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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SURESH GOPALAN

Appeal 2018-003363
Application 13/926,096
Technology Center 2800

Before JAMES C. HOUSEL, DONNA M. PRAISS, and
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

HOUSEL, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner’s decision rejecting claims 1–17 under both 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement, and § 101, as directed to patent-ineligible subject matter. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Our decision refers to the Specification (“Spec.”) filed June 25, 2013, the Examiner’s Final Office Action (“Final”) dated December 1, 2016, Appellants’ Appeal Brief (“Appeal Br.”) filed April 28, 2017, the Examiner’s Answer (“Ans.”) dated December 14, 2017, and Appellants’ Reply Brief (“Reply Br.”) filed February 12, 2018.

² Appellant is the Applicant, ReSurfX, Inc., which is identified in the Appeal Brief as the real party in interest (Appeal Br. 3).

STATEMENT OF THE CASE

The invention relates to methods and systems for high-confidence utilization of large-scale datasets (Spec. ¶ 2). As an example of such large-scale datasets, Appellant describes known large-scale measurements of organismal/cellular state which involve multiple independent measurements of each parameter, e.g., genes, transcripts, proteins, etc. (*id.* ¶ 4). Appellant further describes analyzing such datasets using statistical or mathematical principles, e.g., for detecting differentials between datasets exploring different conditions, to increase the confidence of downstream steps (*id.* ¶ 5). According to Appellant, there is a need for an understanding of system specific properties and the behavior of different parameters used in such analyses with respect to each other (*id.*). Appellant also discloses that understanding properties of such datasets would help design better measurement technologies (*id.*).

Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the subject matter on appeal.

1. A computer implemented method for-devising spectrally based measurements, wherein a signal is measured at different point along a spectrum, the method comprising the steps of:
 - selecting a number of measurements along the spectrum, constituting at least one data set;
 - selecting a metric for determining substantially optimal combination of true positives and false positives in said at least one data set;
 - applying an optimization technique; and
 - obtaining, from the results of the optimization technique, a value for at least one optimization parameter, said value for at least one optimization parameter resulting in substantially optimal combination of true positives and false positives; wherein the obtaining at least one optimization parameter comprises obtaining a value of a number of independent

measures; wherein obtaining a value of a number of independent measures comprises obtaining at least one combination of a value of a number of independent measures and a value for a confidence measure; said independent measures comprising measures of a parameter of spectral property being measured obtained using different measurement criteria;

implementing a measurement strategy by placement of sensors or design of components that allow design of measurement by sensors to implement the number of independent measures; wherein the measurement strategy for the spectrally based measurements results from the number of independent measures;

wherein a number of true positives and false positives are a function of at least one combination of the number of independent measures and the confidence measure; and

wherein the steps of selecting a metric, applying an optimization technique, and obtaining, from the results of the optimization technique, a value are performed by means of a non-transitory computer usable medium having computer readable code that causes a processor to perform the steps;

whereby such measurement are used in systems used in applications including nucleic acid sequencing, high spatial density measurement of spectrally based measurement, including fluorescence, based signals using scanners and cameras including for nucleic acid and protein measurements.

Independent claim 12 recites a system comprising at least one processor and computer usable media having computer readable code for causing the processor to perform a method similar to that of claim 1.

Independent claim 16 recites a computer program product comprising a non-transitory computer usable medium having computer readable code for causing a computer system to perform a method similar to that of claim 1.

ANALYSIS

We review the appealed rejections for error based upon the issues identified by Appellant and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) *cited with approval in In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“[I]t has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections.”)). After considering the argued claims relative to case law presented in this Appeal and each of Appellant’s arguments, we are persuaded that Appellant identifies reversible error in Rejection 1 only. Thus, we reverse Rejection 1 for the reasons given by Appellant in the Appeal and Reply Briefs, but otherwise affirm Rejection 2 for the reasons expressed in the Final Office Action and the Answer. We add the following primarily for emphasis.

Rejection 1

The Examiner rejects claims 1–17 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner finds that the claims contain subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the Inventor, at the time the application was filed, had possession of the claimed invention (Final 2). Specifically, the Examiner finds that the recitation, “implementing a measurement strategy by placement of sensors or design of components that allow design of measurement by sensors to implement the number of independent measures, wherein the measurement strategy for the spectrally based measurements results from the number of independent measures,” in claims 1, 12, and 16 are not supported in the original disclosure (*id.*). The Examiner finds that,

although paragraph 33 describes a sensor design strategy, the Specification fails to disclose “actually implementing the designed sensor strategy by actually placing the sensors” (*id.* at 2–3). The Examiner also finds that the entire original disclosure is directed to strategizing using a generic computer (*id.* at 3).

Appellant argues that one skilled in the art, upon reading the Specification and drawings, would recognize that the Applicant had possession of the claimed invention (Appeal Br. 9). Appellant begins by asserting a definition of the level of ordinary skill in the art (*id.*; *see also* Reply Br. 4–5). In this regard, Appellant notes the Inventor’s technical expertise, including an advanced degree, knowledge and experience to understand the physical nature of measurements and the analytical methods to solve difficulties in direct utilization of measurements due to stray signals or data complexity (Appeal Br. 10, citing the 37 C.F.R. § 1.132 Declaration of Suresh Gopalan (“Gopalan Declaration”) filed August 19, 2016). Appellant asserts that prior art solutions to these problems include the use of model based approaches to summarize the data (*id.*, citing US 6,571,005, issued May 27, 2003). Appellant also notes that the art includes nucleic acid sequencing, high spatial density measurement of spectrally based measurement, and computational biology (*id.*). Based on this information, Appellant contends that the educational level of active workers in the art is at the graduate level (*id.*).

Appellant next contends that one skilled in the art would be familiar with the design of equipment such as monochromators and interferometers (Appeal Br. 10, citing <https://saylor.org/site/wp-content/uploads/2012/07/Chapter1011.pdf> (“Saylor”) and D. Sheehan, Physical Biochemistry,

Chapter 3, p. 56 (“Sheehan”)).^{3, 4} Appellant notes the Specification, paragraph 33 states that one approach to implementing measurement strategies is the placement of sensors or design alternatives (*id.* at 11). Appellant also notes the Specification, paragraph 32 provides an example of a measurement strategy (*id.*, also citing Fig. 20). Appellant asserts that, from these disclosures and “from the knowledge that in some spectroscopic techniques different frequencies are imaged at different locations or different frequencies require different program code,” one skilled in the art “would know that a measurement strategy can be implemented by placement of sensors or alteration of design of components to implement the number of independent measures” (*id.*).

In response, the Examiner finds that the “original disclosure simply does not disclose ‘implementing a measurement strategy by placement of

³ Appellant additionally contends that one skilled in the art would be familiar with the engineering design process (Reply Br. 5, citing Ertas, A., Jones, J. C., *The Engineering Design Process*, John Wiley and Sons, New York, 1996, and <https://www.saylor.org/site/wp-content/uploads/2012/09/ME101-4.1-Engineering-Design-Process.pdf>, and <https://www.nasa.gov/audience/foreducators/best/edp.html>) (Reply Br. 5). While we have little doubt that the person of ordinary skill in this art would be familiar with the engineering design process, we will not consider these additional references because they were not presented in the principal Brief. *See* 37 C.F.R. § 41.41(b)(1).

⁴ Moreover, in the Reply Brief, Appellant presents a new argument not raised in the Appeal Brief discussing in detail that the skilled artisan would be familiar with two ways of making measurements at the desired frequencies based on the Saylor and Sheehan references, including that the skilled artisan would be familiar with prisms and gratings as dispersing elements (Reply Br. 6). We will not consider this new argument because Appellant fails to provide a showing of good cause explaining why the argument could not have been presented in the principal Brief. *See* 37 C.F.R. § 41.41(b)(2).

sensors or design of components that allow design of measurement by sensors to implement the number of independent measures” (Ans. 3). In the Examiner’s view, “the original disclosure fails to disclose actually placing the sensors using the measurement strategy” (*id.*). The Examiner notes that Appellant admits that the “claimed invention is directed to designing measurement strategies that can significantly eliminate stray signals” (*id.* at 3–4 (italics omitted)). The Examiner concludes that “[c]ontemplating and designing ways to place sensors for particular measurement[s] is not the same as actually placing the sensors to obtain the actual measurements” (*id.* at 4).

“[The written description] inquiry is a factual one and must be assessed on a case-by-case basis.” *Purdue Pharma L.P. v. Faulding, Inc.*, 230 F.3d 1320, 1323 (Fed. Cir. 2000). In rejecting a claim under the first paragraph of 35 U.S.C. § 112 for lack of adequate descriptive support, it is incumbent upon the Examiner to establish that the originally-filed disclosure would not have reasonably conveyed to one having ordinary skill in the art that Appellant had possession of the now claimed subject matter. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). Adequate description under the first paragraph of 35 U.S.C. § 112 does not require literal support for the claimed invention. *In re Herschler*, 591 F.2d 693, 701 (CCPA 1979); *In re Edwards*, 568 F.2d 1349, 1351–52 (CCPA 1978); *In re Wertheim*, 541 F.2d 257, 262 (CCPA 1976). In addition, the written description requirement does not demand either examples or an actual reduction to practice. *Ariad Pharms.*, 598 F.3d at 1352. Rather, it is sufficient if the originally-filed disclosure would have conveyed to one having ordinary skill in the art that Appellant had

possession of the concept of what is claimed. *In re Anderson*, 471 F.2d 1237, 1242 (CCPA 1973).

Here, there is no dispute that the Specification demonstrates that the Inventor was in possession of contemplating and designing measurement strategies for spectrally based measurements involving placement of sensors or design of components. Although the Examiner finds that designing measurement strategies based on ways to place sensors for particular measurements is not the same as actually placing the sensors to obtain the actual measurements, the Examiner fails to explain the significance of the difference as it pertains to the Inventor's possession of the claimed invention. In other words, the Examiner does not explain why those skilled in the art would not have immediately recognized the placement of the sensors to make the appropriate measurements once the measurement strategy was designed based on a way to place those sensors.⁵ As indicated above, actual reduction to practice is not required to establish written description. *Ariad Pharma.*, 598 F.3d at 1352. Absent some explanation regarding the significance of the difference between designing the placement of the sensors and the actual placement of those sensors, we cannot say that the Examiner has established, by a preponderance of the evidence, that the originally-filed disclosure would not have reasonably conveyed to one

⁵ We note that recognition of possession of the actual placement of the sensors based on the design of the placement of those sensors under the written description requirement of the first paragraph of 35 U.S.C. § 112 is distinct from the question whether the same disclosure enables those skilled in the art with regard to how to place and use those sensors to perform the appropriate measurements under the enablement requirement of this statute.

having ordinary skill in the art that Appellant had possession of the now claimed subject matter.

Accordingly, we do not sustain the Examiner's rejection of claims 1–17 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Rejection 2

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: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *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, 69 (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 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (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.”). Having said that, 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.* (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.*

The PTO recently published revised guidance on the application of § 101. USPTO’s January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* (“Memorandum”). 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 interactions such as a fundamental economic practice, or mental processes); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

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, conventional” in the field (*see* MPEP § 2106.05(d)); or
- (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See Memorandum.

Here, the Examiner determines claim 1 is directed to the abstract idea of (1) the collection and organization of data, and (2) to a mathematical concept (Final 4). Specifically, the Examiner finds selecting a metric, applying an optimization technique, obtaining an optimization parameter value are the abstract ideas within these two categories (*id.*). In so finding, the Examiner determines that these steps are similar to other concepts identified by the courts to be abstract ideas: (1) for the collection and organization of data, the Examiner cites *SmartGene, Inc. v. Advanced Biological Lab., SA*, 555 F.App'x 950 (Fed. Cir. 2014), *Cyberfone Systems, LLC v. CNN Interactive Group, Inc.*, 558 F.App'x 988 (Fed. Cir. 2014), *Classen Immunotherapies v. Biogen IDEC*, 659 F.3d 1057 (Fed. Cir. 2011), and *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373 (Fed. Cir. 2011); and (2) for a mathematical concept, the Examiner finds that the Specification and drawings demonstrate the method performs various mathematical operations and cites *Benson, Flook, Diehr*, and *In re Grams*, 888 F.2d 835 (Fed. Cir. 1989) (*id.*).

The Examiner next determines that the claims do not include additional elements that are sufficient to amount to significantly more than the abstract idea (Final 5). The Examiner finds the limitations, “said independent measures comprising measures of a parameter of spectral property being measured obtained using different measurement criteria,” “wherein the measurement criteria include measuring a signal at different point along a spectrum,” and “wherein the measurement strategy resulting from the number of independent measures is implemented by placement of sensors or design of components that allow design of measurement by sensors,” are merely collection or insignificant extra-solution activities (*id.*).

The Examiner also finds that placement of sensors is recited at a high level of generality, as the details of the structural placement of sensors or design components are absent (*id.*). And the Examiner finds the limitations, “whereby such measurement are used in systems used in applications including nucleic acid sequencing, high spatial density measurement of spectrally based signals, including fluorescence, using scanners and cameras including for nucleic acid and protein measurements,” are nothing more than generally linking the use of the abstract idea to a particular technological environment or field of use (*id.*).

Appellant argues that the claims are directed to patent-eligible subject matter (Appeal Br. 12). Appellant asserts that the claimed invention is directed to designing measurement strategies that can significantly eliminate stray signal, and provides more accurate results and facilitates effective downstream processing (*id.* at 13). Appellant urges that the claimed invention does not attempt to patent a mathematical formula (*id.*).

With regard to the Examiner’s citation of case law as reflecting the abstract idea set forth in the claims, Appellant asserts that the methods of *CyberSource* and *SmartGene* “can be performed *entirely* in the human mind” (*id.*). Appellant contends that “[a]pplying an optimization technique to a cost metric is not a method that can be performed entirely in a human mind” (*id.* at 14). Appellant further asserts that the *Classen* method simply invites the reader to determine the content of the existing knowledge (*id.*). Appellant contends that the claimed invention “does more than determining the content of existing knowledge” (*id.*). Appellant also attempts to distinguish over *Cyberfone*, contending that the claimed invention “is not directed to collecting information in classified form” (*id.*).

Further, Appellant contends that, although the Supreme Court recognized that a mathematical formula like the Arrhenius equation is not itself patent-eligible subject matter, even if limited to a particular technological environment or accompanied by “insignificant post-solution activity,” the Court explained that claims are patent-eligible “when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect” (*id.*, citing *Diehr*, 450 U.S. at 177 and 192). Appellant urges that the *Diehr* claims were directed to an improvement in a process, not a mathematical formula (*id.*).

Therefore, Appellant argues that the claims should be compared to those in *Thales*, asserting that the *Thales* court found that the claims were nearly indistinguishable from those in *Diehr* and not directed to an abstract idea (Appeal Br. 14–15, citing *Thales Visionix Inc. v. United States*, 850 F.3d 1343 (Fed. Cir. 2017)). Appellant also asserts the *McRO* court found the claims allowed computers to produce accurate and realistic synchronization and facial expressions in animated characters, “which is performed using a computer but is not a computer improvement as in *Enfish*” (*id.* at 15, citing *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016)). Appellant contends that, as in *McRO*, the claimed invention does not automate a process that was already being carried out (*id.*).

Appellant next argues that the claimed invention is an improvement in measurement technology for technologies where sensitivity and throughput of measurements are increased and there is a need to significantly eliminate stray signals, thereby reaching a new and useful end (Appeal Br. 16). As

such, Appellant contends that the elements of the claimed invention are sufficient to transform the process into an inventive application of an abstract concept (if such an abstract concept is present) (*id.*).

Lastly, Appellant argues that the Examiner failed to properly consider evidence that the

approach of using measures claimed in this invention is a radical improvement over everything that is practiced in the sector of instrumentation design. The concept of designing measurement systems from an analytic end use perspective for the level of data and accuracy needs associated with high-density and high throughput systems has not been a practice until the present application

(Appeal Br. 18). Appellant contends that this evidence is contrary to the Examiner's determination that additional features of the claims are "well understood, routine, conventional activities previously known to the industry" (*id.*) (emphasis omitted). Appellant asserts that the Examiner has not presented any evidence that these additional features are conventional and not inventive (*id.*).

Appellant's arguments are unpersuasive. Independent claims 1, 12, and 16 are directed to a computer-implemented method, system, and computer program product for devising spectrally based measurements. Claims 1, 12, and 16 each recites,⁶ among other things, selecting a number of measurements along the spectrum, constituting at least one data set, and selecting a metric for determining substantially optimal combination of true positives and false positives in said at least one data set. Both of these steps

⁶ Appellant does not argue the claims separately so we do not analyze the dependent claims separately from the independent claims. *See* 37 C.F.R. § 41.37(c)(1)(iv).

require judgment, may be performed in the human mind, and are, therefore, mental processes.

Moreover, claims 1, 12, and 16 each recites, among other things, applying an optimization technique; obtaining, from the results of the optimization technique, a value for at least one optimization parameter, said value for at least one optimization parameter resulting in substantially optimal combination of true positives and false positives; wherein the obtaining at least one optimization parameter comprises obtaining a value of a number of independent measures; wherein obtaining a value of a number of independent measures comprises obtaining at least one combination of a value of a number of independent measures and a value for a confidence measure; and said independent measures comprising measures of a parameter of spectral property being measured obtained using different measurement criteria.

The Specification discloses that the optimization uses algorithms and mathematical relationships to obtain at least one optimization parameter and a number of independent measures, including at least one combination of a value of a number of independent measures and a value for a confidence measure, so as to devise a measurement strategy for spectrally based measurement results from the number of independent measures. For example, paragraph 32 discloses that “a combination measure (e.g., a number of measurements at relevant parts of the spectrum) and the number of measures can be optimized using parameters and a cost function.” Paragraph 38 states that “the equations used to optimize selection of true and false positives in comparative evaluations, methods for determining data-specific thresholds and evaluating the statistic or mathematical criteria used

for identifying differentials are applicable to many other types of datasets.” Paragraphs 39–45 disclose the algorithms and mathematical relationships used to devise a measurement strategy. Paragraphs 46–77 disclose the application of these algorithms and mathematical relationships to datasets for devising measurement strategies. Therefore, claims 1, 12, and 16 are directed to the abstract idea of using algorithms or mathematical relationships to devise a measurement strategy for spectrally based measurements.

The Federal Circuit noted that “analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, as essentially mental processes within the abstract-idea category,” and “merely presenting the results of abstract processes of collecting and analyzing information, without more” is abstract and thus the claims focused on the combination of these abstract ideas. *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016). The Federal Circuit has summarized such a situation in this way:

We have explained that claims focused on “collecting information, analyzing it, and displaying certain results of the collection and analysis” are directed to an abstract idea. *Electric Power*, 830 F.3d at 1353. “Information as such is an intangible,” hence abstract, and “collecting information, including when limited to particular content (which does not change its character as information), [i]s within the realm of abstract ideas.” *Id.* (citing cases). So, too, is “analyzing information ... by mathematical algorithms, without more.” *Id.* at 1354 (citing cases, including *Parker v. Flook*, 437 U.S. 584, 98 S. Ct. 2522, 57 L. Ed. 2d 451 (1978), and *Gottschalk v. Benson*, 409 U.S. 63, 93 S. Ct. 253, 34 L. Ed. 2d 273 (1972)). And “merely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an

ancillary part of such collection and analysis.” *Id.* (citing cases). The claims here are directed [to] abstract ideas under those principles.

SAP America, Inc. v. InvestPic, LLC, 898 F.3d 1161, 1167 (Fed. Cir. 2018).

Like the claims in *Electric Power Group* and *SAP America*, “[t]he claims in this case are directed to abstract ideas. The focus of the claims, as is plain from their terms, quoted above, is on selecting certain information, analyzing it using mathematical techniques, and reporting or displaying the results of the analysis. That is all abstract.” *SAP America*, 898 F.3d at 1167. Thus, in accordance with the PTO’s policy guidance, we identify claim 1 as reciting both mental processes and mathematical concepts.

In accordance with the PTO’s policy guidance, and looking to MPEP § 2106.05(a)–(c), (e)–(h), we determine that the additional elements of claims 1, 12, and 16, both individually and as an ordered combination, do not integrate a judicial exception, in this case abstract concepts, into a practical application. Indeed, claim 1 is directed to little more than the implementation of the abstract idea. Claim 12 is directed to a computerized system that executes a similar method as claim 1, wherein the system includes at least one generic processor and a computer usable media having computer readable code. Claim 16 is directed to a computer program product comprising computer usable medium having computer readable code for causing a computer system to perform a similar method as claim 1. Paragraphs 94 and 97 of the Specification, however, describe these components in generic terms suggesting that these components are not themselves improvements.

We also note that Appellant asserts that the claims are directed to designing measurement strategies that can significantly eliminate stray

signals. However, designing measurement strategies is not an integration of the abstract concept into a practical application. We note claim 1 recites “implementing a measurement strategy by placement of sensors or design of components that allow design of measurement by sensors to implement the number of independent measures.” In addition, we note claim 1 recites “whereby such measurement are used in systems used in applications including nucleic acid sequencing, high spatial density measurement of spectrally based measurement, including fluorescence, based signals using scanners and cameras including nucleic acid and protein measurements.” Both of these recitations amount to no more than mere instructions to apply the judicial exception. There is no indication that the implementation step results in any change in either the placement of sensors or the design of components that allow design of measurement of sensors, nor does the implementation step include any use of the sensors or components that allow design of measurement of sensors. Thus, unlike the claims in *Diehr*, Appellant’s claims do not result in the improvement in a physical process.

In view of the above, Appellant’s contention that there is no difference between the claims and those in *Thales* is unpersuasive. The claims of *Thales* were directed to an unconventional physical arrangement of inertial sensors and calculations based on a different reference frame to reduce errors. *Thales*, 850 F.3d at 1348–49. Although their invention regards mental and mathematical steps and or generic components (e.g., when considered individually), Appellant does not explain how they are “combined in an unconventional manner” that provides an improvement and thus patent-eligible subject matter. See *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1300 (Fed. Cir. 2016) (citing *DDR Holdings*,

LLC v. Hotels.com, L.P., 773 F.3d 1245, 1256–59 (Fed. Cir. 2014) and *BASCOM Glob. Internet Servs. Inc. v. AT & T Mobility LLC*, 827 F.3d 1341, 1349–52 (Fed. Cir. 2016)).

In view of the above, claims 1, 12, and 16 embody the implementation of an abstract idea via a generic processor as a tool, as explained by the Examiner. Implementing an idea on a generic processor does not transform it into a patentable apparatus; the idea remains a pre-empted mental and mathematical process. *See Alice*, 573 U.S. at 216 (“We have described the concern that drives this exclusionary principle as one of pre-emption.”), citing *Bilski v. Kappos*, 130 S. Ct. 3218, 3231 (2010) (“upholding the patent ‘would pre-empt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea’”). Claims 1, 12, and 16 involve the sort of matter the Supreme Court cautioned against in *Alice* by stating “transformation into a patent-eligible application requires ‘more than simply stat[ing] the [abstract idea] while adding the words ‘apply it.’” *Id.* at 221 (quoting *Mayo*, 566 U.S. at 72).

With regard to *McRO*, Appellant further argues that the claims do not automate a process that was already being carried out. Appeal Br. 15. In *McRO*, the Federal Circuit disagreed with a district court’s determination that claims were “drawn to the [abstract] idea of automated rules-based use of morph targets and delta sets for lip-synchronized three-dimensional animation.” *McRO*, 837 F.3d at 1313 (quoting *McRO, Inc. v. Sony Computer, Entm’t Am., LLC*, 55 F.Supp.3d 1214, 1226 (C.D. Cal. 2014)). Instead, the Federal Circuit determined that “the claims are limited to rules with specific characteristics.” *Id.* More specifically, the Federal Circuit stated:

[a]s the district court recognized during claim construction, “the claims themselves set out meaningful requirements for the first set of rules: they ‘define[] a morph weight set stream as a function of phoneme sequence and times associated with said phoneme sequence.’”

Id. The Federal Circuit determined “[t]he specific, claimed features of these rules allow for the improvement realized by the invention.” *Id.* Moreover, the Federal Circuit recently stated: “[o]ur recent abstract idea exception decisions likewise have stressed that a claimed invention must embody a concrete solution to a problem having ‘the specificity required to transform a claim from one claiming only a result to one claiming a way of achieving it.’” *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1343 (Fed. Cir. 2018) (citing *SAP Am., Inc. v. InvestPic, LLC*, 890 F.3d 1016, 1021–22 (Fed. Cir. 2018) (collecting cases)).

A comparison of claims 1, 12, and 16 to claim 1 of *McRO* demonstrates substantial differences between the facts of this appeal and the facts of *McRO*. Claim 1 of *McRO* recites a method for automatically animating lip synchronization and facial expression of 3-D characters comprising, among other things, “obtaining a first set of rules that define output morph weight set stream as a function of phoneme sequence and time of said phoneme sequence.” *McRO*, 837 F.3d at 1307–08. As noted above, the Federal Circuit determined “the claims are limited to rules with specific characteristics.” *Id.* at 1313.

In contrast, Appellant’s claims 1, 12, and 16 do not recite any rules with specific characteristics. Although mathematical relationships and algorithms are implicated in the recitations of claims 1, 12, and 16, these claims do not actually recite any particular rules. Claims 1, 12, and 16

generally recite selecting a metric for determining substantially optimal combination of true positives and false positives in at least one data set, applying an optimization technique, obtaining, from the results of the optimization technique, a value for at least one optimization parameter resulting in substantially optimal combination of true positives and false positives, and implementing a measurement strategy by placement of sensors or design of components that allow design of measurement by sensors to implement the number of independent measures. Such a level of generality does not limit the claims to rules with specific characteristics, as in *McRO*.

Finally, Appellant's argument that the Examiner failed to properly consider the Gopalan Declaration is not persuasive. Appellant argues that the Gopalan Declaration states that the

approach of using measures claimed in this invention is a radical improvement over everything that is practiced in the sector of instrumentation design. The concept of designing measurement systems from an analytic end use perspective for the level of data and accuracy needs associated with high-density and high throughput systems has not been a practice until the present application

(Appeal Br. 18). Though Appellant contends that this evidence is contrary to the Examiner's determination that additional features of the claims are "well understood, routine, conventional activities previously known to the industry" (*id.*), we disagree. Appellant's evidence merely amounts to a statement that the claimed invention is new and, therefore, cannot be well-understood, routine, conventional activities previously known to the industry. However, Appellant's argument misapprehends the burden on the Examiner to establish that additional features of the claim are "well

understood, routine, conventional activities previously known to the industry.” (*Id.*) (emphasis omitted). The Examiner is not required to establish that the claimed invention, as a whole, is well-understood, routine, and conventional in the industry. Instead, the Examiner is required to establish that the additional features, apart from the judicial exception, are well-understood, routine, conventional in the industry. In this case, the Examiner has met this burden by establishing that the additional features, including mere data collection and a generic processor, are well-understood, routine, and conventional in the industry (*see* Ans. 8–10).

Accordingly, we sustain the Examiner’s rejection of claims 1–17 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter.

DECISION

For the reasons given above and in the Appeal and Reply Briefs, the decision of the Examiner rejecting claims 1–17 under 35 U.S.C. § 112, first paragraph, is *reversed*.

However, upon consideration of the record and for the reasons given above and in the Final Office Action and the Examiner’s Answer, the decision of the Examiner rejecting claims 1–17 under 35 U.S.C. § 101 is *affirmed*.

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).

AFFIRMED