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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* YEHUDA BINDER and BENJAMIN MAYTAL

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Appeal 2018-007694  
Application 13/733,634  
Technology Center 2400

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Before JOHN A. JEFFERY, JUSTIN BUSCH, and LINZY T. McCARTNEY, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Under 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1–3, 13, 31, 33–35, 38, 39, 100–102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201, and 223. Claims 4–12, 14–30, 32, 36, 37, 40–99, 103, 105, 106, 109–116, 119, 121–139, 141, 143–158, 160–167, 169–192, 194–197, 199, 200, 202–222, and 224–235 were withdrawn from consideration. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM and enter a new ground of rejection.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as May Patents Ltd. Appeal Br. 1.

## STATEMENT OF THE CASE

Appellant's invention is a control system used in connection with a building or vehicle, where the system uses a server implementing gateway or control functionalities. *See* Abstract; Spec. 1.<sup>2</sup> To this end, the invention uses sensors that provide information on environmental conditions and events, and actuators that either (1) effect or generate a physical phenomenon responsive to an electrical command, which can be an electrical signal (e.g., voltage or current), or (2) change a device's characteristic, such as its resistance or impedance. Spec. 16–18.

Controller functionality can be integrated in a server 151 external to the building as shown in Figures 15 and 15a, where sensor data is relayed to the controller via a router inside a building and the Internet. *See* Spec. 162–63. As shown in Figure 15a, command data is sent from the server to field units via the Internet, the router, and associated control networks within the building. *See id.* Claim 1 is illustrative:

1. A system for commanding an actuator operation in response to a sensor response associated with a phenomenon according to a control logic, for use with one or more in-building or in-vehicle networks for communication in a building or in a vehicle, and an external network at least in part external to the building or to the vehicle, the system comprising:

a router in the building or in the vehicle, coupled between the one or more in-building or in-vehicle networks and the external network, and operative to pass digital data between the in-building and external networks;

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<sup>2</sup> Throughout this opinion, we refer to the substitute Specification filed April 19, 2013.

a first device in the building or in the vehicle comprising, or connectable to, the sensor that responds to the phenomenon, said first device is operative to transmit a sensor data corresponding to the phenomenon to said router over the one or more in-building or in-vehicle networks;

a second device in the building or in the vehicle comprising, or connectable to, an actuator that affects the phenomenon, the second device is operative to execute actuator commands received from said router over said one or more in-building or in-vehicle networks; and

a control server external to the building or to the vehicle storing said control logic and coupled to said router over the Internet via the external network,

wherein said control server is operative to receive the sensor data from said router, to produce actuator commands in response to the received sensor digital data according to said control logic, and to transmit the actuator commands to said second device via said router.

#### RELATED APPEAL

Appellant informs us of a related appeal in copending application 15/657,163. The Board has not yet decided this appeal.

### THE REJECTIONS<sup>3</sup>

The Examiner rejected claims 2, 13, 31, 38, 39, 101, 102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, and 201<sup>4</sup> under 35 U.S.C. § 112, second paragraph as indefinite. Non-Final Act. 3–11.<sup>5</sup>

The Examiner rejected claims 1–3, 13, 31, 33–35, 38, 39, 100–102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201, and 223 under 35 U.S.C. § 101 as ineligible. Non-Final Act. 11–13.

The Examiner rejected claims 1–3, 13, 100, 117, 118, 140, 142, 159, 168, 193, 201, and 223 under 35 U.S.C. § 103 as unpatentable over Beliles (US 2007/0283005 A1; published Dec. 6, 2007) and Abe (US 2012/0253480 A1; published Oct. 4, 2012). Non-Final Act. 14–21.

The Examiner rejected claims 31 and 33–35 under 35 U.S.C. § 103 as unpatentable over Beliles, Abe, and Ansari (US 2010/0071053 A1; published Mar. 18, 2010). Non-Final Act. 21–24.

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<sup>3</sup> Because the Examiner’s objections (Non-Final Act. 3) are petitionable—not appealable—matters, they are not before us. *See* MPEP § 706.01 (“[T]he Board will not hear or decide issues pertaining to objections and formal matters which are not properly before the Board.”); *see also* MPEP § 1201 (“The Board will not ordinarily hear a question that should be decided by the Director on petition . . .”).

<sup>4</sup> Although the Examiner rejects these claims separately as indefinite, we nonetheless consolidate the separate rejections here for clarity and brevity. Also, despite erroneously omitting claims 33–35 that depend from claim 31 that was rejected as indefinite, we nonetheless reproduce the claims so rejected as articulated by the Examiner.

<sup>5</sup> Throughout this opinion, we refer to (1) the Non-Final Rejection mailed May 10, 2018 (“Non-Final Act.”); (2) the Appeal Brief filed May 17, 2018 (“Appeal Br.”); (3) the Examiner’s Answer mailed June 25, 2018 (“Ans.”); and (4) the Reply Brief filed July 8, 2018 (“Reply Br.”).

The Examiner rejected claims 38 and 39 under 35 U.S.C. § 103 as unpatentable over Beliles, Abe, and Noonan (US 2003/0105389 A1; published June 5, 2003). Non-Final Act. 24–26.

The Examiner rejected claims 101 and 102 under 35 U.S.C. § 103 as unpatentable over Beliles, Abe, and Wechs (US 2013/0139440 A1; published June 6, 2013). Non-Final Act. 26–28.

The Examiner rejected claims 104 and 107 under 35 U.S.C. § 103 as unpatentable over Beliles, Abe, and Gelvin (US 2015/0046582 A1; published Feb. 12, 2015). Non-Final Act. 28–30.

The Examiner rejected claim 108 under 35 U.S.C. § 103 as unpatentable over Beliles, Abe, Gelvin, and Rofougaran (US 2013/0308581 A1; published Nov. 21, 2013). Non-Final Act. 30–32.

The Examiner rejected claim 120 under 35 U.S.C. § 103 as unpatentable over Beliles, Abe, Noonan, and Ansari. Non-Final Act. 32–33.

The Examiner rejected claim 198 under 35 U.S.C. § 103 as unpatentable over Beliles, Abe, Ansari, and Balgard (US 2009/0224906 A1; published Sept. 10, 2009). Non-Final Act. 33–35.

#### THE INELIGIBILITY REJECTION

The Examiner determines that the claimed invention is directed to an abstract idea, namely (1) collecting information via sensors; (2) analyzing the information; and (3) producing/transmitting actuator commands as a response. *See* Non-Final Act. 12; Ans. 11. The Examiner adds that the claims do not include elements that add significantly more than the abstract idea, but merely recite elements that are well-understood, routine, and conventional. *See* Non-Final Act. 12; Ans. 12–13.

Appellant argues that not only did the Examiner fail to identify the purported abstract idea clearly, the claimed invention is eligible because, among other things, it is tied to a particular machine, and improves the communication field by implementing a control loop using communication based on multiple devices over multiple networks to detect when abnormalities occur. Appeal Br. 29–31; Reply Br. 14–19.

Appellant adds that not only did the Examiner fail to show that the recited elements are well-understood, routine, and conventional, but they add significantly more to the abstract idea by, for example, carrying power and data over the same cable as recited in claims 104, 107, and 108. Appeal Br. 30–32; Reply Br. 16.

## ISSUE

Under § 101, has the Examiner erred in rejecting claims 35 and 36 as directed to ineligible subject matter? This issue turns on whether the claims are directed to an abstract idea and, if so, whether the recited elements—considered individually and as an ordered combination—transform the nature of the claims into a patent-eligible application of that abstract idea.

## PRINCIPLES OF LAW

An invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[I]aws of nature, natural phenomena, and abstract ideas” are not patentable. *See, e.g., Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is “directed to.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 187 n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 67 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 U.S. at 176; *see also id.* at 191 (“We view respondents’ claims as nothing more than a process for molding rubber

products and not as an attempt to patent a mathematical formula.”). That said, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221 (quotation marks omitted). “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

In January 2019, the United States Patent and Trademark Office (“USPTO”) published revised guidance on the application of § 101. *See* USPTO’s *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Guidance”). Under that guidance, we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of

organizing human activity such as a fundamental economic practice, or mental processes); and

(2) additional elements that integrate the judicial exception into a practical application (*see* MANUAL OF PATENT EXAMINING PROCEDURE (MPEP) §§ 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 08.2017, Jan. 2018)).

Only if a claim (1) recites a judicial exception, and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

(3) adds a specific limitation beyond the judicial exception that is not well-understood, routine, and conventional in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, and conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

*See* Guidance, 84 Fed. Reg. at 56.

## ANALYSIS

*Claims 1–3, 13, 31, 33–35, 38, 39, 100–102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201, and 223: Alice/Mayo Step One*

Representative independent claim 1 recites:

1. A system for commanding an actuator operation in response to a sensor response associated with a phenomenon according to a control logic, for use with one or more in-building or in-vehicle networks for communication in a building or in a vehicle, and an external network at least in part external to the building or to the vehicle, the system comprising:

a router in the building or in the vehicle, coupled between the one or more in-building or in-vehicle networks and the external network, and operative to pass digital data between the in-building and external networks;

a first device in the building or in the vehicle comprising, or connectable to, the sensor that responds to the phenomenon, said first device is operative to transmit a sensor data corresponding to the phenomenon to said router over the one or more in-building or in-vehicle networks;

a second device in the building or in the vehicle comprising, or connectable to, an actuator that affects the phenomenon, the second device is operative to execute actuator commands received from said router over said one or more in-building or in-vehicle networks; and

a control server external to the building or to the vehicle storing said control logic and coupled to said router over the Internet via the external network,

wherein said control server is operative to receive the sensor data from said router, to produce actuator commands in response to the received sensor digital data according to said control logic, and to transmit the actuator commands to said second device via said router.

As the disclosure explains, Appellant's invention is a control system used in connection with a building or vehicle, where the system uses a server implementing gateway or control functionalities. *See* Abstract; Spec. 1. To this end, the invention uses sensors that provide information on environmental conditions and events, and actuators that effect or generate a physical phenomenon responsive to an electrical command, which can be an electrical signal (e.g., voltage or current), or change a device's characteristic, such as its resistance or impedance. Spec. 16–18.

A key aspect of the invention is that controller functionality can be integrated in a server 151 external to the building as shown in Figures 15

and 15a, where sensor data is relayed to the controller via a router inside a building and the Internet. *See* Spec. 162–63. As shown in Figure 15a, command data is sent from the server to field units via the Internet, the router, and associated control networks within the building. *See id.*

Turning to claim 1, we first note that the claim recites a system and, therefore, falls within the machine category of § 101. But despite falling within this statutory category, we must still determine whether the claim is directed to a judicial exception, namely an abstract idea. *See Alice*, 573 U.S. at 217. To this end, we must determine whether the claim (1) recites a judicial exception, and (2) fails to integrate the exception into a practical application. *See* Guidance, 84 Fed. Reg. at 52–55. If both elements are satisfied, the claim is directed to a judicial exception under the first step of the *Alice/Mayo* test. *See id.*

In the rejection, the Examiner determines that claim 1 is directed to an abstract idea, namely (1) collecting information via sensors; (2) analyzing the information; and (3) producing/transmitting actuator commands as a response. *See* Non-Final Act. 12; Ans. 11. To determine whether a claim recites an abstract idea, we (1) identify the claim’s specific limitations that recite an abstract idea, and (2) determine whether the identified limitations fall within certain subject matter groupings, namely, (a) mathematical

concepts<sup>6</sup>; (b) certain methods of organizing human activity<sup>7</sup>; or (c) mental processes.<sup>8</sup>

Here, apart from the recited “actuator,” “sensor,” “network,” “router,” “first device,” “second device,” and “control server,” all of claim 1’s recited limitations fit squarely within at least one of the above categories of the USPTO’s guidelines. When read as a whole, the recited limitations are directed to (1) obtaining information regarding a phenomenon; (2) analyzing this information remotely; and (3) providing an associated instruction to affect the phenomenon.

First, despite reciting a first device and associated sensor, a human can nonetheless (1) “respond[] to the phenomenon” by sensing its characteristics, such as by merely observing the phenomenon, and (2) transmit corresponding data to a remote location by communicating that observation to another person, such as a colleague. *Cf. CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011) (noting that a recited step that utilized a map of credit card numbers to determine the

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<sup>6</sup> Mathematical concepts include mathematical relationships, mathematical formulas or equations, and mathematical calculations. *See* Guidance, 84 Fed. Reg. at 52.

<sup>7</sup> Certain methods of organizing human activity include fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions). *See* Guidance, 84 Fed. Reg. at 52.

<sup>8</sup> Mental processes are concepts performed in the human mind including an observation, evaluation, judgment, or opinion. *See* Guidance, 84 Fed. Reg. at 52.

validity of a credit card transaction could be performed entirely mentally by merely using *logical reasoning* to identify a likely instance of fraud by merely *observing* that numerous transactions using different credit cards all originated from the same IP address); *TLI Comm., LLC v. AV Automotive, LLC*, 823 F.3d 607, 610–14 (Fed. Cir. 2016) (holding ineligible claims reciting recording and administering digital images including (1) recording images using a digital pick-up unit in a telephone unit; (2) storing the recorded images; (3) transmitting data including the images and classification information to a server; (4) extracting the received classification information; and (5) storing the images in the server considering that information); *In re Salwan*, 681 F. App'x 938, 939–41 (Fed. Cir. 2017) (unpublished) (holding ineligible claims reciting, among other things, receiving medical records information and transmitting reports where the claimed invention's objective was to enable electronic communication of tasks that were otherwise done manually using paper, phone, and facsimile machine); *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1344 (Fed. Cir. 2018) (noting that a nontechnical human activity of passing a note to a person who is in a meeting or conversation as illustrating the invention's focus, namely providing information to a person without interfering with the person's primary activity); *LendingTree, LLC v. Zillow, Inc.*, 656 F. App'x 991, 993–94, 996 (Fed. Cir. 2016) (unpublished) (holding ineligible claims reciting, among other things, (1) receiving selection criteria from lending institutions and credit data from a computer user, and (2) forwarding the credit data to selected lending institutions as directed to an abstract idea).

Second, despite reciting a control server, a human, such as a colleague, could (1) receive the data corresponding to the phenomenon; (2)

analyze that data entirely mentally or with pen and paper; (3) based on this analysis, produce an associated instruction or command; and (4) transmit the command to the observer either orally or in writing to affect the phenomenon.

For example, an employee in an office building may observe that his or her computer monitor does not display anything, and call a help desk in another building informing an information technology (IT) technician of this observed phenomenon. Upon receiving and analyzing this data based on the technician's knowledge and experience, the technician could determine that the problem may be due to the monitor not receiving electrical power. To remedy this problem, the technician could then produce and transmit an instruction or command to the employee by telling the employee to plug the monitor in a wall outlet to provide electrical power to the monitor, thus affecting the phenomenon.

In short, given their high level of generality, the recited limitations involve both mental processes and certain methods of organizing human activity and, therefore, recite abstract ideas. First, the recited limitations involve mental processes, at least to the extent that humans can not only *observe* phenomena, but also *think* about such observed phenomena to determine an associated command to affect the phenomena, as in the above example. That is, apart from the recited "actuator," "sensor," "network," "router," "first device," "second device," and "control server," the above-noted functions could be performed entirely mentally or by using pen and paper and, therefore, they fall squarely within the mental processes category of the USPTO's guidelines and, accordingly, recite an abstract idea. *See* Guidance, 84 Fed. Reg. at 52 (listing exemplary mental processes including

observation and evaluation). *Cf. CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011) (noting that a recited step that utilized a map of credit card numbers to determine the validity of a credit card transaction could be performed entirely mentally by merely using *logical reasoning* to identify a likely instance of fraud by merely *observing* that numerous transactions using different credit cards all originated from the same IP address).

Second, the recited limitations recite abstract ideas because they also involve certain methods of organizing human activity, at least with respect to communicating information between people, such as phenomenon observations and associated commands to affect the phenomenon as in the above example. *See* Guidance, 84 Fed. Reg. at 52 (listing exemplary methods of organizing human activity, including personal interactions and following rules or instructions). *Cf. Salwan*, 681 F. App'x at 939–41 (holding ineligible claims reciting, among other things, receiving medical records information and transmitting reports where the claimed invention's objective was to enable electronic communication of tasks that were otherwise done manually using paper, phone, and facsimile machine); *Interval Licensing*, 896 F.3d at 1344 (noting that a nontechnical human activity of passing a note to a person who is in a meeting or conversation as illustrating the invention's focus, namely providing information to a person without interfering with the person's primary activity); *LendingTree*, 656 F. App'x at 993–94, 996 (holding ineligible claims reciting, among other things, (1) receiving selection criteria from lending institutions and credit data from a computer user, and (2) forwarding the credit data to selected lending institutions as directed to an abstract idea).

Therefore, apart from the recited “actuator,” “sensor,” “network,” “router,” “first device,” “second device,” and “control server,” all of claim 1’s recited limitations are within the mental processes and certain methods of organizing human activity categories of the USPTO’s guidelines and, therefore, recite an abstract idea. *See* Guidance, 84 Fed. Reg. at 52.

Notably, the recited “actuator,” “sensor,” “network,” “router,” “first device,” “second device,” and “control server” are the only recited elements beyond the abstract idea, but these additional elements, considered individually and in combination, do not integrate the abstract idea into a practical application when reading claim 1 as a whole.

In reaching this conclusion, we are not persuaded that the claimed invention is tied to a particular machine or apparatus to satisfy the machine-or-transformation test as Appellant seems to suggest.<sup>9</sup> *See* App. Br. 29–30. To be sure, a claim that transforms a particular article to another state or thing or is tied to a particular machine to satisfy the machine-or-transformation test can be a “useful clue” to eligibility in the *Alice/Mayo*

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<sup>9</sup> Although the machine-or-transformation test applies generally to process claims, we nevertheless see no reason to treat independent system claim 1 any differently with respect to its eligibility, just as the U.S. Supreme Court did for the system claims in *Alice*. *See Alice*, 573 U.S. at 208 (“[T]he system claims are no different from the method claims in substance.”). This approach is also consistent with the Federal Circuit’s approach for the computer-readable medium claims in *CyberSource*, as well as its predecessor court’s treating an apparatus claim as a method claim for eligibility purposes in *In re Abele*, 684 F.2d 902 (CCPA 1982). *See CyberSource*, 654 F.3d at 1374 (noting that the underlying invention for both the method and computer-readable medium claims was a method for detecting credit card fraud—not a manufacture for storing computer-readable information); *see also id.* (noting that the *Abele* court treated apparatus claim 7 as a method claim for purposes of determining eligibility).

framework. *See Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014) (quoting *Bilski v. Kappos*, 561 U.S. 593, 594 (2010)); *see also In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008), *aff'd sub nom. Bilski*, 561 U.S. at 593. Despite not being the sole eligibility test, the machine-or-transformation test can nevertheless indicate whether additional elements integrate the exception into a practical application. *See Guidance*, 84 Fed. Reg. at 55 (citing MPEP §§ 2106.05(b), (c)).

It is well settled, however, that whether a recited device is a tangible system or, in 35 U.S.C. § 101 terms, a “machine,” is not dispositive. *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 770 (Fed. Cir. 2019) (quoting *In re TLI Commc'ns*, 823 F.3d 607, 611 (Fed. Cir. 2016) (“[N]ot every claim that recites concrete, tangible components escapes the reach of the abstract-idea inquiry.”). For a machine to impose a meaningful limit on the claimed invention, it must play a significant part in permitting a claimed method to be performed, rather than function solely as an obvious mechanism for permitting a solution to be achieved more quickly. *Versata Dev. Grp. v. SAP America, Inc.*, 793 F.3d 1306, 1335 (Fed. Cir. 2015); *see also* MPEP § 2106.05(b)(II) (citing *Versata*). The latter role is the case here, for the recited router, sensor, actuator, and devices are merely obvious mechanisms that achieve the recited solution more quickly, namely (1) obtaining information regarding a phenomenon; (2) analyzing this information remotely; and (3) providing an associated instruction to affect the phenomenon faster than by using manual methods. That is, despite the recited tangible components that are used to achieve this end, the focus of the claim is nonetheless directed to (1) obtaining information regarding a phenomenon; (2) analyzing this information remotely; and (3) providing an

associated instruction to affect the phenomenon, albeit using computer- and network-based components to achieve that end. *Cf. ChargePoint*, 920 F.3d at 772–73 (holding ineligible claim reciting a network-controlled charge transfer system for electric vehicles comprising, among other things, a communication device configured to connect a controller to a mobile wireless communication device for communication between the electric vehicle operator and the controller); *see also id.* at 772 (noting that the lack of an indication that (1) the disclosed invention was intended to improve the recited components, including the communications devices, or (2) that the inventors viewed the combination of those components as their invention).

So, leaving aside the fact that satisfying the machine-or-transformation test is not dispositive to eligibility, *see Bilski*, 561 U.S. at 604, that test is not satisfied here in any event. Therefore, the recited additional elements, namely the recited “actuator,” “sensor,” “network,” “router,” “first device,” “second device,” and “control server,” do not integrate the exception into a practical application. *See Guidance*, 84 Fed. Reg. at 55 (citing MPEP § 2106.05(b), (c)).

We also find unavailing Appellant’s contention that the claimed invention is eligible because it ostensibly improves the communication field by implementing a control loop using communication based on multiple devices over multiple networks to detect when abnormalities occur. Appeal Br. 31; Reply Br. 17–19. First, the claimed invention does not improve a computer or associated components’ functionality or efficiency, or otherwise change the way those devices function, at least in the sense contemplated by the Federal Circuit in *Enfish LLC v. Microsoft Corporation*, 822 F.3d 1327 (Fed. Cir. 2016). The claimed self-referential table in *Enfish* was a specific

type of data structure designed to improve the way a computer stores and retrieves data in memory. *Enfish*, 822 F.3d at 1339. To the extent Appellant contends that the claimed invention uses such a data structure to improve a computer's functionality or efficiency, or otherwise change the way that device functions, there is no persuasive evidence on this record to substantiate such a contention.

Nor is this invention analogous to that which the court held eligible in *McRO, Inc. v. Bandai Namco Games America, Inc.*, 837 F.3d 1299 (Fed. Cir. 2016). There, the claimed process used a combined order of specific rules that rendered information in a specific format that was applied to create a sequence of synchronized, animated characters. *McRO*, 837 F.3d at 1315. Notably, the recited process *automatically animated characters* using particular information and techniques—an improvement over manual three-dimensional animation techniques that was not directed to an abstract idea. *Id.* at 1316.

But unlike the claimed invention in *McRO* that improved how the physical display operated to produce better quality images, the claimed invention here is directed to, at a high level of generality, (1) obtaining information regarding a phenomenon; (2) analyzing this information remotely; and (3) providing an associated instruction to affect the phenomenon. The claimed invention not only recites abstract ideas, namely mental processes and certain methods of organizing human activity as noted previously, but also does not improve a display mechanism as was the case in *McRO*. See *SAP Am. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018) (distinguishing *McRO*).

To the extent Appellant contends that the claimed invention is rooted in technology because it is ostensibly directed to a technical solution (*see* Appeal Br. 31; Reply Br. 17–19), we disagree. Even assuming, without deciding, that the claimed invention can (1) obtain information regarding a phenomenon; (2) analyze this information remotely; and (3) provide an associated instruction to affect the phenomenon faster than doing so manually, any speed increase comes from the capabilities of the generic computer components—not the recited process itself. *See FairWarning IP, LLC v. Iatric Systems, Inc.*, 839 F.3d 1089, 1095 (Fed. Cir. 2016) (citing *Bancorp Services, LLC v. Sun Life Assurance Co.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (“[T]he fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter.”)); *see also Intellectual Ventures I LLC v. Erie Indemnity Co.*, 711 F. App. 1012, 1017 (Fed. Cir. 2017) (unpublished) (“Though the claims purport to accelerate the process of finding errant files and to reduce error, we have held that speed and accuracy increases stemming from the ordinary capabilities of a general-purpose computer do not materially alter the patent eligibility of the claimed subject matter.”) (quotation marks, bracketed alteration, and citation omitted). Moreover, Appellant’s reliance on the Board decisions on page 18 of the Reply Brief is likewise unavailing, for not only do the facts in those cases differ from those at issue here, as non-precedential decisions, those cases are not binding on this panel in any event. *See* PTAB Standard Operating Procedure 2 (Rev. 10) (“SOP 2”) § I(B), <https://www.uspto.gov/sites/default/files/documents/SOP2%20R10%20FINAL.pdf>.

The Examiner’s reliance on the court’s decision in *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016) is reasonable here, particularly since the recited actuator can be a *display* as the Examiner indicates. *See* Non-Final Act. 12; *see also* Ans. 12; Spec. 33 (“An actuator may be a display for presentation of visual data or information, commonly on a screen . . . .”), 145 (same), 53 (“The actuator may be a monochrome, grayscale or color display for visually presenting information . . . .”). Notably, in this implementation, the display-based actuator can “affect a phenomenon” by merely displaying information or changing the displayed information responsive to an associated command.

Given this display-based implementation, the display-based invention in *Electric Power* is analogous to the claimed invention. There, the court held ineligible a recited method of *detecting* events on an interconnected power grid from plural data streams in real time and analyzing those events, where the method included, among other things, *displaying* event analysis results and diagnoses, metrics, and concurrent visualization of measurements from the data streams, and deriving a composite reliability indicator. *Electric Power*, 830 F.3d at 1351–56. Our emphasis underscores two key functions of the invention in *Electric Power*, namely “detecting” and “displaying,” that are at issue here, namely with respect to the functions of the recited sensor and actuator. Notably, in *Electric Power*, the claimed invention was ineligible because it merely gathered and analyzed information, and then *displayed results*—an abstract idea that is strikingly similar to the one at issue here, particularly when the recited actuator is merely a display as noted previously.

Appellant's contention that the claimed invention ostensibly does not collect information (Reply Br. 15) is belied by the fact that sensor data is, in fact, collected and sent to the control server for analysis to produce an actuator command. Nevertheless, to the extent that Appellant contends that the Examiner's reliance on *Electric Power* is erroneous (see Reply Br. 15–16), we disagree.

The display-based invention in *University of Florida Research Foundation, Inc. v. General Electric Co.*, 916 F.3d 1363 (Fed. Cir. 2019) is also analogous to the claimed invention. There, the court held ineligible a claim reciting a method of integrating physiologic treatment data that (1) converted physiologic data received from at least two bedside machines into machine-independent data; (2) performed at least one programmatic action involving that data; and (3) presented results from that action upon a bedside graphical user interface as directed to the abstract idea of collecting, analyzing, manipulating, and displaying data. *Univ. of Fla. Research Found.*, 916 F.3d at 1365–69; see also *TDE Petroleum Data Sol., Inc. v. AKM Enter., Inc.*, 657 F. App'x 991, 992–94 (Fed. Cir. 2016) (unpublished) (holding ineligible claims reciting automatically selecting a well operation state upon determining validity of at least some mechanical and hydraulic data received from associated systems as directed to the abstract idea of storing, gathering, and analyzing data). Similarly, the claimed invention here (1) obtains information regarding a phenomenon; (2) analyzes this information remotely; and (3) provides an associated instruction to affect the phenomenon which, as noted previously, can merely affect information displayed on a display-based actuator.

Nor is this a case involving eligible subject matter as in *DDR Holdings, LLC v. Hotels.Com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014). There, instead of a computer network operating in its normal, expected manner by sending a website visitor to a third-party website apparently connected with a clicked advertisement, the claimed invention in *DDR* generated and directed the visitor to a hybrid page that presented (1) product information from the third party, and (2) visual ““look and feel”” elements from the host website. *DDR*, 773 F.3d at 1258–59. Given that particular Internet-based solution, the court held that the claimed invention did not merely use the Internet to perform a business practice known from the pre-Internet world, but rather was necessarily rooted in computer technology to overcome a problem specifically arising in computer networks. *Id.* at 1257.

That is not the case here. As noted previously, Appellant’s claimed invention, in essence, is directed to mental processes and certain methods of organizing human activity, namely (1) obtaining information regarding a phenomenon; (2) analyzing this information remotely; and (3) providing an associated instruction to affect the phenomenon—albeit by using computer-based components to achieve that end. The claimed invention here is not necessarily rooted in computer technology in the sense contemplated by *DDR* where the claimed invention solved a challenge particular to the Internet. Although Appellant’s invention uses various computer-based and networking components, the claimed invention does not solve a challenge particular to the components used to implement this functionality.

In short, the claim’s focus is not on improving machines or computers as tools, but rather on certain independently abstract ideas that use those tools. *See FairWarning*, 839 F.3d at 1095 (quotation marks and citations

omitted). As with the ineligible claimed invention in *BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281, 1284–91 (Fed. Cir. 2018), the claimed invention does not improve a computer’s functionality or that of its associated components. *See BSG*, 899 F.3d at 1288 (“While the presentation of summary comparison usage information to users improves the quality of the information added to the database, an improvement [in] . . . the information stored by a database is not equivalent to an improvement in the database’s functionality.”).

On this record, then, the claimed invention does not recite additional elements that (1) improve a computer itself; (2) improve another technology or technical field; (3) implement the abstract idea in conjunction with a particular machine or manufacture that is integral to the claim; (4) transform or reduce a particular article to a different state or thing; or (5) apply or use the abstract idea in some other meaningful way beyond generally linking the abstract idea’s use to a particular technological environment, such that the claim as a whole is more than a drafting effort designed to monopolize the exception. *See Guidance*, 84 Fed. Reg. at 55 (citing MPEP §§ 2106.05(a)–(c), (e)). In short, the claim’s additional elements do not integrate the abstract idea into a practical application when reading claim 1 as a whole.

In conclusion, although the recited functions may be beneficial by (1) obtaining information regarding a phenomenon; (2) analyzing this information remotely; and (3) providing an associated instruction to affect the phenomenon, a claim for a useful or beneficial abstract idea is still an abstract idea. *See Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379–80 (Fed. Cir. 2015).

We, therefore, agree with the Examiner that claim 1 is directed to an abstract idea.

*Claims 1–3, 13, 31, 33–35, 38, 39, 100–102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201, and 223: Alice/Mayo Step Two*

Turning to *Alice/Mayo* step two, claim 1’s additional recited elements, namely the recited “actuator,” “sensor,” “network,” “router,” “first device,” “second device,” and “control server”—considered individually and as an ordered combination—do not provide an inventive concept that amounts to significantly more than the abstract idea when reading claim 1 as a whole. *See Alice*, 573 U.S. at 221; *see also* Guidance, 84 Fed. Reg. at 56. As noted above, the claimed invention merely uses generic computing components to implement the recited abstract idea.

To the extent Appellant contends that the recited limitations, including those detailed above in connection with *Alice* step one, add significantly more than the abstract idea to provide an inventive concept under *Alice/Mayo* step two (*see* App. Br. 30–32; Reply Br. 16), these limitations are not *additional* elements *beyond* the abstract idea, but rather are directed to the abstract idea as noted previously. *See BSG*, 899 F.3d at 1290 (explaining that the Supreme Court in *Alice* “only assessed whether the claim limitations *other than the invention’s use of the ineligible concept* to which it was directed were well-understood, routine and conventional”) (emphasis added); *see also* Guidance, 84 Fed. Reg. at 56 (instructing that *additional* recited elements should be evaluated in *Alice/Mayo* step two to determine whether they (1) *add* specific limitations that are not well-understood, routine, and conventional in the field, or (2) simply *append*

well-understood, routine, and conventional activities previously known to the industry (citing MPEP § 2106.05(d)).

Rather, the the recited “actuator,” “sensor,” “network,” “router,” “first device,” “second device,” and “control server” are the only additional recited elements whose generic computing functionality is well-understood, routine, and conventional. *See Mortgage Grader*, 811 F.3d at 1324–25 (noting that components such as an “interface,” “network,” and “database” are generic computer components that do not satisfy the inventive concept requirement); *buySAFE v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed. Cir. 2014) (“That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive.”). *Accord* Spec. 15–57 (describing generic computer components used to implement the invention), Spec. 11–12 (describing known systems in connection with Figure 1, some of which are shown in Figure 2); Non-Final Act. 11; Non-Final Act. 12 (concluding that the recited (1) actuator command; (2) router; (3) devices; and (4) control server are additional elements that do not add significantly more than the abstract idea); Ans. 13 (noting that these elements are taught by the cited prior art).

As in *Electric Power*, the claimed invention here does not require (1) a new source or type of information; (2) new techniques for analyzing that information; (3) an inventive set of components or methods, such as measurement devices or techniques that would generate new data; or (4) invoke any inventive programming. *See Electric Power*, 830 F.3d at 1355. Rather, as in *Electric Power*, the claimed invention here requires nothing more than off-the-shelf, conventional computer, network, and display

technology for gathering, sending, and presenting the desired information via the recited display-based actuator as noted previously. *See id.*

We reach the same conclusion regarding the recited cable that can carry electric power and a communication signal simultaneously in claims 104, 107, and 108, despite Appellant's contention to the contrary (Appeal Br. 32). Not only are such cables known in the art as noted in the Specification, the Examiner also finds that they are in the cited prior art, including Gelvin. *See* Non-Final Act. 28–29; Spec. 62 (discussing known systems that use Broadband over Power Lines), 67 (citing known standards for carrying power and data signals).

To the extent that Appellant contends that the Examiner allegedly did not comply with the evidentiary requirements under the April 2018 USPTO memorandum mandating these requirements for ineligibility rejections after *Berkheimer v. HP, Inc.*, 881 F.3d 1360, 1369 (Fed. Cir. 2018) (Appeal Br. 30; Reply Br. 16), Appellant does not persuade us of error in this regard. To be sure, the Examiner must show—with supporting facts—that certain claim elements are well-understood, routine, and conventional where such a finding is made. *See Berkheimer*, 881 F.3d at 1369 (noting that whether something is well-understood, routine, and conventional to a skilled artisan at the time of the invention is a factual determination). In light of this factual determination, the USPTO issued a memorandum requiring that Examiners support a finding that an *additional element* of a claim is well-understood, routine, and conventional. Robert W. Bahr, *Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (Berkheimer v. HP, Inc.)*, USPTO, Apr. 19, 2018 (“*Berkheimer Memo.*”), at 2–3 (noting that the *Berkheimer*

decision clarifies the inquiry whether an *additional element* (or combination of *additional elements*) represents well-understood, routine, and conventional activity).

Although Appellant quotes *Berkheimer* for the notion that merely because something is disclosed in a piece of prior art does not mean that it is well-understood, routine, and conventional (Appeal Br. 16; Reply Br. 30), this alone does not demonstrate error in the Examiner's findings in this regard. To be sure, the *Berkheimer* Memorandum indicates that merely finding an additional element in a single patent or published application is not sufficient to demonstrate that the additional element is well-understood, routine, and conventional unless these publications demonstrate that the additional element is widely prevalent or in common use in the relevant field. *See Berkheimer* Memo. § III(A)(3).

But apart from merely alleging that the Examiner has not shown that any single element or any combination thereof is well-understood, routine, and conventional, Appellant does not persuasively rebut the Examiner's findings in this regard, including the Examiner's taking of Official Notice, which is one of the four acceptable findings explained in the *Berkheimer* Memorandum. *See Berkheimer* Memo. § III(A)(4). To the extent that Appellant contends that the arguments in the Briefs somehow constitute an adequate and seasonable traversal of the Examiner's taking of Official Notice in this regard, including *explaining why* the noticed fact is not considered to be widely prevalent or in common use in the relevant field consistent with the requirements in Section 2144.03(C) of the MPEP, we disagree. *See Berkheimer* Memo. § III(A)(4) (citing MPEP § 2144.03). Nor does Appellant persuasively rebut the Examiner's reliance on the

Specification's Background section in connection with these findings, including the admitted prior art shown in Figure 1 and its associated description on pages 6, 7, 11, and 12 of the Specification. *See* Ans. 12–13.<sup>10</sup>

In any event, to the extent that Appellant contends that the additional recited elements, namely the recited “actuator,” “sensor,” “network,” “router,” “first device,” “second device,” and “control server,” are not well-understood, routine, and conventional, the evidence on this record, including the cited case law, prior art, and Appellant's own Specification, shows otherwise.

In conclusion, the additional recited elements—considered individually and as an ordered combination—do not add significantly more than the abstract idea to provide an inventive concept under *Alice/Mayo* step two when reading the claims as a whole. *See Alice*, 573 U.S. at 221; *see also* Guidance, 84 Fed. Reg. at 56.

Therefore, we are not persuaded that the Examiner erred in rejecting claims 1–3, 13, 31, 33–35, 38, 39, 100–102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201, and 223 as ineligible under § 101.

#### THE INDEFINITENESS REJECTION

We do not sustain the Examiner's indefiniteness rejection of claims 2, 13, 31, 38, 39, 101, 102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, and 201. Non-Final Act. 3–11. In the rejection, the Examiner

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<sup>10</sup> Although the Examiner cites paragraphs 17, 18, and 33 of the published application (US 2013/0201316 A1) corresponding to the present application (Ans. 12–13), these citations nevertheless correspond to pages 6, 7, 11, and 12 of the substitute Specification, which we refer to for clarity and consistency.

finds that various limitations and their associated functionalities in claims 2, 13, 31, 38, 39, 101, 102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, and 201, such as the recited particulars of the router in claim 2, in-building or in-vehicle networks in claim 31, etc., are not distinctly defined in the Specification nor identified in the drawings, thus rendering their use “unclear and confusing.” *See* Non-Final Act. 3–11; Ans. 5–11. The Examiner adds that claim 13 is incomplete for omitting essential elements, namely details regarding the piezoelectric effect measured by the piezoelectric sensor, including temperature, pressure, acceleration, strain, or force. Non-Final Act. 4; Ans. 6.

But as Appellant indicates (Appeal Br. 10), the test for definiteness under 35 U.S.C. § 112, second paragraph, is whether “those skilled in the art would understand what is claimed when the claim is read in light of the specification.” *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted). Despite the Examiner’s determinations to the contrary, we find the claims satisfy this test particularly because the present application is written for those ordinarily skilled in the art who come to the application with knowledge of what has come before. *See LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005). Therefore, it is unnecessary to spell out every detail of the invention; only enough must be included in the disclosure to ensure the claims are clear, and convince a person of ordinary skill in the art that the inventor possessed the invention, and to enable such a person to make and use the invention without undue experimentation. *See id.*

Therefore, the Examiner’s indefiniteness rejection that is apparently premised on the claims lacking sufficient details regarding the particular

identified elements to render the claims unclear (*see* Non-Final Act. 3–11; Ans. 5–11) runs counter to these fundamental legal principles and, consequently, is untenable on this record. And to the extent that the Examiner’s articulated basis for the indefiniteness rejection implicates a lack of enablement or possession under § 112, first paragraph, such a rejection is not before us, nor will we speculate in that regard here in the first instance on appeal.

Nor does the fact that a claim is broad in scope mean that it is indefinite. *See In re Gardner*, 427 F.2d 786, 788 (CCPA 1970) (“Breadth is not indefiniteness.”); MPEP § 2173.04 (citing *Gardner*). Therefore, the Examiner’s “lack of detail” rationale for the indefiniteness rejection (*see* Non-Final Act. 3–11; Ans. 5–11) runs counter to this fundamental legal principle. Although the various recited elements that the Examiner identifies in the rejection may lack detail, that does not mean the claims are indefinite: rather, they are simply broad. Again, to the extent that the Examiner’s articulated basis for the indefiniteness rejection implicates a lack of enablement or possession under § 112, first paragraph, such a rejection is not before us, nor will we speculate in that regard here in the first instance on appeal.

Therefore, we are persuaded that the Examiner erred in rejecting claims 2, 13, 31, 38, 39, 101, 102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, and 201 as indefinite.<sup>11</sup>

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<sup>11</sup> Although not dispositive to our decision, we note that the Examiner’s and Appellant’s reliance on Wikipedia (Non-Final Act. 4; Ans. 6; Reply Br. 12) is dubious, for such unreliable, non-peer-reviewed sources have low probative value. *See Bing Shun Li v. Holder*, 400 F. App’x 854, 857 (5th Cir. 2010) (unpublished) (noting Wikipedia’s unreliability and citing *Badasa*

### THE OBVIOUSNESS REJECTION OVER BELILES AND ABE

Regarding independent claim 1, the Examiner finds that Beliles discloses every recited element except for a control server external to the building or vehicle storing control logic and coupled to the router over the Internet via the recited external network. Non-Final Act. 14–15. The Examiner, however, cites Abe for teaching this feature in concluding that the claim would have been obvious. Non-Final Act. 15–16.

Appellant argues that not only do the cited references fail to teach (1) an external network; (2) control server; and (3) sensing and affecting the same phenomenon, but the proposed combination of Abe and Beliles is improper in any event. Appeal Br. 32–39; Reply Br. 19–21. According to Appellant, the Examiner’s articulated rationale to combine the references is improper because (1) the primary reference Beliles already has the capabilities for which Abe was cited; (2) it is unclear why these two references are analogous to each other; (3) the Examiner’s obviousness rationale is inconsistent with the patentably-distinct inventions articulated in the Examiner’s earlier restriction requirement; and (4) the Examiner picks and chooses subject matter from different embodiments in Abe to arrive at the claimed invention. Appeal Br. 35–39; Reply Br. 20–21. Appellant argues various other recited limitations summarized below.

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*v. Mukasey*, 540 F.3d 909, 910–11 (8th Cir. 2008)); *see also Ex parte Three-Dimensional Media Group, Ltd.*, No. 2009-004087, 2010 WL 3017280 (BPAI 2010) (non-precedential), at \*17 (“Wikipedia is generally not considered to be as trustworthy as traditional sources for several reasons, for example, because (1) it is not peer reviewed; (2) the authors are unknown; and (3) apparently anyone can contribute to the source definition”).

## ISSUES

I. Under § 103, has the Examiner erred by finding that Beliles and Abe collectively would have taught or suggested:

- (1) a control server external to a building or vehicle storing control logic and coupled to a router over the Internet via the recited external network as recited in claim 1?
- (2) a third device external to the building, where the device is operative to transmit additional sensor data corresponding to the phenomenon to the control server over a network, where the control server is operative to receive the additional sensor data and produce actuator commands responsive to the received data according to control logic as recited in claim 3?
- (3) a device out of a group consisting of the router, first device, second device, and control server is operative for communicating with another device from the group over multiple data paths as recited in claim 117?
- (4) the control server is operative to analyze the sensor data versus the transmitted actuator commands as recited in claim 140?
- (5) the analysis is used to estimate or determine a phenomenon's characteristics or parameter as recited in claim 142?

II. Is the Examiner's proposed combination of the cited references supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusion?

ANALYSIS

*Claims 1, 100, and 223*

On this record, we are not persuaded of error in the Examiner’s obviousness rejection of independent claim 1. As shown in Beliles’s Figure 1 reproduced below, Beliles discloses a computer network 100 in a building comprising, among other things, fire sensor 123 connected to sensor translator 132 that is, in turn, connected to router 152 that is connected to network cloud 110 to which fire suppression device 161 is connected. See Beliles ¶¶ 15–17, 27–29, 34.

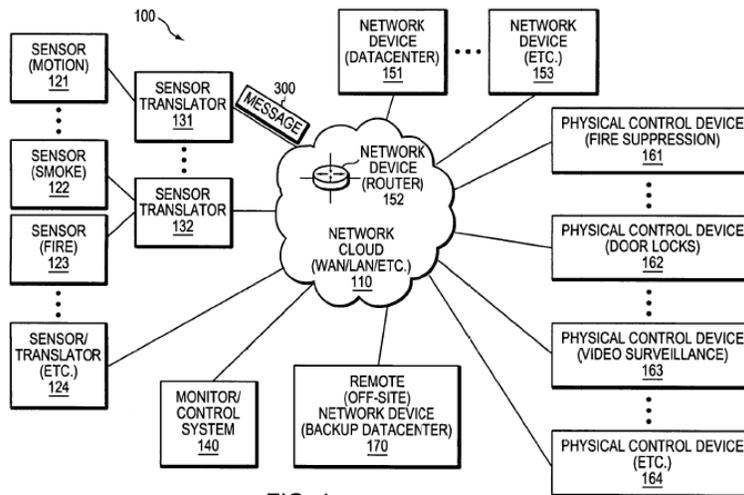


FIG. 1

**Beliles’s computer network 100 in Figure 1**

Although physical-based events, such as detected fires, can be conveyed from the sensors to monitoring/control system 140 using proprietary signaling systems, such as an internal fire alarm system, these events can also be sent over the Internet. Beliles ¶ 34. To the extent that Appellant contends that this Internet-based functionality must be limited to

an internal network within the building, and somehow cannot involve an external network (*see* Reply Br. 19), we disagree. Not only is there no persuasive evidence on this record to substantiate Appellant's contention, ordinarily skilled artisans would understand that external networks are the very essence of the Internet and the *World Wide Web*. Therefore, Beliles at least suggests an external network.

Given this Internet-based functionality, we see no error in the Examiner's reliance on Abe merely to show that providing an Internet-based control apparatus 101 that is external to a building is known in the art as shown in Abe's Figure 15, and that providing such external control functionality in connection with Beliles's system would have been at least an obvious variation. *See* Abe ¶ 93. That detected events associated with fires can be conveyed *over the Internet* from the sensors to monitoring/control system 140 as noted in Beliles's paragraph 34 only bolsters the Examiner's findings and conclusions in this regard. Nor does Appellant persuasively rebut the Examiner's mapping of Abe's control apparatus 101 to a control server (*see* Ans. 16)—a mapping that we find reasonable on this record given the control apparatus's external control capabilities for in-building networked sensor-based systems via Internet 300 in Figure 15. *See* Abe ¶¶ 93–96. As the Examiner indicates, Beliles teaches sensing and affecting the same fire-based phenomenon via fire sensors and a fire suppression system—the latter initiated responsive to fire detected via the sensors. *See* Ans. 14 (citing Beliles ¶¶ 17, 28).

Nor are we persuaded of error in the Examiner's rationale for combining Beliles and Abe despite Appellant's arguments to the contrary (*see* Appeal Br. 35–39; Reply Br. 19–21). A key aspect of the Examiner's

rationale relies on the control logic functionality of Abe's control apparatus in Figure 6, including its multiple input and threshold features, in connection with the second embodiment of Figure 15. *See* Ans. 14–15. Given this functionality, the Examiner concludes that the control logic of the Abe/Beliles system under the proposed combination would enable analyzing and using multiple input values from plural sensors along with threshold values before generating actuator control commands. Ans. 15.

We see no error in these findings and conclusions. Although the control logic functionality in Abe's Figure 6 and corresponding paragraphs 56 to 58 pertain to Abe's first disclosed embodiment, we nevertheless see no reason why this control apparatus functionality could not also be provided in conjunction with that of Abe's second embodiment in Figure 15 as the Examiner proposes despite Appellant's arguments to the contrary (Appeal Br. 38–39). First, although Figure 15 embodiment uses a control apparatus 101 instead of control apparatus 100 in Figure 1, the two respective control apparatuses are nonetheless strikingly similar in many respects. As shown in Abe's Figures 2 and 15, control apparatus 101 has the same sections 11–15 as control apparatus 100, where the latter section, namely control rule accumulation section 14, has control rules that the Examiner maps to the recited control logic. *See* Ans. 15. Given this striking similarity, the Examiner's reliance on Abe's first and second embodiments is reasonable, at least regarding the particular functionality from these embodiments on which the Examiner relies.

Second, it is well settled that “[c]ombining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness.” *Boston Scientific Scimed, Inc. v. Cordis Corp.*, 554 F.3d

982, 991 (Fed. Cir. 2009). That is the case here. In short, in light of Abe, the Examiner's proposed enhancement to Beliles is not based on impermissible hindsight as Appellant alleges (Reply Br. 21), but rather uses prior art elements predictably according to their established functions—an obvious improvement. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007).

Appellant's contention that it is ostensibly unclear why Beliles and Abe are analogous *to each other* (Appeal Br. 37–38) is unavailing. Prior art is analogous if it is (1) from the same field of endeavor regardless of the problem addressed, or (2) reasonably pertinent to the particular problem with which the inventor is involved. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). The analogous art test, then, does not ask whether the prior art references are analogous *to each other* as Appellant seems to suggest (*see* Appeal Br. 38–39), but rather asks whether the references are analogous to the claimed subject matter. *See id.*; *see also In re Kahn*, 441 F.3d 977, 986–87 (Fed. Cir. 2006). Because Beliles and Abe both involve commanding an actuator responsive to a sensor response as the Examiner indicates (Ans. 16), the references are not only in the same field of endeavor as Appellant's invention, but they are also reasonably pertinent to Appellant's problem in that regard.

Lastly, to the extent that Appellant contends that the Examiner's obviousness rationale is inconsistent with the patentably-distinct inventions articulated in a restriction requirement made during prosecution (*see* Appeal Br. 38), such a contention is unavailing. First, the propriety of the Examiner's restriction requirement that was made during prosecution is a petitionable matter that is not before us, as are objections regarding

procedural inconsistencies associated with that requirement. *See* MPEP § 706.01 (“[T]he Board will not hear or decide issues pertaining to objections and formal matters which are not properly before the Board.”); *see also* MPEP § 1201 (“The Board will not ordinarily hear a question that should be decided by the Director on petition . . . .”); MPEP § 1002.02(c) (requiring that Technology Center Directors decide petitions from an Examiner’s final decision requiring restriction in patent applications). Therefore, to the extent there are inconsistencies between the Examiner’s restriction requirement and obviousness rejection, the Examiner’s restriction requirement is not before us, nor are we bound by it. Rather, only the Examiner’s obviousness rejection is before us—a rejection that is (1) articulated in the non-final Office Action from which this appeal was taken, and (2) based solely on the cited prior art.

Appellant’s request, then, that we remand the case to the Examiner to issue a new Office Action withdrawing the earlier restriction requirement (Appeal Br. 38) pertains to petitionable matters that are not before us, and we therefore deny the request.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 1, and claims 100 and 223 not argued separately with particularity.

### *Claim 3*

We also sustain the Examiner’s rejection of claim 3 reciting, in pertinent part, a third device external to the building, where the device is operative to transmit additional sensor data corresponding to the phenomenon to the control server over a network, where the control server is operative to receive the additional sensor data and produce actuator

commands responsive to the received data according to control logic. Despite Appellant's arguments to the contrary (App. Br. 39–40; Reply Br. 22), we see no error in the Examiner's reliance on the cited prior art for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 16–17; Ans. 16–17 (citing Abe ¶¶ 38, 104–105, 108; Figs. 15–16). That both Abe and Beliles use multiple sensors to produce associated actuator commands only bolsters the Examiner's findings and conclusions in this regard. In short, the Examiner's proposed enhancement merely predictably uses prior art elements according to their established functions—an obvious improvement. *KSR*, 550 U.S. at 417. Appellant's contention, then, that the Examiner's combinability rationale is ostensibly irrelevant (Appeal Br. 39–40; Reply Br. 22) is unavailing. To the extent that Appellant contends that providing a third device as claimed in connection with the Beliles/Abe system would have been uniquely challenging or otherwise beyond the level of ordinarily skilled artisans, there is no persuasive evidence on this record to substantiate such a contention. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

Therefore, we are not persuaded that the Examiner erred in rejecting claim 3.

### *Claim 13*

We also sustain the Examiner's rejection of claim 13 reciting, in pertinent part, a piezoelectric sensor, but for reasons different than those articulated by the Examiner. In the rejection, the Examiner maps the recited piezoelectric sensor to Abe's temperature sensor 22 in Figure 1 that,

according to the Examiner, “runs on the piezoelectric effect,” namely the ability of certain materials to generate electric charge responsive to *applied mechanical stress*. Because the Examiner acknowledges that a piezoelectric sensor responds to *mechanical stress* as emphasized above, the Examiner’s equating the recited piezoelectric sensor to one that senses *temperature*—an entirely different parameter—is puzzling. That the Specification omits temperature as one of the parameters measured by the disclosed piezoelectric sensor only underscores the inconsistency in the Examiner’s finding. *See, e.g.*, Spec. 95 (noting that the disclosed sensor may be a piezoelectric sensor whose piezoelectric effect is used to measure *pressure, acceleration, strain, or force*). To the extent that the Examiner finds that detecting temperature somehow involves applied mechanical stress that enables such detection, there is no evidence on this record to support such a finding, nor will we speculate in that regard here. Appellant’s contention, then, that the Examiner improperly equated the recited piezoelectric sensor to Abe’s temperature sensor 22 (Appeal Br. 40) has merit.

Nevertheless, we see no reason why Beliles’s motion sensor 121 or Abe’s motion sensor 21 cannot be a piezoelectric sensor, particularly given the Specification’s description of motion sensors that use piezoelectric materials to measure dynamic changes in mechanical variables, such as acceleration, vibration, and mechanical shock. *See* Spec. 95–96. Such an enhancement uses prior art elements predictably according to their established functions—an obvious improvement. *See KSR*, 550 U.S. at 417. To the extent Appellant contends otherwise (*see* Appeal Br. 40–41; Reply Br. 22–23), we disagree.

We, therefore, agree with the Examiner that providing the recited piezoelectric sensor in connection with the Beliles/Abe system would have been at least an obvious variation, but for reasons different than those articulated by the Examiner. Accordingly, we sustain the Examiner's rejection of claim 13, but designate our affirmance as a new ground of rejection.

*Claims 117, 118, and 120*

We also sustain the Examiner's rejection of claim 117. Claim 117 depends from independent claim 100, and adds that a device out of a group consisting of the router, first device, second device, and control server is operative for communicating with another device from the group over multiple data paths.

Despite Appellant's arguments to the contrary (App. Br. 41), we see no error in the Examiner's reliance on the bus-connected network interfaces 210 with their respective data paths in Beliles's Figure 2 for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 17–18; Ans. 17–18 (citing Beliles ¶ 31; Fig. 2).

Therefore, we are not persuaded that the Examiner erred in rejecting claim 117, and claims 118 and 120 not argued separately with particularity.

*Claim 140*

We also sustain the Examiner's rejection of claim 140 reciting the control server is operative to analyze the sensor data versus the transmitted actuator commands. Despite Appellant's arguments to the contrary (App. Br. 41–42; Reply Br. 23), we see no error in the Examiner's reliance on the

cited prior art for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 18–19; Ans. 18 (citing Abe ¶ 51; Figs. 2, 13). Not only does Appellant fail to persuasively rebut the Examiner’s finding that the determination made by Abe’s control apparatus at least suggests the recited analysis (*see* Non-Final Act. 18; Ans. 18), Appellant’s arguments regarding Beliles’s alleged failure to disclose *multiple data paths* connecting the same two devices (Reply Br. 23) are also unavailing, for claim 140 recites no such connection.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 140.

#### *Claim 142*

We also sustain the Examiner’s rejection of claim 142. Claim 142 depends from claim 140, and adds that the analysis is used to estimate *or* determine a phenomenon’s characteristics *or* parameter. Our emphasis on the term “or” underscores that only one of each of the groups of recited alternatives need be taught or suggested by the prior art to satisfy the claim.

Despite Appellant’s arguments to the contrary (App. Br. 42–43), we see no error in the Examiner’s reliance on the cited prior art for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 18–19; Ans. 18 (citing Abe ¶¶ 51, 58; Figs. 2, 13). In short, Appellant fails to persuasively rebut the Examiner’s finding that (1) the determination made by Abe’s control apparatus at least suggests the recited analysis, and (2) this analysis is used to at least determine a parameter associated with a phenomenon, namely the determined value that is outputted based on the analysis. *See* Non-Final Act. 18–19; Ans. 18.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 142.

#### THE REJECTION OVER BELILES, ABE, AND ANSARI

We also sustain the Examiner's rejection of claim 31 over Beliles, Abe, and Ansari. Non-Final Act. 21–23; Ans. 19. Claim 31 depends from claim 1, and recites, in pertinent part, that the router, first device, second device, sensor, *or* actuator are addressable in a digital data network using (1) distinct locally administered addresses, *or* (2) universally administered digital addresses stored in a respective device's memory. Our emphasis on the term “or” underscores that only one of each of the groups of recited alternatives need be taught or suggested by the prior art to satisfy the claim.

Therefore, to the extent that Appellant contends that the claimed invention addresses *multiple* devices (*see* Appeal Br. 44), such a contention is not commensurate with the scope of the claim that need only address *one* device given the alternative language emphasized above. Nevertheless, despite Appellant's arguments to the contrary (App. Br. 43–44; Reply Br. 23–24), we see no error in the Examiner's reliance on the cited prior art for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 21–23; Ans. 19 (citing Ansari ¶ 116). That both Ansari's gateway device 10 and client endpoints are assigned Internet Protocol (IP) addresses in Ansari's paragraph 116 only bolsters the Examiner's findings and conclusions in this regard. Appellant's contention, then, that Ansari's paragraph 116 is directed to a *single* device, namely the gateway (Appeal Br. 44), is overstated given the multiple addressed devices

in this paragraph. In any event, only one device need be addressed under the terms of the claim as noted above.

Nor do we find error in the Examiner's articulated rationale to combine Ansari's teachings with those of the other cited references. First, to the extent that Appellant contends that a gateway, such as that disclosed in Ansari, is not a router (*see* Appeal Br. 44), we disagree, for routers and gateways are synonymous in the art, or at least obvious variations. *See* DICTIONARY OF COMPUTER SCIENCE, ENGINEERING, AND TECHNOLOGY 429 (Phillip A. Laplante ed. 2001) (noting that a router is also called a gateway).

Second, providing addressable devices, such as those in Ansari, in connection with the Beliles/Abe system would, among other things, facilitate identifying and communicating with those devices over a network as the Examiner indicates. *See* Non-Final Act. 23. In short, the Examiner's proposed enhancement uses prior art elements predictably according to their established functions—an obvious improvement. *KSR*, 550 U.S. at 417.

Lastly, although Appellant argues for the first time on page 23 of the Reply Brief that Ansari is non-analogous art, this argument was not raised in the Appeal Brief and is, therefore, waived as untimely. *See* 37 C.F.R. § 41.41(b)(2). Nor has good cause been shown to raise this new argument in the first instance in the Reply Brief.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 31, and claims 33–35 not argued separately with particularity.

#### THE REJECTION OVER BELILES, ABE, AND NOONAN

We also sustain the Examiner's rejection of claim 38 over Beliles, Abe, and Noonan. Non-Final Act. 24–26; Ans. 19. Claim 38 depends from

claim 1, and recites that the router, first device, or second device are connectable to be powered from a direct current (DC) or alternating current (AC) power supply source, and further comprising a power supply housed within the respective device enclosure, and coupled to be powered from the power source and to power at least part of the respective device.

Despite Appellant's arguments to the contrary (App. Br. 44–45; Reply Br. 24), we see no error in the Examiner's reliance on the cited prior art for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 24–26; Ans. 19 (citing Noonan ¶¶ 2, 38).

Appellant's contention that the Examiner did not explain why Beliles and Noonan are analogous *to each other* (Appeal Br. 44) is unavailing. Prior art is analogous if it is (1) from the same field of endeavor regardless of the problem addressed, or (2) reasonably pertinent to the particular problem with which the inventor is involved. *Bigio*, 381 F.3d at 1325. The analogous art test, then, does not ask whether the prior art references are analogous *to each other* as Appellant seems to suggest (*see* Appeal Br. 44), but rather asks whether the references are analogous to the claimed subject matter. *See id.*; *see also Kahn*, 441 F.3d at 986–87. Because Noonan's system processes data acquired from multiple networked devices as the Examiner indicates (Ans. 16), the references are at least reasonably pertinent to Appellant's problem in that regard. In short, the Examiner's proposed enhancement uses prior art elements predictably according to their established functions—an obvious improvement. *KSR*, 550 U.S. at 417.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 38, and claims 39 not argued separately with particularity.

THE REJECTION OVER BELILES, ABE, AND WECHS

We also sustain the Examiner's rejection of claim 101 over Beliles, Abe, and Wechs. Non-Final Act. 26–28; Ans. 19–20. Claim 101 depends from claim 100, and recites, in pertinent part, that the actuator is an electric light source that emits visible or non-visible light.

Despite Appellant's arguments to the contrary (App. Br. 45–47), we see no error in the Examiner's reliance on the cited prior art for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 26–27; Ans. 19–20 (citing Wechs ¶¶ 2, 5–8, 18).

Appellant's contention that the Examiner did not explain why Beliles and Wechs are analogous *to each other* (Appeal Br. 46) is unavailing. Prior art is analogous if it is (1) from the same field of endeavor regardless of the problem addressed, or (2) reasonably pertinent to the particular problem with which the inventor is involved. *Bigio*, 381 F.3d at 1325. The analogous art test, then, does not ask whether the prior art references are analogous *to each other* as Appellant seems to suggest (*see* Appeal Br. 46), but rather asks whether the references are analogous to the claimed subject matter. *See id.*; *see also Kahn*, 441 F.3d at 986–87. Because Wechs's system controls an actuator-based light source, namely infrared light emitting diode (LED) 12 as noted in paragraphs 6, 7, and 18, Wechs is at least reasonably pertinent to Appellant's problem, at least with respect to commanding an actuator and, therefore, is analogous art. In short, the Examiner's proposed enhancement uses prior art elements predictably according to their established functions—an obvious improvement. *KSR*, 550 U.S. at 417.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 101, and claim 102 not argued separately with particularity.

THE REJECTION OVER BELILES, ABE, AND GELVIN

*Claim 104*

We also sustain the Examiner's rejection of claim 104 over Beliles, Abe, and Gelvin. Non-Final Act. 28–30; Ans. 20. Claim 104 depends from claim 100, and recites, in pertinent part, a wired network using a cable connectable to carry (1) a DC or AC power signal, and (2) a communication signal simultaneously.

Despite Appellant's arguments to the contrary (App. Br. 47–49), we see no error in the Examiner's reliance on the cited prior art for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 28–30; Ans. 20 (citing Gelvin ¶¶ 4, 322). First, Gelvin's teaching in paragraph 322 of providing interconnections with telephone wire that can convey *both* information *and* DC power at least suggests the recited cable's simultaneous power/signal carrying capability. To the extent that Appellant contends that Gelvin's telephone wire in paragraph 322 is somehow incapable of carrying DC power and communication signals simultaneously (*see* Appeal Br. 48), there is no persuasive evidence on this record to substantiate such a contention.

Nor do we see any reason why this functionality could not be provided in connection with the Beliles/Abe system as the Examiner proposes. In short, the Examiner's proposed enhancement uses prior art elements predictably according to their established functions—an obvious improvement. *KSR*, 550 U.S. at 417. Because Gelvin provides network-based access to, among other things, sensors and controls as the Examiner

indicates (Ans. 20), Gelvin is at least reasonably pertinent to Appellant's problem and, therefore, is analogous art. *See Bigio*, 381 F.3d at 1325.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 104.

#### *Claim 107*

We also sustain the Examiner's rejection of claim 107 reciting, in pertinent part, the power and communication signals are carried concurrently over the same wires in the cable. Despite Appellant's arguments to the contrary (App. Br. 49–50), we see no error in the Examiner's reliance on the cited prior art for at least suggesting the recited limitations for the reasons noted above and by the Examiner. Non-Final Act. 30; Ans. 21 (citing Gelvin ¶ 322).

First, Appellant's arguments regarding withdrawn claim 105 are irrelevant here as the Examiner indicates. *See* Ans. 21. Second, to the extent that Appellant contends that Gelvin's telephone wire in paragraph 322 is somehow incapable of carrying DC power and communication signals concurrently (*see* Appeal Br. 50), there is no persuasive evidence on this record to substantiate such a contention. On this record, Gelvin's telephone wire-based functionality at least suggests the ability to carry electric power and communication signals concurrently on the same wires. Nor do we see any reason why this functionality could not be provided in connection with the Beliles/Abe system as the Examiner proposes. In short, the Examiner's proposed enhancement uses prior art elements predictably according to their established functions—an obvious improvement. *KSR*, 550 U.S. at 417.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 107.

#### THE REJECTION OVER BELILES, ABE, AND ROFOUGARAN

We also sustain the Examiner's rejection of claim 108 over Beliles, Abe, and Rofougaran. Non-Final Act. 30–32; Ans. 21. Claim 108 depends from claim 107, and recites, in pertinent part, that the power and communication signals are carried using Frequency Division Multiplexing (FDM).

Apart from disputing Rofougaran's combinability with the other cited prior art, Appellant does not dispute the Examiner's particular findings from Rofougaran in the rejection, at least regarding the Examiner's mapping particular cited disclosure in Rofougaran to corresponding limitations in claim 108. *See* Non-Final Act. 30–31. Although these particular findings are undisputed, we nevertheless note that the Examiner's finding that Rofougaran's paragraph 174 teaches that communication slots may be, among other things, frequency division multiple access (FDMA) slots of an FDMA frame, is puzzling, for the Examiner's finding tracks language used in Rofougaran's paragraph 94—not paragraph 174. Nevertheless, we treat any error associated with this inconsistency as harmless on this record particularly where, as here, that particular finding is undisputed.

What is disputed, however, is the Examiner's rationale for combining Rofougaran with the other cited prior art. *See* Appeal Br. 50–51; Reply Br. 24. Despite Appellant's arguments to the contrary, we see no harmful error in the Examiner's rejection in this regard. *See* Non-Final Act. 30–32; Ans. 21. The Examiner's rationale to combine the references, while perhaps

inartfully articulated, nonetheless pertains to enhancing communication using FDM (*see* Non-Final Act. 32; Ans. 21)—an enhancement that uses prior art elements predictably according to their established functions—an obvious improvement. *See KSR*, 550 U.S. 417.

Although the Examiner’s articulated basis for combining the references pertains to *wireless* communication between devices—not using FDM to carry power and communication signals concurrently over *wired* connections as claimed—there is nevertheless at least some rational basis for the Examiner’s rationale to combine the references, at least to the extent that it is premised on using a known technique, namely FDM, to enhance communicating distinct power and communication signals over wired connections to yield a predictable result and, therefore, is reasonably consistent with the fundamental obviousness principles articulated by the Court in *KSR*. *See, e.g., KSR*, 550 U.S. at 417 (noting that if a technique has been used to improve one device, and an ordinarily skilled artisan would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill).

In this sense, then, Rofougaran is at least reasonably pertinent to Appellant’s problem of communicating signals concurrently over the same communications medium, such as wires, and is, therefore, analogous art. *See Bigio*, 381 F.3d at 1325. To the extent that Appellant contends that using a known FDM technique, such as that in Rofougaran, to carry power and communication signals over the same wires as the Examiner proposes, would have been uniquely challenging or otherwise beyond the level of ordinarily skilled artisans, there is no persuasive evidence on this record to

substantiate such a contention. Accordingly, the weight of the evidence on this record favors the Examiner.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 108.

#### THE REJECTION OVER BELILES, ABE, NOONAN, AND ANSARI

We also sustain the Examiner's rejection of claim 120 over Beliles, Abe, Noonan, and Ansari. Non-Final Act. 32–33; Ans. 21.

We do, however, note an inconsistency in the Examiner's rejection. Claim 120 depends from claim 118 that depends from claim 117 that depends from claim 100. Claims 100, 117, and 118 were rejected over Beliles and Abe, but claim 120 is rejected over Beliles, Abe, Noonan, and Ansari. That is, in rejecting claim 120, the Examiner adds two references, namely Noonan and Ansari, to the references that were cited to reject the claims from which claim 120 depends.

But in the rejection of claim 120, the Examiner finds that the combination of Beliles, Abe, *and Noonan* discloses “all of the elements with respect to claim 118”—a finding inconsistent with the Examiner's articulated rejection of claim 118 that is based solely on Beliles and Abe. *Compare* Non-Final Act. 32 *with* Non-Final Act. 18.

Given this inconsistency, we agree with Appellant that not only is Noonan's relevance regarding the rejection of claim 120 unclear on this record, the Examiner's attempt to clarify this ambiguity by indicating that claim 118 is rejected over Beliles, Abe, *and Noonan* (Ans. 21)—a statement that runs counter to the rejection of claim 118 that is based solely on Beliles and Abe—only exacerbates the confusion in this regard.

Nevertheless, we treat this error as harmless on this record, for it is clear from the rejection of claim 120 that the Examiner relies on (1) Ansari for teaching the first alternative recited in the claim, namely that *at least two* network interfaces use different transceivers or modems, and (2) Beliles for teaching the second recited alternative, namely that *all* network interfaces use different transceivers or modems. *See* Non-Final Act. 33. In other words, Noonan is merely cumulative to the other references cited in Examiner’s rejection that relies solely on the other references’ teachings.

In addition, claim 120’s alternative language is significant here. Because the claim recites that at least two *or* all network interfaces use different transceivers or modems, only one alternative need be taught or suggested by the prior art to satisfy the claim. And here, satisfying the second alternative, namely that *all* interfaces use different transceivers or modems, would also satisfy the first “at least two interfaces” alternative.

As noted above, the Examiner cites Ansari for teaching the first alternative, and Beliles for teaching the second alternative. *See* Non-Final Act. 33. So even if we were to accept Appellant’s contentions regarding the alleged impropriety of combining Ansari with the other cited references in connection with the *first alternative* of claim 120 (*see* Appeal Br. 51–52; Reply Br. 25),<sup>12</sup> Appellant still does not persuasively rebut the Examiner’s reliance on Beliles for teaching the *other* recited alternative noted above.

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<sup>12</sup> Appellant’s contention regarding the Examiner’s reliance on Ansari that “there *is* rationale or reasoning provided by this reference analogous or any motivation for combining” (Appeal Br. 51; emphasis added) is puzzling as it seemingly supports the propriety of the Examiner’s proposed combination. Nevertheless, we presume that this sentence was intended to mean that the Examiner’s rejection is improper.

We are, therefore, not persuaded of harmful error in the Examiner's rejection for that reason alone. Because Ansari is technically cumulative to Beliles in this regard, any error associated with the Examiner's reliance on Ansari regarding claim 120 is deemed harmless on this record. Accordingly, the weight of the evidence on this record favors the Examiner.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 120.

#### THE REJECTION OVER BELILES, ABE, ANSARI, AND BALGARD

We also sustain the Examiner's rejection of claim 198 over Beliles, Abe, Ansari, and Balgard. Non-Final Act. 33–35; Ans. 22. Claim 198 depends from claim 193 that depends from claim 100. Claim 198 recites, in pertinent part, that the WAN is a wireless broadband network over a licensed *or* unlicensed radio frequency band, where the unlicensed band is an Industrial, Scientific and Medical (ISM) radio band.

Our emphasis on the term “or” underscores that only one alternative need be taught or suggested by the prior art to satisfy the claim. So, even if we were to accept Appellant's contentions regarding the alleged impropriety of combining Balgard with the other cited references in connection with the *second alternative* of claim 198, namely the unlicensed band alternative (*see* Appeal Br. 52–53), Appellant still does not persuasively rebut the Examiner's reliance on Ansari for teaching the first alternative, namely licensed band alternative, even assuming, without deciding, that Ansari teaches away from using an unlicensed band as Appellant contends. *See* Appeal Br. 53. That Appellant admits that Ansari teaches using a licensed band on page 53 of the Appeal Brief is telling in this regard.

Because Balgard is technically cumulative to the other cited references, including Ansari, due to this alternative language, we see no harmful error in the Examiner’s reliance on Balgard in the rejection. In short, providing such a licensed band for a WAN in connection with the Beliles/Abe system is an enhancement that uses prior art elements predictably according to their established functions—an obvious improvement. *See KSR*, 550 U.S. 417.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 198.

### CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/ Basis</b>	<b>Affirmed</b>	<b>Reversed</b>	<b>New Ground</b>
2, 13, 31, 38, 39, 101, 102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201	112, second paragraph	Indefiniteness		2, 13, 31, 38, 39, 101, 102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201	
1–3, 13, 31, 33–35, 38, 39, 100–102, 104, 107, 108, 117, 118, 120, 140,	101	Eligibility	1–3, 13, 31, 33–35, 38, 39, 100–102, 104, 107, 108, 117, 118, 120, 140, 142, 159,		

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142, 159, 168, 193, 198, 201, 223			168, 193, 198, 201, 223		
1–3, 13, 100, 117, 118, 140, 142, 159, 168, 193, 201, 223	103	Beliles, Abe			13
31, 33–35	103	Beliles, Abe, Ansari	31, 33–35		
38, 39	103	Beliles, Abe, Noonan	38, 39		
101, 102	103	Beliles, Abe, Wechs	101, 102		
104, 107	103	Beliles, Abe, Gelvin	104, 107		
108	103	Beliles, Abe, Rofougaran	108		
120	103	Beliles, Abe, Noonan, Ansari	120		
198	103	Beliles, Abe, Ansari, Balgard	198		
<b>Overall Outcome</b>	1–3, 13, 31, 33– 35, 38, 39, 100– 102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201, 223		1–3, 13, 31, 33–35, 38, 39, 100– 102, 104, 107, 108, 117, 118, 120, 140, 142, 159, 168, 193, 198, 201, 223		13

### TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). Section 41.50(b) provides “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.” Section 41.50(b) also provides:

When the Board enters such a non-final decision, the appellant, within two months from the date of the decision, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. The new ground of rejection is binding upon the examiner unless an amendment or new Evidence not previously of Record is made which, in the opinion of the examiner, overcomes the new ground of rejection designated in the decision. Should the examiner reject the claims, appellant may again appeal to the Board pursuant to this subpart.

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same Record. The request for rehearing must address any new ground of rejection and state with particularity the points believed to have been misapprehended or overlooked in entering the new ground of rejection and also state all other grounds upon which rehearing is sought.

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Further guidance on responding to a new ground of rejection can be found in the Manual of Patent Examining Procedure § 1214.01.

AFFIRMED; 37 C.F.R. § 41.50(b)