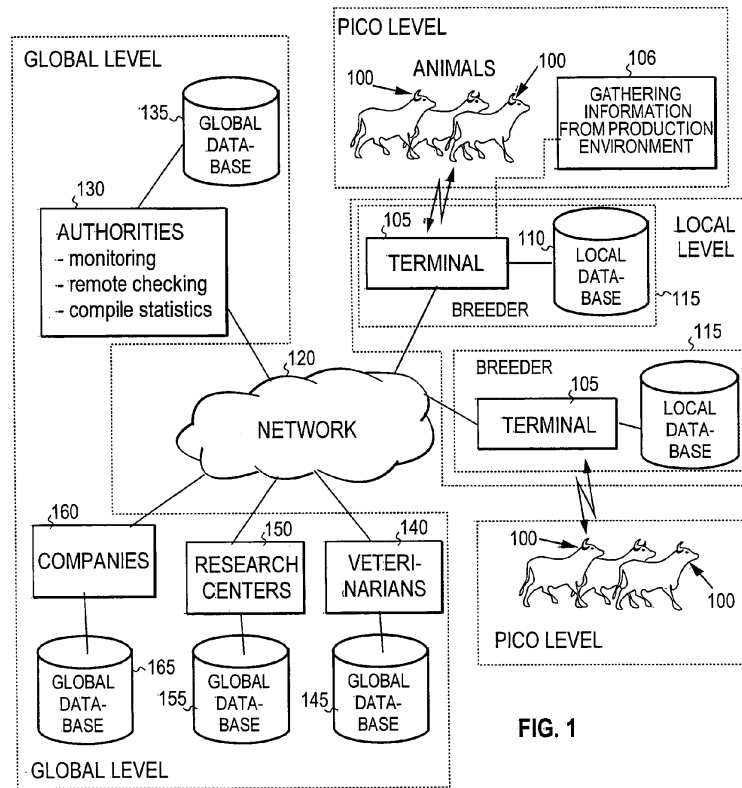


FIG. 1

Figure 1 illustrates the overall architecture of a surveillance system connected to a network, including a pico level, local level, and global level. *Id.* at 3:5–6.

Laitinen’s pico level is illustrated with pico level device 100 that includes, *inter alia*, the following components:

RF transmitter/receiver used in the creation of a (programmable) radio network with the local level’s terminal unit. This component can also be a mere RF transmitter.

....

Micro controller that coordinates radio transmissions between the pico and the local level and gathers parameter values from the [s]ensors attached to the animals. When necessary, the micro controller protects data saved in the device. As a part of the micro controller or as a separate component, the pico level also features an identifier.

[S]ensor unit connected to the micro controller for the surveillance of the animal's body temperature, occlusion, muscular action, motion or metabolic level. The [s]ensor unit can also be an implant inside the animal, in which case the data it provides can be, for instance, read/transcribed by the pico level equipment using the so-called Radio Frequency Identification Technology. It is also possible the [s]ensor unit includes components suitable for the dispersing of medicaments which enable the individual treatment of animals via a communications network, or detectors which alarm if the pico level device is detached from the animal.

Id. at 3:36–62.

Laitinen further describes “two different pico level devices connected to a local information system. The pico level control device can be either external (100a) or implanted inside the animal's tissue (100b).” *Id.* at 5:38–43. “The external device can, for instance, measure the animal's body temperature (with a temperature [s]ensor) or movements . . . , or determine the animal[']s location.” *Id.* at 5:44–47. “The internal device enables, for example, the use of an EKG analysis for the surveillance of the animal[']s heart rate or an EMG (Electromyography) conveying its muscular tension or level of fatigue.” *Id.* at 5:50–53.

Laitinen's pico level devices provide data to the local level information system. *See id.* at Fig. 1. Laitinen describes the “local level” as consisting of “one or more local 115 information systems, located in the farm of one farmer or breeder and tailored to meet its requirements by modifying a normal personal computer, for instance.” *Id.* at 4:5–9. Local information system 115 comprises terminal unit 105, typically featuring database 110 into which the terminal compiles information from pico and local levels, as well as from possible other devices 106. *Id.* at 4:9–17.

“[T]he highest, global, level consists of a computer or computers linked to the communications network 120 and of software in the databases of which information sent by the local level is gathered, organized and refined.” *Id.* at 4:42–45. “Based on the collected animal and farm information and expert knowledge, recommendations, treatment measures and management decisions are taken and prognosticated on the global level.” *Id.* at 4:50–53.

Laitinen describes feeding locally-collected data into “algorithms and knowledge models upheld in the global level systems.” *Id.* at 6:29–31. In one example, Laitinen describes an algorithm for monitoring medication effects using information about the animal’s present condition. *See id.* at 7:4–13, 7:35–56. In another example, Laitinen describes applying a pico level device to monitor whether the animal is in heat by measuring body temperature and movement. *Id.* at 8:5–11.

b) Buchanan (Ex. 1011)

Buchanan relates to “a farm management system for providing different levels of access and control to different users.” Ex. 1011, 1:5–6.

Figure 1 of Buchanan illustrates the system and is reproduced below.

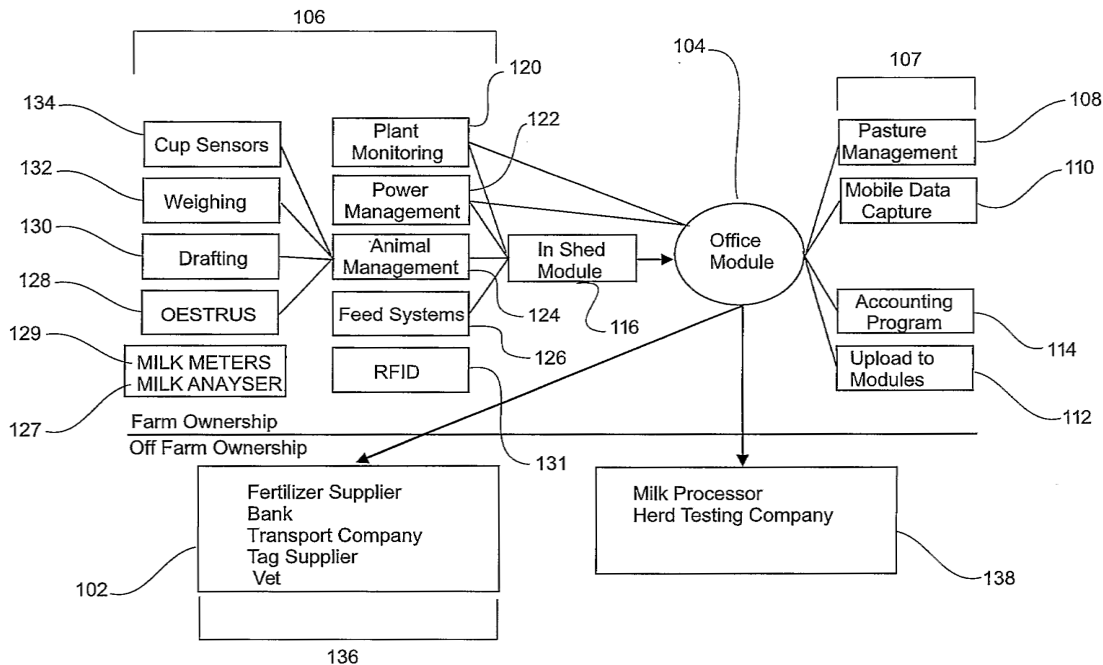


FIGURE 1

Figure 1 is a block diagram of a farm management system implemented for a single farm unit. *Id.* at 10:14–15.

Figure 1 illustrates central office module 104 that communicates with in-shed module 116, located in a milking parlor. *Id.* at 10:15–17. “[I]n-shed module 116 includes data input interfaces to communicate with plant and equipment 106 located in and around the milking shed,” including “physical plant (including vats and coolers) 120, power systems 122, feed systems 126, weigh scales 132, milking cup sensors 134, milk meters 129, in line milk analysers 127 and oestrus detectors 128.” *Id.* at 10:19–20, 10:25–27. Equipment 106 includes an animal identification device 131, which “may, for example, be an RFID scanner reading animal identifying data from animal ID tags moving into vicinity of the scanner.” *Id.* at 10:29–11:2.

Buchanan describes cup sensors that detect somatic cell count and milk meters that read milk volume and/or flow rate. *Id.* at 19:28–29. “The

program stores these readings to be associated with the particular animal being milked” and “determines if any of the received values are outside of a preset range.” *Id.* at 19:29–32.

According to Buchanan, “[d]etecting when a cow is on heat can be done through the cup sensors checking the milk or alternatively the sensors or camera taking a temperature reading from the cow[']s stomach, or an external sensor taking a temperature reading of the cow to determine if the cow is on heat.” *Id.* at 21:3–5. “The management system may be programmed to automatically draft cows for artificial breeding when the cows are on heat.” *Id.* at 21:6–8.

c) Liao (Ex. 1010)

Liao relates to a system for assisting in managing a dairy farm herd. Ex. 1010, 2:23–30. According to Liao, the described system “is capable of modeling decision processes that cannot be explicitly formulated” and “can provide valuable support to the farmer” in “very complex farm management decision making.” *Id.* at 3:15–18. “[T]he proposed dairy farm decisions relate to insemination, dry-cow states, determining individual animal energy demands, ketosis testing and/or mastitis testing.” *Id.* at 5:10–13.

For example, Liao explains the system assists with insemination decisions by combining animal identity with other inputs, including:

a respective number of days in milk, a peak milk yield in a latest lactation, a conception rate of any previous lactations (i.e. the average number of inseminations required for the previous conceptions), a heat-detection status, a time period since a last heat date, a number of lactation periods, a body condition scoring, whether the animal has been selected for culling, and/or an activity status.

Id. at 5:14–23. According to Liao, the output data reflects “whether the animal having this identity should be inseminated within a particular time period.” *Id.* at 5:23–27.

As another example, Liao describes mastitis testing, in which the dairy farm data includes one or more parameters reflecting “a status of a low-activity alarm, a milk conductivity, a relative milk yield, a somatic cell count and a number of days in milk.” *Id.* at 6:32–7:2. According to Liao, the output data reflects “whether the animal with this identity should be tested for mastitis within a particular time period.” *Id.* at 7:2–6.

2. Independent Claim 1

a) Preamble

The preamble of claim 1 recites “[a] computer implemented animal management system.” Ex. 1001, 18:22–23.

Petitioner asserts that Laitinen discloses a “system for the surveillance of a group of animals” that comprises “computers” and collects animal and farm information to take “management decisions.” Pet. 41–42 (citing Ex. 1006, 1:12–18, 4:5–9, 4:23–25, 4:40–53).

Patent Owner does not specifically contest Petitioner’s arguments as to the preamble. *See* PO Resp. We agree with Petitioner that Laitinen discloses the preamble of claim 1; thus, we need not decide whether the preamble is limiting. *See* Ex. 1006, 1:12–18; Ex. 1003 ¶ 170.

b) Limitation 1[A]

Limitation 1[A] recites “a processor communicatively coupled to a non-transitory computer readable media containing program instructions executable to.” Ex. 1001, 18:24–26.

Petitioner asserts that Laitinen discloses the use of a computer, which “necessarily indicates the inclusion of a processor.” Pet. 42 (citing Ex. 1006,

4:5–9, 4:23–25, 4:42–45, Fig. 2; Ex. 1003 ¶ 171). Petitioner contends that Laitinen discloses “gathering, assessing, and presenting data concerning the animal’s health” and “implementing ‘algorithms and knowledge models’” that “would have required program instructions, i.e., software.” *Id.* at 42–43 (citing Ex. 1006, 4:15–15, 4:40–45, 6:29–32; Ex. 1003 ¶ 171); *see also* Pet. Reply 26 (citing Ex. 1006, 4:42–49, 5:21–30). Petitioner further contends that one skilled in the art “would have understood that such program instructions were necessarily stored on some computer-readable media, such as a hard drive so they could be accessed and executed by the processor.” Pet. 43 (citing Ex. 1003 ¶ 172). In its Reply, Petitioner elaborates that both inherency and “the general knowledge in the field” show that one skilled in the art “would have understood the art to disclose, or at least found it obvious to have, one or more processors executing program instructions stored on computer readable media to perform the claimed retrieving, matching, entering, solving, and similar functions.” Pet. Reply 25–26 (citing Ex. 1003 ¶¶ 171, 172).

Patent Owner responds that Petitioner never asserts that Laitinen’s computers “contain program instructions ‘executable to’ perform all of the specific instructions recited in claim elements 1[B] through 1[F].” PO Resp. 57–58 (citing *Garmin Int’l, Inc. v. LoganTree, LP*, 825 F. App’x 894, 899 (Fed. Cir. 2020)) (non-precedential); Ex. 2009 ¶¶ 82, 240–243. Patent Owner further argues that Petitioner “cannot demonstrate the presence of such limitations through inherency because that would require establishing that the specific claimed instructions are ‘necessarily present’ or the ‘natural result’ of the software that they identified.” PO Resp. 58 (citing *PAR Pharm.*, 773 F.3d at 1195–96).

On the full record, we are persuaded by Petitioner’s argument and evidence that Laitinen discloses using a computer, which one skilled in the art would have understood as including a processor communicatively coupled to a non-transitory computer readable media further including program instructions. *See* Pet. 42–43 (citing Ex. 1003 ¶¶ 171–172; Ex. 1006, 4:5–45, 6:29–32, Fig. 2). Specifically, Laitinen describes a local information system being a “normal personal computer,” or terminal unit that includes a database for gathering information. Ex. 1006, 4:5–15. The terminal unit can download software, i.e., program instructions, to gather, assess, and present data concerning the animals’ health. *Id.* at 4:5–15, 4:40–41. As to instructions to perform individual steps, e.g., “retrieving” identification and sensed information, we address these limitations below.

c) Limitations 1[B] and 1[C]

Limitation 1[B] recites “retrieve animal identification information from an RFID device.” Ex. 1001, 18:27–28. Limitation 1[C] recites “retrieve sensed animal information from said RFID device, said sensed animal information generated by a sensor coupled to said RFID device.” *Id.* at 18:29–31.

Petitioner asserts that Laitinen discloses retrieving information from a “pico level device” that is permanently attached to an animal and functions like a conventional identification tool. Pet. 43 (citing Ex. 1006, 3:28–35, 6:2–4). Petitioner contends that “[t]he device can be an ‘implant inside the animal.’” *Id.* (citing Ex. 1006, 3:53–57); *see also id.* at 44 (citing Ex. 1006, 3:51–57 (“the ‘[s]ensor unit connected to the micro controller’ can be ‘an implant inside the animal’”)) (alternation by Petitioner). Also, Petitioner asserts that the pico level device may include a sensor for measuring animal body temperature and “providing location information using GPS.” *Id.* at 44

(citing Ex. 1006, 3:51–57, 4:21–25, 4:37–41, 8:9–11). Accordingly, Petitioner asserts Laitinen teaches retrieving sensed information, e.g., temperature, from the pico level device. *See id.* at 43–44.

Petitioner further asserts that Laitinen discloses the pico level device can be read using Radio Frequency Identification Technology. Pet. 43–44 (citing Ex. 1006, 3:53–57; Ex. 1003 ¶ 174 (citing Ex. 1009)). In its Reply, Petitioner elaborates that “Laitinen discloses ‘software’ (*i.e.*, executable program instructions) running on a ‘computer’ (*i.e.*, processor) for ‘coordinat[ing] radio transmissions’ (e.g., retrieving information from pico device).” Pet. Reply 25–26 (citing Ex. 1006, 4:21–25, 4:37–41) (alternation by Petitioner).

Patent Owner argues that “the computers that Petitioners rely on do not *necessarily* include program instructions that ‘retrieve’ animal identification information or sensed animal information from an RFID device.” PO Resp. 58 (citing Ex. 2009 ¶ 244). Patent Owner argues that “such data *could* be entered into the alleged computers manually,” and “Laitinen does not *necessarily* have an instruction for retrieving manually entered data.” *Id.*

On the full record, we are persuaded by Petitioner’s argument and evidence that Laitinen teaches or suggests program instructions for retrieving identification and sensed information from an RFID. Pet. 43 (citing Ex. 1006, 3:28–35, 3:53–57, 6:2–4). Specifically, Laitinen teaches the pico level device—that functions as an identification tool and sensor unit—includes an RF transmitter/receiver and microcontroller. *See* Ex. 1006, 3:28–35, 3:53–57. The RF transmitter receiver is used to create a radio network with the local level terminal unit. *See id.* at 3:36–39. Laitinen further teaches the pico level device communicates its information to the

personal computer/terminal unit that coordinates radio transmissions and downloads software to perform its functions, including gathering animal data. *Id.* at 4:5–15, 4:21–25, 4:37–41. We are persuaded that one skilled in the art would have recognized that Laitinen’s personal computer/terminal unit includes software for retrieving information from the RFID. *See id.* Accordingly, we agree with Petitioner and credit Dr. Brown-Brandl’s testimony that one skilled in the art would have understood Laitinen as teaching or suggesting software (program instructions) for retrieving identification and sensed information from the pico level RFID. *See* Ex. 1003 ¶¶ 171–174.

d) Limitation 1[D]

Limitation 1[D] recites “match said sensed animal information retrieved from said RFID device to animal information of said animal stored in a database including an amount of milk production or a number of days in milk.” Ex. 1001, 18:32–35.

Petitioner asserts that “Laitinen discloses retrieving animal identification and temperature information from the RFID device,” *i.e.*, sensed information, and storing the information in a database. Pet. 44–45 (citing Ex. 1006, 9:30–33, 6:10–13, 6:36–39, 7:6–25; Ex. 1003 ¶ 176). Petitioner argues that it would have been obvious “to configure Laitinen’s database to match a cow’s sensed temperature readings to its stored milk production and/or [days in milk (DIM)] information” in view of Buchanan and Liao. *Id.* at 47 (citing Ex. 1006, 3:28–31, 6:2–4; Ex. 1003 ¶ 182).

First, Petitioner asserts Laitinen would have expressly motivated one skilled in the art to track milk production by identifying a “vital” need for real-time information about milk production. Pet. 45 (citing Ex. 1006, 1:36–38; Ex. 1003 ¶ 177). Petitioner asserts that “Buchanan discloses a farm

management system that stores milk production information that satisfies the motivation presented in Laitinen.” *Id.* (citing Ex. 1003 ¶ 178). According to Petitioner, Buchanan describes milk meters that take milk volume readings of particular animals and store those readings in a database where the readings are “associated with ‘animal identifiers.’” *Id.* (citing Ex. 1011, 19:17–31, 11:18–22).

Second, Petitioner asserts that one skilled in the art “would have been additionally motivated to store milk production information in Laitinen’s database, because Laitinen and Liao were both concerned with detecting when a cow was in heat for purposes of artificial insemination” and detecting disease. Pet. 46. For example, “Liao expressly teaches that both peak yield of milk and DIM information are ‘applicable to insemination decisions.’” *Id.* (citing Ex. 1010, 9:34–11:10). Likewise, “Liao teaches that milk production information and DIM information are ‘input parameters’ for deciding whether to test a cow for mastitis.” *Id.* at 46–47 (citing Ex. 1010, 15:16–29, 29:15–35).

Petitioner concludes that one skilled in the art would have been able to combine Laitinen’s disclosure of “storing sensed animal temperature data for each animal” with Buchanan’s and Liao’s disclosures of “storing milk production for each animal . . . according to each animal’s identity.” *Id.* at 47 (citing Ex. 1003 ¶ 182).

Patent Owner does not dispute that the combination of Laitinen, Buchanan, and Liao, teaches limitation 1[D] relating to matching sensed animal information to stored animal information, including an amount of milk production. *See* PO Resp. 51–57. Rather, Patent Owner disputes whether one skilled in the art would have found the prior art combination to

have taught or suggested entering the information into a logical expression, which we address below, with reference to limitation 1[E].

On the full record, we are persuaded by Petitioner’s argument and evidence that one skilled in the art would have had a reason to combine Laitinen with Buchanan and Liao to match sensed information to stored information regarding milk production. Specifically, Laitinen describes a need for real-time information about milk production. *See* Ex. 1006, 1:36–38; Ex. 1003 ¶ 177. Buchanan and Liao address that need by describing databases with stored milk production information associated with individual animals. *See* Ex. 1011, 11:18–22, 19:17–31; Ex. 1010, 5:14–25, 10:1–11; Ex. 1003 ¶¶ 178–180. We further credit Dr. Brown-Brandl’s testimony that one skilled in the art “would have understood that the sensed temperature information would be matched to the stored milk production and days in milk information for each animal using the animal’s identification information.” Ex. 1003 ¶ 182.

e) Limitation 1[E]

Limitation 1[E] recites “enter said sensed animal information retrieved from said RFID device and said animal information stored in said database as logical variables into at least one logical expression.” Ex. 1001, 18:36–39.

Petitioner argues the combined art teaches two different logical expressions that meet the requirements of limitation 1[E]. Pet. 47–51. Because we find Petitioner’s arguments persuasive as to the second proposed logical expression (for detecting animal illness (*id.* at 49–51)), we do not address Petitioner’s first proposed logical expression (for determining whether a cow is in heat (*id.* at 48–49)).

Petitioner asserts that “Laitinen discloses a second logical expression that determines the appropriate ‘medical treatment’ for an animal.” Pet. 49 (citing Ex. 1003 ¶ 186). Specifically, Laitinen’s “second logical expression” is “ $x=f^{-1}(y,z)$, wherein the treatment x is a function of initial state vector y and present state vector z ,” and “[t]he state vectors include the animal’s temperature at different times.” *Id.* (citing Ex. 1006, 7:6–13, 7:35–37). According to Petitioner, this second logical expression addresses Laitinen’s “concern for detecting animal disease” and “identifying the appropriate treatment.” *Id.* (citing Ex. 1006, 1:33–35; 4:60–64; Ex. 1003 ¶ 186).

Petitioner asserts that one of ordinary skill would have been “aware that lowered milk production was also an indicator of illness.” Pet. 49 (citing Ex. 1010, 6:31–7:6; Ex. 1023, 4:12–18; Ex. 1008, 6:48–50). Specifically, Liao describes an expression for mastitis testing that includes a first input parameter reflecting animal identity, and one or more parameters that may include relative milk yield and number of days in milk. Ex. 1010, 6:31–7:6; *see also* Ex. 1023, 4:12–18 (“a more reliable indication signal of heat or illness is obtainable from parameters including one or more of the following: the milk rate of flow, the temperature of a milk flow, [and] the milk yield.”). Accordingly, Petitioner asserts that the person of ordinary skill “would have been motivated to modify the second logical expression of Laitinen, *or create a new expression*, to include milk production as an input variable, along with temperature, to improve the reliability of its logical expression determining whether a cow is ill and advising on medical treatments.” Pet. 49–50 (Ex. 1003 ¶ 187) (emphasis added); *see also id.* at 50–51 (“[I]t was known to use an expression to determine, based on the input variables temperature and milk yield, whether a cow was in oestrus or ill.” (citing Ex. 1033, 173–181; Ex. 1003 ¶ 189)).

Patent Owner responds that Laitinen’s second logical expression is an inverse function that “selects a ‘medical treatment’ by identifying prior treatments that produced desirable effects on certain parameters, none of which are ‘milk production.’” PO Resp. 54; Ex. 2009 ¶¶ 227–229; Ex. 1006, 7:35–37. Patent Owner asserts that one skilled in the art would not have added milk production as a parameter to Laitinen’s inverse function because no milk production data is measured when a medicated cow’s milk is withdrawn from production. PO Resp. 55 (citing Ex. 2009 ¶ 231; Ex. 2010, 78:7–80:2). Patent Owner argues also that a milk production parameter would not improve the reliability of Laitinen’s function because “effective medication can cause milk production to increase, decrease, or stay the same.” *Id.* at 56 (citing Ex. 2009 ¶ 232). Accordingly, Patent Owner argues that “the record does not support that combining temperature and milk production into a logical expression was known to aid in distinguishing between illness and other issues.” *Id.*

Petitioner replies that, as to modifying Laitinen’s medical treatment expression, “[m]edicated animals must still be milked, with the milk discarded, and the yield of the discarded milk is still measured.” Pet. Reply 22 (citing Ex. 1055 ¶ 35; Ex. 1005, 81; Ex. 1050, 2702–03; Ex. 1051, 751). Apart from Laitinen’s specific inverse function, Petitioner asserts a “broader argument” that

(1) Laitinen (and a POSA) was concerned with illness and estrus, (2) Laitinen proposed the use of algorithms and models to analyze animal health, including expressions using temperature for detecting illness and estrus, and (3) it was known to a POSA that milk yield was also correlated with illness and estrus.

Id. at 22–23 (citing Pet. 44–51; Ex. 1052, 44; Ex. 1053, 528). Petitioner concludes that one skilled in the art would “have been motivated to modify Laitinen or ‘create a new’ expression that included both temperature and milk production information as input variables to detect estrus or illness.” *Id.* at 23 (citing Pet. 48–51; Ex. 1055 ¶¶ 31–32; Ex. 1033, 172) (emphasis omitted).

Patent Owner responds that Petitioner does not explain why discarded milk measurements “would be used in Laitinen’s inverse function, such as to assess the effectiveness of a medication.” PO Sur-Reply at 22 (citing Ex. 2009 ¶ 232). Patent Owner further argues that we should not consider Petitioner’s argument that one skilled in the art “would have been motivated to ‘create a new expression,’” because that “argument is based on expert testimony, not a patent or printed publication.” *Id.* (citing 35 U.S.C. § 311(b); Pet. Reply 22–23; Ex. 1055 ¶¶ 31–32).

On the full record, we find that a preponderance of the evidence supports Petitioner’s argument that one skilled in the art would have been motivated to combine Laitinen and Liao to provide a logical expression for identifying illness, by entering animal temperature and milk production as variables. Specifically, Laitinen describes a logical expression for identifying medical treatment of illness including animal temperature as a variable. Ex. 1006, 7:4–13, 7:35–55. Laitinen further identifies bovine mastitis as a specific illness of concern. *See id.* at 4:60–64. Likewise, Liao teaches a logical expression for testing for illness, i.e., mastitis, that includes relative milk yield and days in milk (“DIM”) as input parameters. Ex. 1010, 6:31–7:6. We further credit Dr. Brown-Brandl’s testimony, supported by van den Berg and de Mol, that one skilled in the art would have been motivated to combine the variables of animal temperature and milk

production to provide a logical expression for determining illness, specifically mastitis. *See* Ex. 1003 ¶¶ 187–189; Ex. 1023, 4:12–22 (describing milk temperature and milk yield parameters as “more reliable indication signals” of illness); Ex. 1033, 173, 181 (describing a detection model for generating mastitis alerts). The resulting logical expression need not rely on Laitinen’s inverse function for monitoring medical treatment, but instead more broadly include a logical expression to identify animal illness. *See* Ex. 1003 ¶ 189; Ex. 1055 ¶¶ 31–33.

Because we agree with Petitioner’s argument that one skilled in the art would have been motivated to combine the art to generate a logical expression for identifying animal illness, we are not persuaded by Patent Owner’s arguments regarding modifying Laitinen’s specific inverse function or whether milk from a medicated cow would have been discarded or tested. *See* PO Resp. 54–55. Also, we are not persuaded by Patent Owner’s argument that Petitioner’s proposed logical expression for identifying illness is based on expert testimony and not a patent or printed publication. *See* PO Sur-Reply 22. Both Laitinen and Liao describe logical expressions associated with animal health (medication and illness), and Dr. Brown-Brandl’s testimony is further supported by extrinsic evidence, including van den Berg and de Mol. *See* Ex. 1003 ¶¶ 187–189. Of the evidence relied on by Dr. Brown-Brandl, de Mol expressly describes a detection model that includes data such as milk yield and milk temperature. *See* Ex. 1033, 181 (“A mastitis alert is given when the conductivity error is rather high and the sum of standardised errors of conductivity, yield and temperature falls outside a certain confidence interval. An illness alert is based on the sum of standardised errors of yield, temperature, activity and concentrates intake.”).

We are further not persuaded by Patent Owner’s argument that de Mol disparages the use of a logical expression for identifying illness as unlikely to succeed for generating too many false positives. *See* PO Resp. 28, 57 (citing Ex. 1033, 184); Ex. 2009 ¶ 237. Instead, we find de Mol supports the conclusion that one skilled in the art would have had a reasonable expectation of success in creating a logical expression for detecting illness incorporating animal temperature and milk product, even if de Mol’s specific model required additional improvement to reduce false positive alerts. *See* Ex. 1033, 180–84; Ex. 1055 ¶ 19.

Thus, we determine that one skilled in the art would have been motivated to combine Laitinen, Buchanan, and Liao to teach limitation 1[E] with a reasonable expectation of success.

f) Limitation 1[F]

Limitation 1[F] recites “solve said at least one logical expression to obtain a corresponding at least one logical value.” Ex. 1001, 18:40–41.

Petitioner asserts that the logical expression for identifying illness “would be solved to determine if the animal is sick and to identify the appropriate medical treatment.” Pet. 51–52 (citing Ex. 1006, 7:35–37, Ex. 1003 ¶ 191). As discussed above, we are persuaded by Petitioner’s argument that one skilled in the art would have combined Laitinen, Buchanan, and Liao, to provide a logical expression for determining illness.

Patent Owner, supported by Dr. Bowser’s testimony, argues that “milk yield is not a reliable indicator of the effectiveness of treatment and would introduce noise to the system that renders it incapable of identifying the appropriate treatment or whether the animal was ill.” PO Resp. 57 (citing Ex. 2009 ¶ 239). We consider Dr. Bowser’s testimony (Ex. 2009 ¶¶ 232–237, 239), but find it outweighed by the express teachings of the references,

that milk yield and DIM were known parameters used to identify illness, e.g., mastitis. *See* Ex. 1010, 6:31–7:6; Ex. 1033, 173, 181.

On the full record, we are persuaded by Petitioner’s argument that it would have been obvious to solve the combined logical expression of Laitinen, Buchanan, and Liao to obtain a logical value indicating illness. *See* Ex. 1003 ¶¶ 191, 192.

g) Conclusion as to Claim 1

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that independent claim 1 would have been obvious over Laitinen, Buchanan, and Liao.

3. Claim 2

Claim 2 depends from claim 1 and adds “wherein said animal identification information further comprises said animal identification information correspondingly generated by a plurality of RFID devices implanted in a plurality of animals.” Ex. 1001, 18:42–45.

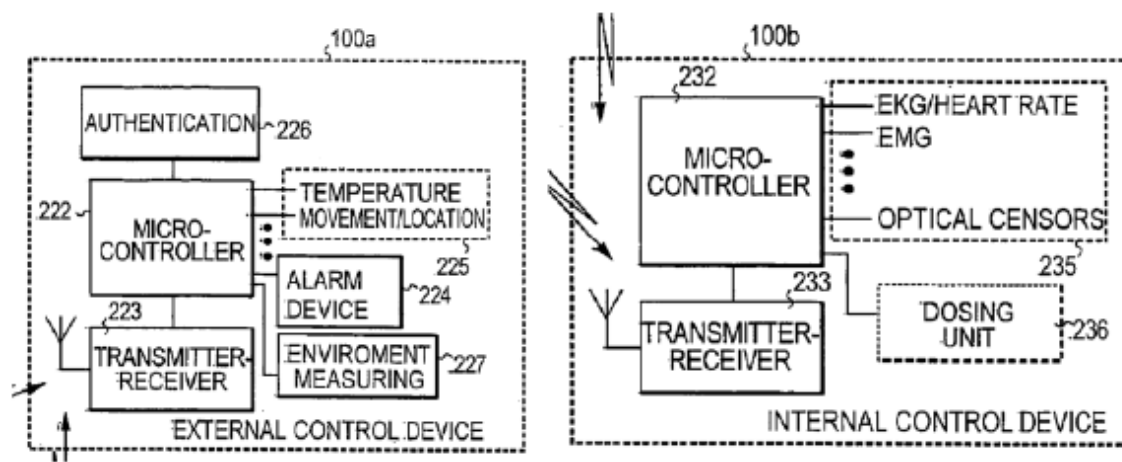
Petitioner asserts that “Laitinen discloses that its ‘[s]ensor unit can also be an *implant* inside the animal, in which case the data it provides can be, for instance, read/transcribed by the pico level equipment using the so-called Radio Frequency Identification Technology.’” Pet. 52 (citing Ex. 1006, 3:53–57, 5:38–43) (alternation by Petitioner). Petitioner further asserts one skilled in the art “would have understood Laitinen to teach using implanted RFID devices, which were common as of the effective date.” *Id.* (citing Ex. 1003 ¶¶ 193–194); *see also id.* at 44 (citing Ex. 1003 ¶ 175; Ex. 1009⁹ ¶¶ 39, 41, 53).

⁹ Pohlkamp, US 2006/0267767 A1, published Nov. 30, 2006.

Patent Owner responds that “Laitinen is explicit: temperature and movement are obtained only from an ‘external’ pico device—*not* an RFID device implanted within an animal.” PO Resp. 59 (citing Ex. 1006, 5:44–47, Fig. 2; Ex. 2009 ¶¶ 254–256). Patent Owner further argues that Petitioner makes “no showing that it would have been obvious or possible to reconfigure Laitinen’s device to meet the claims,” by modifying “Laitinen’s external sensors to be implantable in an animal.” *Id.* at 59–60 (citing Ex. 2009 ¶¶ 250–256). As to Dr. Brown-Brandl’s testimony that an internal device would have avoided detachment (Ex. 1003 ¶ 194), Patent Owner argues that “Laitinen itself suggests a different solution to the purported problem.” PO Resp. 60. Specifically, Laitinen describes a sensor unit separate from the RFID including “detectors which alarm if the pico level device is detached from the animal.” *Id.* (citing Ex. 1006, 3:58–62). Finally, Patent Owner argues that Laitinen’s sensor cannot be the claimed implanted RFID because “Laitinen explicitly says that the sensor unit is separate from the RFID device because the sensor unit is ‘*read/transcribed by the pico level equipment . . .*’” *Id.* at 61 (citing Ex. 1006, 3:53–57; Ex. 2009 ¶¶ 258–259).

Petitioner replies that “Laitinen expressly discloses an implanted RFID devices that measures, among other things, temperature and movement.” Pet. Reply 23–4 (citing Ex. 1006, 3:33–57; Ex. 1055 ¶¶ 26–27). Petitioner also argues that “Laitinen does not describe the pico unit and sensor unit as ‘separate,’ and Figure 2 belies this notion by showing the ‘internal’ pico unit as a single device comprising the RFID transmitter/receiver and sensors.” *Id.* at 25 (citing Ex. 1006, Fig. 2, 5:39–43).

Patent Owner responds that “[e]ven if the sensor unit were an RFID device, [Laitinen’s] disclosure as a whole demonstrates that the sensor unit that measures temperature and movement is located external to the animal.” PO Sur-Reply 24. Patent Owner argues that Laitinen’s Figure 2 illustrates two separate devices: (1) external control device 100a, that measures temperature and movement, and (2) internal control device 100b, that measures EKG, and EMG, and includes optical sensors. *Id.* (citing Ex. 1006, Fig. 2, 5:38–55). We reproduce Patent Owner’s excerpted Laitinen Figure 2 below.



See *id.* at 24. Figure 2 “exemplifies two different pico level devices connected to a local information system. The pico level control device can be either external (100a) or implanted inside the animal’s tissue (100b).” Ex. 1006, 5:38–41. External control device 100a includes microcontroller 222, transmitter-receiver 223, alarm device 224, and sensor unit 225 labeled as “temperature” and “movement/location.” *Id.* at 5:44–49. Internal control device 110b includes microcontroller 232, transmitter-receiver 233, and sensor unit 235 labeled as “EKG/heart rate,” “EMG,” and “optical sensors.” *Id.* at 5:50–55. Patent Owner concludes “[t]here is no teaching or suggestion that Laitinen’s implanted [s]ensor unit is capable of

providing temperature or movement data.” PO Sur-Reply 24–25 (citing Ex. 1006, 3:53–57).

We find a preponderance of the evidence supports Petitioner’s argument. Specifically, we find Laitinen teaches or suggests a pico level device that includes a sensor unit that can be an implant inside the animal and can be read using RF technology and therefore function as an RFID. Ex. 1006, 3:33–57. Laitinen generally teaches a pico level device that includes an RF transmitter/receiver, an antenna, energy supply, microcontroller and sensor unit. *Id.* at 3:21–62. The sensor unit can measure temperature, “can also be an implant inside the animal,” and “can be . . . read/transcribed by the pico level equipment.” *Id.* at 3:51–56. Patent Owner reads this disclosure as teaching an implanted sensor unit separate from the pico level device including RF transmitter/receiver. *See* PO Resp. 61; Ex. 2009 ¶¶ 258–259. We disagree. Instead, we read Laitinen as teaching a sensor within the pico level device, which may be an implant.

Laitinen’s Figure 2 also shows a sensor in an implant, by illustrating sensor 235 within internal device 100b, further including transmitter/receiver 232, and microcontroller 232. Ex. 1006, Fig. 2, 5:38–43. Accordingly, Figure 2 supports Petitioner’s argument. *See id.*

We are further not persuaded by Patent Owner’s argument that Figure 2 precludes an internal device with a temperature sensor by illustrating only external device 100a including temperature sensor 225. *See id.* Rather, Laitinen describes two exemplary pico level devices, one external and one internal/implanted. Ex. 1006, 5:38–55. Although, Laitinen describes each device as including particular sensors, the descriptions are exemplary (“for instance,” “for example”), not exclusionary. *See id.* “The prior art’s mere disclosure of more than one alternative does not constitute a teaching

away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution.” *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Laitinen does not discourage locating a temperature sensor in an internal sensor, it merely describes a preferred embodiment of a temperature sensor in an external sensor. *See Merck*, 874 F.2d at 807 (“[I]n a section 103 inquiry, the fact that a specific embodiment is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered.” (internal quotations and brackets omitted)). Accordingly, we disagree that Laitinen’s disclosure as a whole requires an external sensor unit that measures temperature and movement.

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that claim 2 would have been obvious over Laitinen, Buchanan, and Liao.

4. *Claim 3*

Petitioner asserts “Laitinen discloses collecting sensed animal information, for example, temperature, location, and movement from each cow in the herd having implanted devices.” Pet. 53 (citing Ex. 1006, 3:51–57, 3:63–67, 8:9–11; Ex. 1003 ¶ 196).

Patent Owner does not specifically contest Petitioner’s arguments as to claim 3, apart from depending on claim 2 and thus requiring an implanted RFID. *See* PO Resp. 59–62.

As discussed above, we find that Laitinen teaches an implanted RFID. We further agree with Petitioner that Laitinen teaches or suggests collecting sensed animal information from a plurality of RFID implants in a plurality of animals. *See* Ex. 1006, 3:31–67, Fig. 1; Ex. 1003 ¶ 196.

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that claim 3 would have been obvious over Laitinen, Buchanan, and Liao.

5. *Claim 4*

Claim 4 depends from claim 1 and adds “wherein said sensed animal information comprises sensed physiological information of said animal, and wherein said animal information stored in said database comprises health information associated with said animal, and wherein said logical value indicates an occurrence of an illness of said animal.” Ex. 1001, 18:50–55.

Petitioner asserts that Laitinen teaches a system that collects sensed physiological (temperature) and stored health information. Pet. 53–54 (citing Ex. 1006, 4:12–15, 5:4–8; Ex. 1003 ¶¶ 197–198). Petitioner further refers to its prior discussion of limitations 1[C]–1[F] for entering sensed temperature and stored milk information into a “logical expression to solve for a logical value indicating an occurrence of illness and the appropriate medical treatment.” *Id.* at 54 (citing Ex. 1003 ¶ 199).

Patent Owner responds that Petitioner’s challenge is conclusory and does not address claim 4’s limitations. PO Resp. 62. Specifically, “Petitioners merely cite to Laitinen’s references to gathering, assessing and presenting data concerning the animal’s health and collecting unspecified historical data for health surveillance;” but “[t]hey never contend that such data is entered into the “second logical expression.” *Id.* ((citing Pet. 53–54) (internal quotations and brackets omitted); Ex. 2009 ¶ 265).

We are persuaded by Petitioner’s argument that the Laitinen, Buchanan, and Liao combination teaches or suggests claim 4. “[T]he question under 35 U.S.C. § 103 is not merely what the references expressly teach but what they would have suggested to one of ordinary skill in the art

at the time the invention was made.” *Merck*, 874 F.2d at 807. Specifically, Laitinen teaches a local system that gathers, assesses and presents “data concerning the animals’ health.” Ex. 1006, 4:12–15. With this “collected historical data . . . the system enables individual health surveillance and the creation of remote health care services.” *Id.* at 5:4–6. We find these disclosures teach or suggest using stored health data for health care services.

As discussed above as to limitations 1[E] and 1[F] with respect to this combination, we find that the evidence supports Petitioner’s argument that one skilled in the art would have been motivated to combine Laitinen and Liao to provide a logical expression for identifying illness as a logical value, using sensed and stored animal information as variables. *See supra* (citing Ex. 1006, 4:60–64, 7:4–13, 7:35–55; Ex. 1010, 6:31–7:6). We further find that the evidence supports the conclusion that one skilled in the art would have included stored animal health data in the logical expression for identifying animal illness, thereby providing remote health care services. *See* Ex. 1003 ¶¶ 198–199.

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that claim 4 would have been obvious over Laitinen, Buchanan, and Liao.

6. *Claim 6*

Claim 6 depends from claim 4 and adds

wherein said animal identification information further comprises said animal identification information correspondingly generated by a plurality of RFID devices implanted in a plurality of animals, wherein said sensed animal information comprises said sensed animal information generated by said plurality of RFID devices implanted in said plurality of animals, wherein said at least one logical expression solves as to a selected period of time as to said plurality of

animals correspondingly associated with said animal identification information if a greater than selected number of said illness have occurred.

Ex. 1001, 18:61–19:4.

Petitioner refers to its prior arguments regarding sensed animal information generated by plurality of RFIDs implanted in a plurality animals, and used in a logical expression that solves for the occurrence of illness. Pet. 54–55 (citing Ex. 1003 ¶¶ 200–201). Petitioner then asserts that Laitinen teaches determining illness over a selected period of time by measuring an initial state vector and present state vector “containing the animals’ physiological data measured at discrete points in time.” *Id.* at 55 (citing Ex. 1006, 4:65–5:8, 7:6–11; Ex. 1003 ¶¶ 202–203). Petitioner further contends that one skilled in the art “would have been motivated to implement Laitinen’s system to detect whether the occurrence of illnesses in a herd of cattle is greater than a selected number of illnesses to detect a disease outbreak.” *Id.* at 55–56 (citing Ex. 1006, 1:30–35; Ex. 1003 ¶ 204). Dr. Brown-Brandl explains that a disease monitoring system could have been implemented by counting the detected occurrences of individual illness and comparing the occurrences against a preselected threshold within a selected period of time. Ex. 1003 ¶ 204.

Patent Owner does not specifically contest Petitioner’s arguments as to claim 6, apart from requiring an implanted RFID due to its dependence on claim 2. *See* PO Resp. 59–62.

As discussed above, we find that Laitinen teaches an implanted RFID. *See supra*. We further agree with Petitioner that one skilled in the art would have been motivated to use the logical expression for determining illness to detect a disease outbreak by monitoring whether a threshold number of

illness occurred over a selected period of time. Ex. 1003 ¶ 204; Ex. 1006, 1:30–35, 4:50–5:12, 7:6–11.

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that claim 6 would have been obvious over Laitinen, Buchanan, and Liao.

G. Asserted Obviousness of Claims 17–20 over Laitinen and Brune

Petitioner contends that claims 17–20 would have been obvious over the combination of Laitinen and Brune. Pet. 56–64. Patent Owner disputes Petitioner’s contentions. PO Resp. 63–64.

1. Independent Claim 17

a) Claim 17 preamble and limitations 17[A]–[C], [E]–[G]

Claim 17 recites similar limitations to claim 1. *See* Ex. 1001, 20:23–41. Accordingly, Petitioner cites Laitinen for teaching the preamble of claim 17, and limitations 17[A]–17[C]. Pet. 56–57 (citing Pet. 41–44; Ex. 1003 ¶¶ 205–208).

Petitioner next addresses the differences between claims 1 and 17. *See* Pet. 57–62. Claim 17 expressly recites retrieving animal information from an RFID device implanted in an animal.¹⁰ For claim 17, Petitioner contends that “Laitinen teaches retrieving animal identification information from an RFID device *implanted* in an animal as explained in element 1[B] . . . and claim 2,” and “retrieving sensed temperature, movement, and movement/location information from said *implanted* RFID device as described in element 1[C] and claim 3.” *Id.* at 57 (citing Ex. 1003 ¶¶ 207, 208) (emphasis added).

¹⁰ Compare limitation 1[B]: retrieve animal identification information from an RFID device” to limitation 17[B]: “retrieve animal identification information from an RFID device *implanted in an animal*.” Ex. 1001, 18:27–28, 20:28–29.

In another difference, limitation 17[E] recites “stored” animal information, as opposed to specifying “an amount of milk production or a number of days in milk,” in limitation 1[D]. Ex. 1001, 18:32–35, 20:33–35. For limitation 17[E], Petitioner relies solely on Laitinen for teaching stored animal information in the form of stored movement/location information and previously stored temperature measurements. Pet. 59–60 (citing Ex. 1006, 4:9–15, 4:45–49, 5:26–28, 7:35–37; Ex. 1003 ¶¶ 215, 216).

Because Petitioner relies on Laitinen alone for sensed and stored information as to claim 17, Petitioner further relies on Laitinen alone for the logical expression and logical value of limitations 17[F] and [G], respectively. *See* Pet. 61–62. Specifically, Petitioner contends that Laitinen discloses a first logical expression for determining if the cow is in heat and a second logical expression for determining animal illness and medical treatment. *Id.* at 61 (citing Ex. 1006, 8:5–11). According to Petitioner, Laitinen’s first logical expression inputs sensed temperature as a first variable and stored animal movement/location as the second variable, to solve for a heat-indicative value. *Id.* at 61–62 (citing Ex. 1006, 8:11–15; Ex. 1003 ¶¶ 217, 218, 221). Laitinen’s second logical expression inputs sensed temperature (“present state vector *z*”) as a first variable and previously stored temperature information (“initial state vector *y*”) as a second variable, to solve for an animal illness or medical treatment value. *Id.* (citing Ex. 1006, 7:4–11, 7:35–37; Ex. 1003 ¶¶ 219, 220, 222).

b) Limitation 17[D]

Limitation 17[D] recites: “retrieve date-time information from said RFID device.” Ex. 1001, 20:32. Petitioner combines Laitinen with Brune for this limitation. *See* Pet. 57–59.

(1) Petitioner's Arguments

First, Petitioner asserts that Laitinen stores “date-time information” in its databases. Pet. 57–58 (citing Ex. 1003 ¶ 209). As examples, Petitioner asserts: (1) “Laitinen stores the time of administration of medicaments” to calculate “time elapsed,” and (2) “Laitinen generates an *initial* state vector and a *present* state vector containing temperatures at different points in time,” thereby storing the dates and times of those measurements. *Id.* (citing Ex. 1006, 7:1–3, 7:6–11). Additionally, Petitioner asserts that “Laitinen teaches monitoring temperature and movement to determine if a cow is in heat” where one of ordinary skill would store “several measurements over a period of time to filter out anomalies and increase reliability.” *Id.* at 58 (citing Ex. 1006, 8:5–15; Ex. 1003 ¶ 210).

Second, Petitioner asserts that Brune discloses transmitting a message from a bolus implant within the stomach of a cow to a remote receiver. *Id.* 58 (citing Ex. 1008, 4:1–3, 2:4–11). Petitioner further asserts that Brune discloses that “[e]ach transmitted message includes the temperature data, identification data unique to a specific cow, and ‘*date and/or time stamp data* corresponding to the *discrete point in time at which the temperature was sensed* by the bolus.’” *Id.* (quoting Ex. 1008, 4:1–11).

To combine the teachings, Petitioner contends “[i]n view of Laitinen’s use of date-time information, and Brune’s explicit disclosure of transmitting date/time-stamped animal temperature data from an implanted bolus, the POSA would have been motivated to modify Laitinen’s RFID system to retrieve from the bolus date-time stamp data associated with each retrieved temperature measurement.” *Id.* at 58–59 (citing Ex. 1003 ¶ 212). Petitioner further contends that one skilled in the art would have a reasonable expectation of success in the combination “because both Laitinen and Brune

are retrieving similar data from an implanted animal sensor.” *Id.* at 59 (citing Ex. 1003 ¶ 213). As to the specific modification, Petitioner contends that it would have been “relatively easy” to add “a simple time clock to generate time-stamps” to Laitinen’s RFID that already includes GPS and “can accommodate a wide variety of sensors and hardware components.” *Id.* (citing Ex. 1006, 3:51–67, 5:50–55; Ex. 1003 ¶ 214).

(2) Patent Owner’s Arguments

Patent Owner responds that Petitioner’s challenge of claims 17–20 based on Laitinen and Brune fails for similar reasons as Petitioner’s challenge of claim 1 based on obviousness over Laitinen, Buchanan, and Liao. PO Resp. 63–64 (citing Ex. 2009 ¶¶ 266–268). Patent Owner argues that Petitioner does not rely on Brune to cure any of Laitinen’s deficiencies identified in connection with the challenge of claim 1. *Id.* at 63. Specifically, Patent Owner argues that Petitioner relies solely on Laitinen to teach: limitation 17[A], a processor coupled to a non-transitory computer readable media containing program instructions to perform the claimed steps; limitation 17[B], an RFID implanted in an animal; limitation 17[C], retrieving sensed animal information from an RFID device; and 17[F] entering sensed and stored animal information into at least one logical expression. *Id.*; *see also* Ex. 2009 ¶¶ 266–269.

c) Analysis

On the full record, we determine Petitioner has shown by a preponderance of the evidence that claim 17 would have been obvious over the combination of Laitinen and Brune. First, we find that Laitinen teaches or suggests the preamble of claim 17 and limitations 17[A]–17[C], including an implanted RFID for measuring animal temperature, for the reasons given above as to claims 1 and 2. *See* Ex. 1006, 3:28–57, 4:5–45, 5:37–55, 6:2–4,

8:9–11, Fig. 2; Ex. 1003 ¶¶ 205–208. Although not specifically relied on by Petitioner for limitation 17[C], we additionally find that Brune also teaches an RFID “bolus including a temperature sensor and transmitter placed in the stomach of a ruminant animal.” Ex. 1008, 2:4–5; *see Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1011 (Fed. Cir. 2023) (“[T]he Board may resolve an issue the parties put in dispute by making findings supported by the evidence, regardless of whether any party advocated for that particularly expressed finding.”).

Second, we find that Laitinen teaches or suggests limitation 17[E] (matching sensed information to stored information), because Laitinen teaches gathering local animal information throughout an animal’s lifetime and comparing stored data to present data. *See* Ex. 1006, 4:9–49, 5:26–28, 7:35–37; Ex. 1003 ¶¶ 215, 216.

Third, we find that Laitinen teaches or suggests limitations 17[F] and 17[G] in the form of either first or second logical expression identified by Petitioner. As to the first logical expression for determining heat, we find that Laitinen teaches or suggests entering sensed temperature information and stored animal movement information as variables into a logical expression to solve for heat as the logical value. Ex. 1006, 8:11–15; Ex. 1003 ¶¶ 217, 218, 221. As to the second logical expression for determining illness or medical treatment, we find that Laitinen teaches or suggests entering stored information (initial state vector y) and sensed information (present state vector z) to solve for animal illness and medical treatment as the logical value. Ex. 1006, 7:4–11, 7:35–37; Ex. 1003 ¶¶ 219, 220, 222.

Fourth, as to limitation 17[D], we are persuaded by Petitioner’s argument that a person of ordinary skill in the art would have been

motivated to combine Brune’s RFID bolus, including a date and time stamp for sensed temperature information, with Laitinen’s use of date-time information. Pet. 57–59; Ex. 1003 ¶¶ 209–212; Ex. 1006, 7:1–11, 8:5–15; Ex. 1008, 2:4–11, 4:1–11. We are further persuaded that one ordinary skill in the art would have had a reasonable expectation of success in combining Laitinen and Brune. Ex. 1003 ¶¶ 213, 214.

d) Conclusion as to Claim 17

Based on our review of the complete trial record, we determine that Petitioner establishes by a preponderance of the evidence that independent claim 17 would have been obvious over Laitinen and Brune.

2. Claim 18

Petitioner refers to its prior arguments as to claim 4 for Laitinen teaching “entering sensed animal temperature information in the database” and “storing animal health information in the database.”¹¹ Pet. 62 (citing Ex. 1003 ¶¶ 224, 225). As to the last “wherein” clause of claim 18, Petitioner argues that Laitinen teaches determining illness over a selected period of time by measuring an initial state vector and present state vector “containing the animals’ physiological data measured at discrete points in time.” *Id.* at 63 (citing Ex. 1006, 7:1–3, 7:6–11, 7:35–37; Ex. 1003 ¶ 226). Petitioner further argues that Laitinen associates “occurrence of an illness . . . with said animal identification information because the sensed animal information is retrieved from the RFID device along with the animal’s identification information.” *Id.* (citing Ex. 1006, 2:47–48, 3:28–31, 6:2–4).

¹¹ Although Petitioner refers to Laitinen in view of Buchanan for limitation 18[B], Petitioner only cites to Laitinen with respect to limitation 4[B]. Pet. 53–54, 62.

Patent Owner does not separately argue claim 18, instead relying on its prior argument against claim 1. *See* PO Resp. 63–64 (citing Ex. 2009 ¶ 269).

Based on the evidence presented in the Petition and for the reasons discussed above for claims 1 and 17, we are persuaded by Petitioner’s arguments and evidence showing that the combination of Laitinen and Brune teaches the limitations of claim 18.

3. Claims 19 and 20

Petitioner presents evidence that the combination of Laitinen and Brune teaches the limitations of claims 19 and 20. Pet. 63–64 (citing Ex. 1003 ¶¶ 226–229). Patent Owner does not separately argue claims 19 and 20, instead relying on its prior argument against claim 1. *See* PO Resp. 63–64.

Based on the evidence presented in the Petition and for the reasons discussed above for claims 1 and 17, we are persuaded by Petitioner’s arguments and evidence showing that the combination of Laitinen and Brune teaches the limitations of claims 19 and 20.

IV. EVIDENTIARY ISSUES

Patent Owner moves to exclude Exhibits 1040, 1041, and 1044. Paper 38. We do not rely on any of Exhibits 1040, 1041, and 1044 to decide this matter. Thus we dismiss Patent Owner’s motion to exclude as moot.

V. CONCLUSION¹²

For the reasons discussed above, Petitioner has shown by a preponderance of the evidence that claims 1–4, 6, and 17–20 of the '206 patent are unpatentable.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–4, 6	103(a)	Trevarthen	1–4	6
17–20	103(a)	Trevarthen, Brune	17–20	
1–4, 6	103(a)	Laitinen, Buchanan, Liao	1–4, 6	
17–20	103(a)	Laitinen, Brune	17–20	
Overall Outcome			1–4, 6, 17–20	

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–4, 6, and 17–20 of the '206 patent have been proven to be *unpatentable*;

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed as moot*; and

¹² Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

FURTHER ORDERED that because this is a Final Written Decision, 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.

IPR2024-00875
Patent 9,844,206 B2

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