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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte EDWARD W. FORDYCE III,
MICHELLE ENG WINTERS, KEVIN PAUL SIEGEL,
LEIGH AMARO, CHARLES RAYMOND BYCE,
and NURTEKIN SAVAS

Appeal 2017-011259
Application 15/091,464¹
Technology Center 3600

Before MAHSHID D. SAADAT, LINZY T. McCARTNEY, and
JOHN P. PINKERTON, *Administrative Patent Judges*.

PINKERTON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's Final Rejection of claims 1 and 3–19. Claims 2 and 20 are canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ Appellants identify VISA INTERNATIONAL SERVICE ASSOCIATION as the real party in interest. App. Br. 2.

STATEMENT OF THE CASE

Introduction

Appellants generally describe the disclosed and claimed invention as follows:

A system including a transaction handler to process transactions, a data warehouse to store transaction data recording the transactions processed at the transaction handler, a profile generator to generate a profile of a user based on the transaction data, an advertisement selector to identify an advertisement based on the profile of the user in response to the transaction handler processing a transaction of the user, and a portal coupled to the transaction handler to provide the advertisement for presentation to the user in connection with information about the transaction of the user. In one example, the profile includes a plurality of values representing aggregated spending of the user in various areas to summarize the transactions of the user.

Abstract.²

Claims 1, 16, and 17 are independent claims. Claim 1 is representative of the subject matter on appeal and reads as follows (with format changes and paragraph lettering added):

1. A method, comprising:
 - (a) providing a computing apparatus comprising:
 - (b) a transaction handler configured in an electronic payment processing network;
 - (c) a data warehouse coupled with the transaction handler and storing:

² Our Decision refers to the Final Office Action mailed Nov. 18, 2016 (“Final Act.”), Appellants’ Appeal Brief filed Apr. 21, 2017 (“App. Br.”) and Reply Brief filed July 24, 2017 (“Reply Br.”), the Examiner’s Answer mailed July 14, 2017 (“Ans.”), and the original Specification filed Apr. 5, 2016 (“Spec.”).

- (d) first transaction data recording payment transactions of a plurality of first users processed by the transaction handler during a first period of time,
- (e) second transaction data recording payment transactions of a second user processed by the transaction handler during a second period of time, and;
- (f) registration data associating an account of the second user with a communication reference of a mobile device of the second user;
- (g) a profile generator coupled with the data warehouse; and
- (h) a portal coupled with the transaction handler and configured to communicate with the mobile device using the communication reference outside the electronic payment processing network;
- (i) compressing, by the computing apparatus, the second transaction data into a set of factor values by:
 - (j) computing a first set of values of a set of predefined spending variables for the first transaction data of the plurality of first users, wherein each value in the first set computed for a respective one of the predefined spending variables identifies a total spending amount, or a spending frequency, of a respective user in the plurality of first users in a respective predefined merchant category during the first period of time;
 - (k) performing a factor analysis of the predefined spending variables based on the first set of values;
 - (l) identifying, from the factor analysis, a set of factor variables that are substantially fewer than the set of predefined spending variables, wherein each of the factor variables is a respective combination of the set of predefined spending variables determined from the factor analysis;
 - (m) computing a second set of values of the set of predefined spending variables for the second transaction

data of the second user, wherein each value in the second set computed for a respective one of the predefined spending variables identifies a total spending amount, or a spending frequency, of the second user in the respective predefined merchant category during the second period of time; and

- (n) computing the factor values of the set of factor variables for the second transaction data by using the second set of values in the respective combination of the set of predefined spending variables determined from the factor analysis;
- (o) generating, by the profile generator, a profile of the second user using the set of factor values;
- (p) processing, by the transaction handler, authorization of a first transaction in the account of the second user initiated on a point of sale terminal, including:
 - (q) receiving, by the transaction handler, an authorization request for the first transaction of the second user transmitted in the electronic payment processing network from the point of sale terminal;
 - (r) obtaining, by the transaction handler using the electronic payment processing network, an authorization response from a computer controlling the account of the second user in the electronic payment processing network; and
 - (s) transmitting, by the transaction handler, the authorization response to the point of sale terminal via the electronic payment processing network; and
- (t) during the processing of the authorization of the first transaction by the transaction handler,
 - (u) identifying, by the computing apparatus, an advertisement for a first advertiser of a plurality of advertisers based at least in part on the profile of the second user;
 - (v) identifying the communication reference based on:

- (w) the account identified in the authorization request for the first transaction, and
- (x) the registration data stored in the data warehouse associating the communication reference with the account;
- (y) instructing, by the transaction handler, the portal to communicate with the mobile device using the communication reference; and
- (z) transmitting, by the portal, the advertisement to the mobile device using the communication reference without going through the point of sale terminal, to cause the mobile device to present the advertisement in real time with the processing of the authorization of the first transaction.

App. Br. 23–25 (Claims App’x).

*Rejections on Appeal*³

Claims 1 and 3–19 stand rejected under 35 U.S.C. § 101 as being directed to a judicial exception (i.e., an abstract idea) without significantly more.⁴ Final Act. 4–7.

Claims 1 and 3–19⁵ stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and

³ Although the Examiner rejected claims 1–19 under 35 U.S.C. § 112, first paragraph, for failure to comply with the written description requirement and rejected claims 1, 16, and 17 under 35 U.S.C. § 112, second paragraph, for indefiniteness based on the term “compressing,” these rejections have been withdrawn by the Examiner. Ans. 3.

⁴ The Examiner also finds that claim 17 is directed to software per se, which is not one of the four categories of statutory subject matter, and states that “[a]ppropriate correction is required.” Final Act. 7. Our decision, *infra*, concerning the Examiner’s rejection of claims 1 and 3–19 under § 101 is dispositive of this issue.

⁵ Claims 18 and 19 were not listed in this rejection by the Examiner, but we have included them because we believe these claims, which depend from claim 17, were inadvertently omitted by the Examiner.

distinctly claim that which the applicant regards as the invention. Final Act. 8–9.

Claims 1, 3–12, and 16–19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fordyce et al. (US 2008/0059306 A1; published Mar. 6, 2008) (“Fordyce”), Hammad et al. (US 2008/0005037 A1; published Jan. 3, 2008) (“Hammad”), Yaskin (US 2009/0281873 A1; published Nov. 12, 2009), and Blume et al. (US 6,839,682 B1; issued Jan. 4, 2005) (“Blume”). Final Act. 9–23.

Claims 13–15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fordyce, Hammad, Yaskin, Blume, and Levine (US 2008/0275771 A1; published Nov. 6, 2008).

ANALYSIS

We have reviewed the Examiner’s rejections in light of Appellants’ arguments in the Appeal Brief (*see* App. Br. 5–22) and the Reply Brief (*see* Reply Br. 3–10). Regarding the Examiner’s rejections under 35 U.S.C. §§ 101 and 103(a), unless otherwise noted, we adopt as our own the findings and reasons set forth by the Examiner in the Office Action from which this appeal is taken (Final Act. 2–7, 9–24), and in the Examiner’s Answer (Ans. 4–7), and we concur with the conclusions reached by the Examiner. However, we do not agree with, or adopt, the Examiner’s findings and conclusion regarding the rejection under 35 U.S.C. § 112, second paragraph.

I. Section 101 Rejection

A. *Applicable Law*

Section 101 of the Patent Act provides that “any new and useful process, machine, manufacture, or composition of matter, or any new and

useful improvement thereof” is patent eligible. 35 U.S.C. § 101. But the Supreme Court has long recognized an implicit exception to this section: “Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (quoting *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)). To determine whether a claim falls within one of these excluded categories, the Court has set out a two-part framework. The framework requires us first to consider whether the claim is “directed to one of those patent-ineligible concepts.” *Alice*, 573 U.S. at 217. If so, we then examine “the elements of [the] claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 573 U.S. at 217 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 78, 79 (2012)). That is, we examine the claim for an “inventive concept,” “an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Alice*, 573 U.S. at 217–18 (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73).

The Patent Office recently issued guidance about this framework. *See* 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Revised Guidance”). Under the Revised Guidance, to decide whether a claim is directed to an abstract idea, we evaluate whether the claim (1) recites one of the abstract ideas listed in the Revised Guidance (“Prong One”) and (2) fails to integrate the recited abstract idea into a practical application (“Prong Two”). *See* Revised Guidance, 84 Fed. Reg. at 51, 54. If the claim is directed to an abstract idea, as noted above, we then

determine whether the claim has an inventive concept. The Revised Guidance explains that when making this determination, we should consider whether the additional claim elements add “a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field” or “simply append[] well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality.” Revised Guidance, 84 Fed. Reg. at 56.

With these principles in mind, we first analyze whether claim 1 is directed to an abstract idea.⁶

B. Abstract Idea

In analyzing the limitations of the claims, the Examiner finds that the claims are directed to multiple abstract ideas. *See* Final Act. 4–5. In particular, the Examiner finds the claims are “directed to an abstract idea: collecting (first transaction data and second transaction data . . . comparing (profile based on first and second transaction), identifying advertisement, i.e. collecting and comparing data.” *Id.* at 4. The Examiner also finds that “[t]he claims include the abstract idea of comparing new and stored information and using rules to identify options (transmitting . . . advertisement).” *Id.* The Examiner further finds the claims are directed to “applying factor definitions to values, clustering, generating data, i.e. generating profile,” which is organizing data by mathematical correlation. *Id.* at 5. Moreover, the Examiner finds that the claims are directed “to comparing 2 points of contact, here second user profile based on first user

⁶ Appellants argue claims 1 and 3–19 together, focusing on representative claim 1. App. Br. 5–22. Thus, we decide the appeal based on claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

data and second user data.” *Id.* In addition, the Examiner finds that “the claims as a whole are directed to the fundamental economic practice of targeted marketing - which is organizing human activity.” *Id.*; *see also* Ans. 4–5.

Appellants argue that the Examiner overgeneralizes claim 1 and improperly asserts that claim 1 describes something any human could do. App. Br. 5. To the contrary, according to Appellants, claim 1 “describes how a machine functions to reduce a set of voluminous transaction data into a transaction profile having a significantly smaller size” and uses the profile for improved electronic communications related to transaction information.” *Id.* (emphasis omitted); *see also id.* at 8, Reply Br. 3. Appellants also argue that the Examiner erred by splitting the claim elements into two sets, one for stage one and the other for stage two, and then considering them in isolation, instead of using an overlapping consideration of elements so that the claim is viewed as an ordered combination and as a whole, without ignoring the individual steps. App. Br. 8–10.

1. USPTO Step 2A, Prong One

Beginning with prong one of the first step of *Alice*, we must determine “whether the claims at issue are directed to one of those patent-ineligible concepts,” including the abstract ideas enumerated in the Revised Guidance. *Alice*, 573 U.S. at 217. One of the subject matter groupings identified as an abstract idea in the Revised Guidance is “mental processes—concepts performed in the human mind (including an observation, evaluation, judgment, opinion).” *See* Revised Guidance, 84 Fed. Reg. at 52, 53. The Revised Guidance explains that “mental processes” include acts that people can perform in their minds or using pen and paper, even if the claim recites

that a generic computer component performs the acts. *See* Revised Guidance, 84 Fed. Reg. at 52 n.14 (“If a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the mental processes category unless the claim cannot practically be performed in the mind.”) Claim 1 recites limitations (a)–(z), which are reproduced in full above. Because people can perform the functions recited in several of these limitations using their minds or pen and paper, they are directed to the abstract idea of “mental processes.”

For example, limitation (c) recites the step of “storing” the following: (d) “first transaction data recording payment transactions of a plurality of first users . . . during a first period of time,” (e) “second transaction data recording payment transactions of a second user . . . during a second period of time,” and (f) “registration data associating an account of the second user with a communication reference of a mobile device of the second user.” App. Br. 23 (Claims App’x). A person can perform these functions by writing down on paper the details of payment transactions for a group of first users during a first time period and the details of payment transactions for a second user for a second time period, and also noting the association of the account of the second user with the telephone number of the mobile device of the second user.

The Revised Guidance also identifies the subject matter grouping of “mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations”—as an abstract idea. *See* Revised Guidance, 84 Fed. Reg. at 52. Here, several of the limitations of claim 1 recite mathematical relationships or calculations. For example,

limitation (i) recites “compressing . . . the second transaction data into a set of factor values by” performing five steps: (j) “computing a first set of values of a set of predefined spending variables for the first transaction data of the plurality of first users, wherein each value in the first set computed for a respective one of the predefined spending variables identifies a total spending amount, or a spending frequency, of a respective user in the plurality of first users in a respective predefined merchant category during the first period of time;” (k) “performing a factor analysis of the predefined spending variables based on the first set of values;” (l) “identifying, from the factor analysis, a set of factor variables that are substantially fewer than the set of predefined spending variables, wherein each of the factor variables is a respective combination of the set of predefined spending variables determined from the factor analysis;” (m) “computing a second set of values of the set of predefined spending variables for the second transaction data of the second user, wherein each value in the second set computed for a respective one of the predefined spending variables identifies a total spending amount, or a spending frequency, of the second user in the respective predefined merchant category during the second period of time;” and (n) “computing the factor values of the set of factor variables for the second transaction data by using the second set of values in the respective combination of the set of predefined spending variables determined from the factor analysis.”

The term “computing,” which is used in limitations (j), (m), and (n), means “to determine especially by mathematical means.” *See* WEBSTER’S NINTH NEW COLLEGIATE DICTIONARY, 271 (1985). The Specification also describes “computing” as a mathematical calculation. For example, in

describing that transaction profiles 127 of Figure 1 include the values for a set of parameters, the Specification states that “[c]omputing the values of the parameters may involve counting transactions that meet one or more criteria, and/or building a statistically-based model in which one or more calculated values or transformed values are put into a statistical algorithm.” Spec. ¶ 54. Similarly, the Specification discloses that performing a “factor analysis,” as in limitation (k), comprises “statistical analysis,” which involves mathematical calculations. *Id.* at ¶ 281. Moreover, the Specification describes that “identifying, from the factor analysis, a set of factor variables that are “substantially fewer” than the set of predefined spending variables, as recited in limitation (l), involves a mathematical relationship between the “factor variables” and the “predefined spending variables.” *Id.* at ¶ 290. In that regard, paragraph 290 of the Specification states that thousands of spending variables are reduced to a factor number “less than one hundred (and even less than twenty),” and in one example, “twelve factors to combine the thousands of the original variables.” *Id.*

Limitation (o) recites “generating . . . a profile of the second user using the set of factor values.” This step of claim 1 could be performed in the mind of a person based on such person’s consideration and evaluation of the set of factor values. Indeed, Appellants’ Specification discloses that “[t]he summarized data can be readily interpreted by a human to ascertain the spending behavior of the cardholder.” Spec. ¶ 291.

Moreover, limitations (p)–(z) pertain to the fundamental economic practice of sales, marketing, and advertising activities. In general, these limitations recite processing the authorization of a transaction in the account of the second user and, during the processing of the transaction, identifying

an advertisement based on the profile of the second user, and transmitting the advertisement to the second user's mobile device.

In particular, limitations (p)–(s) recite: (p) “processing . . . authorization of a first transaction in the account of the second user initiated on a point of sale (‘POS’) terminal,” including (q) “receiving . . . an authorization request” for the transaction from the POS terminal, (r) “obtaining . . . an authorization response,” and (s) “transmitting . . . the authorization response to the POS terminal.” Further, limitations (t)–(z) recite: (t) “during the processing of the authorization of the first transaction,” (u) “identifying . . . an advertisement . . . based at least in part on the profile of the second user,” (v–x) “identifying” the communication reference of the second user's mobile device, (y) “instructing . . . the portal to communicate with the mobile device using the communication reference,” and (z) “transmitting, by the portal, the advertisement to the mobile device . . . without going through the POS terminal, to cause the mobile device to present the advertisement in real time with the processing of the authorization of the first transaction.”

Claim 1 is, therefore, directed to a combination of features that we conclude are similar or analogous to claims in other cases that courts have found are directed to an abstract idea. The Federal Circuit has found claims reciting collecting and manipulating data, and mathematical relationships and calculations, as being directed to abstract ideas. *See, e.g., Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017) (identifying the abstract idea of collecting, displaying, and manipulating data); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) (characterizing collecting information, analyzing

information by steps people go through in their minds, or by mathematical algorithms, and presenting the results of collecting and analyzing information, without more, as matters within the realm of abstract ideas); *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can. (U.S.)*, 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 SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1168 (Fed. Cir. 2018) (“As many cases make clear, even if a process of collecting and analyzing information is ‘limited to particular content’ or a particular ‘source,’ that limitation does not make the collection and analysis other than abstract.” (quoting *Elec. Power Grp.*, 830 F.3d at 1353, 1355 (citing cases))).

Targeting customers with particular targeted advertisements also is a longstanding marketing and advertising practice, and is substantially similar to economic practices that the courts have found patent-ineligible. *See, e.g., Morsa v. Facebook, Inc.*, 77 F. Supp. 3d 1007, 1013 (CD. Cal. 2014), *aff’d*, 622 F. App’x 915 (Fed. Cir. 2015) (concluding that targeting advertisements to certain consumers is no more than an abstract idea); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 713 (Fed. Cir. 2014) (offering media content in exchange for viewing an advertisement); *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1370 (Fed. Cir. 2015) (tailoring information presented to a user based on particular information); *Affinity Labs of Texas, LLC v. Amazon.com, Inc.*, 838 F.3d 1266, 1271 (Fed. Cir. 2016) (customizing a user interface to have targeted advertising based on user information).

Thus, we are not persuaded by Appellants’ argument that the Examiner overgeneralizes claim 1, or fails to consider claim 1 as a whole, because the Examiner analyzed the limitations individually and collectively. *See* Final Act. 4–5. Based on the analysis above, we agree with the Examiner’s findings that the individual limitations of claim 1 recite several abstract ideas, including mental processes and mathematical concepts (functions or operations that could be performed in the human mind or with pen and paper, including mathematical calculations), and fundamental economic practices of sales activities and targeted advertising. In that regard, we note that merely combining several abstract ideas does not render the combination any less abstract. *RecogniCorp, LLC v. Nintendo Co., Ltd.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (“Adding one abstract idea . . . to another abstract idea . . . does not render the claim non-abstract.”); *see also FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1094 (Fed. Cir. 2016) (determining the pending claims were directed to a combination of abstract ideas). We also agree with the Examiner that, as a whole, the limitations of claim 1 “are directed to the fundamental economic practice of targeted marketing – which is organizing human activity.” *Id.* at 5 (emphasis omitted). Accordingly, we conclude that claim 1 recites a method of organizing human activity—targeted advertising based on a user’s profile determined from the user’s spending behavior— one of the abstract idea groupings in the Revised Guidance. *See* Revised Guidance, 84 Fed. Reg. at 52. Thus, we also conclude that claim 1 recites an abstract idea.

2. USPTO Step 2A, Prong Two

Because we determine that claim 1 recites an abstract idea, we turn to prong two of the first step of the *Alice* analysis and consider whether claim 1

integrates this abstract idea into a practical application. *See* Revised Guidance, 84 Fed. Reg. at 51. In doing so, we consider whether there are any additional elements beyond the abstract idea that, individually or in combination, “integrate the [abstract idea] into a practical application, using one or more of the considerations laid out by the Supreme Court and the Federal Circuit.”⁷ Revised Guidance, 84 Fed. Reg. at 54–55.

The Examiner finds that the additional elements recited in the claims other than the abstract idea are “computing apparatus, medium,” that “are not sufficient to amount to significantly more than the judicial exception because the claims do not provide improvements to another technology or technical field, improvements to the functioning of the computer itself, and do not provide meaningful limitations beyond general linking the use of an abstract idea to a particular technological environment.” Final Act. 5; *see also id.* at 6. The Examiner also finds that the claims do not add meaningful limitations to the abstract idea “because they require no more than a generic computer to perform generic computer functions that are well understood, routine, and conventional activities previously known to the industry. *Id.*

Appellants argue the claimed invention “is directed to ‘computer-related technology’ by providing a particular solution to a problem of reducing a set of voluminous transaction data into a transaction profile having a significantly smaller size.” App. Br. 8. Appellants also argue that the computer system of the claimed invention “has a function not previously

⁷ We acknowledge that some of these considerations may be properly evaluated under step 2 of *Alice* (step 2B of the Revised Guidance). Solely for purposes of maintaining consistent treatment within the Office, we evaluate it under step 1 of *Alice* (step 2A, prong two, of the Revised Guidance). *See* Revised Guidance, 84 Fed. Reg. at 54–55.

performable by a computer,” and is patent eligible for the rationale stated in *McRO*.⁸ Appellants further argue that the claimed invention has a computing apparatus “having components that are able in combination to perform ‘functions that are not merely generic (DDR)’⁹.” *Id.* at 13 (emphasis deleted). Thus, according to Appellants, “the claims inventions are significantly more than an abstract idea (and thus eligible).” *Id.* (emphasis deleted).

We are not persuaded by these arguments. First, Appellants have failed to demonstrate that the operations of claim 1, in which, as Appellants argue, “a set of voluminous transaction data [is reduced] into a transaction profile having a significantly smaller size,” invoke any asserted inventive programming, require any specialized computer hardware or other inventive computer components, i.e, a particular machine, or that the claimed invention is performed using other than generic computer components. Nor have Appellants identified any disclosure in the Specification of any inventive techniques or specialized computer components to perform the claimed operations of claim 1, including “compressing” the transaction data into “a set of factor values,” performing a “factor analysis,” or “generating” a profile of the second user.

Second, we are not persuaded claim 1 is analogous or similar to the claim in *McRO* that the court determined was not directed to an abstract idea. In *McRO*, the Federal Circuit concluded that the claim, when considered as a whole, was directed to a “technological improvement over

⁸ *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299 (Fed. Cir. 2016).

⁹ *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014).

the existing, manual 3-D animation techniques” and “uses the limited rules in a process specifically designed to achieve an improved technological result in conventional industry practice.” *McRO*, 837 F.3d at 1316.

Specifically, the Federal Circuit found that the claimed rules allow computers to produce accurate and realistic lip synchronization and facial expressions in animated characters that previously could only be produced by human animators; and the rules are limiting because they define morph weight sets as a function of phoneme sub-sequences. *Id.* at 1313.

Here, Appellants have not identified any analogous improvement that is attributable to the claimed invention. Although compressing transaction data and generating a second user profile as recited in claim 1 may improve a business process, i.e., developing targeted advertisements to send to the second user in “real time,” it does not achieve an improved technological result. We see no parallel between the limiting rules described in *McRO* and compressing first and second user transaction data to generate a profile and advertisement for the second user, as recited in claim 1.

Third, Appellants do not assert that claim 1 requires an arguably inventive device or technique for displaying information or new techniques for analyzing or compressing transaction data. Thus, this case is unlike *DDR* in which an inventive concept was found in the modification of conventional mechanics behind website displays to produce a dual-source integrated hybrid display. *See DDR*, 773 F.3d at 1257. We also agree with the Examiner’s findings that *DDR* addressed a technological problem “particular to the internet,” whereas here Appellants simply take pre-internet “mathematical concepts of factor analysis and cluster analysis from the

paper and pencil era and appl[y] that to card data for sending content (an ad).” Final Act. 7.

Appellants do not specifically argue that the Examiner erred in determining claim 1 recites “computing apparatus, medium,” that perform generic computer functions that are well understood, routine, and conventional activities. *See* Final Act. 5–6. We see nothing in the claims or the Specification that suggests otherwise. Thus, we determine that the additional elements recited in claim 1 of “a computing apparatus,” comprising *inter alia* “a transaction handler,” “a profile generator,” “a portal,” “a point of sale terminal,” and “a mobile device” do not integrate the recited abstract idea into a practical application. *See Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1262 (Fed. Cir. 2016) (“In this case, the claims are directed not to an improvement in cellular telephones but simply to the use of cellular telephones as tools in the aid of a process focused on an abstract idea. That is not enough to constitute patentable subject matter.”); Revised Guidance, 84 Fed. Reg. at 55 (explaining that courts have identified “merely us[ing] a computer as a tool to perform an abstract idea” as an example of when a judicial exception may not have been integrated into a practical application). Further, consistent with the Examiner’s findings, and in view of Appellants’ Specification (e.g., ¶¶ 343–344, 346, 421–424), we conclude that claim 1 does not integrate the judicial exception into a practical application. In particular, we determine claim 1 does not recite:

- (i) an improvement to the functioning of a computer;
- (ii) an improvement to another technology or technical field;
- (iii) an application of the abstract idea with, or by use of, a particular machine;

- (iv) a transformation or reduction of a particular article to a different state or thing; or
- (v) other meaningful limitations beyond generally linking the use of the abstract idea to a particular technological environment.

See MPEP §§ 2106.05(a)–(c), (e)–(h).

3. USPTO Step 2B – Inventive Concept

Finally, we consider whether claim 1 has an inventive concept, that is, whether any additional claim elements “‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 573 U.S. at 217 (quoting *Mayo*, 566 U.S. at 78, 79). This requires us to evaluate whether the additional claim elements add “a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field” or “simply append[] well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality.” Revised Guidance, 84 Fed. Reg. at 56.

The Examiner finds that the claims do not include additional elements that are sufficient to amount to significantly more than the abstract idea. Final Act. 5–6. In particular, the Examiner finds that the “generically recited computer elements do not add a meaningful limitation to the abstract idea because they would be routine in any computer implementation.” *Id.* at 6. The Examiner also finds that the claim limitations “do not improve the technical field” and “require no more than a generic computer to perform generic computer functions that are well-understood, routine, and conventional activities.” *Id.* Contrary to Appellants’ argument that the claims include an ordered combination that is significantly more, the Examiner finds that the claims simply involve “implementing an idea by computer,” which is not an ordered combination demonstrating an

innovative concept to ensure that the claim[s] amount[] to significantly more.” *Id.*

Appellants argue that, even if the claims were directed to an abstract idea, the claims have significantly more “because the claimed invention involves non-generic computer implementation. The claimed implementation is not routine, conventional and well-understood.” App. Br. 14. However, Appellants do not point to, nor do we find, anything in the claims or the Specification suggesting that the claimed computer apparatus is anything but generic computer components that perform well-understand, routine, and conventional activities. *See, e.g.*, Spec. ¶¶ 343–344, 346, 421–424). Moreover, Appellants’ arguments are conclusory and unsupported by persuasive evidence and technical reasoning. As a result, considering claim 1 as a whole, we agree with the Examiner and determine that the additional elements recited in claim 1 do not provide “a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field.” Revised Guidance, 84 Fed. Reg. at 56. Rather, these elements “simply append[] well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality.” Revised Guidance, 84 Fed. Reg. at 56. Accordingly, we agree with the Examiner that claim 1 does not have an inventive concept.

5. Conclusion

Because we determine that claim 1 is directed to an abstract idea and does not contain an inventive concept, we sustain the Examiner’s rejection of claim 1 under § 101. Appellants rely on the same reasoning regarding the rejection of independent claims 16 and 17 as set forth regarding claim 1. *See* App. Br. 14–15. Thus, for the same reasons discussed regarding claim 1, we

also sustain the Examiner's rejection of claims 16 and 17 under § 101. For the same reasons, we also sustain the Examiner's rejection of dependent claims 3–15, 18, and 19, which are not separately argued.

II. Section 112 Rejection

The Examiner rejects claims 1 and 3–19 for indefiniteness under 35 U.S.C. § 112, second paragraph, because the term “substantially fewer,” as recited in independent claims 1, 16, and 17, is vague and indefinite. Final Act. 8. The Examiner finds that persons of ordinary skill in the art could come to different conclusions about what constitutes “substantially fewer” because it could mean a data reduction in one, two, or three orders of magnitude. *Id.*

Appellants argue that claim terms of degree are not necessarily indefinite if the specification provides examples that can be used to measure degree even without precise numerical measurement. App. Br. 17 (citing MPEP § 2173.05 (b)). Appellants also argue that the Specification provides sufficient examples so that a person of ordinary skill in the art would have no difficulty in determining what is the “substantially fewer” set of factor variables needed to practice factor analysis in the claimed invention. *Id.* (citing Spec. ¶¶ 289–290); Reply Br. 7.

We are persuaded by Appellants' arguments that the Examiner erred. Terms of degree like “substantially” and “about” do not necessarily render claims indefinite. *See, e.g., Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1359 (Fed. Cir. 2012) (“This court has repeatedly confirmed that relative terms such as ‘substantially’ do not render patent claims so unclear as to prevent a person of skill in the art from ascertaining the scope of the claim.”). These terms are sufficiently definite when, for example, the

associated specification provides a standard for measuring the degree. *See, e.g., Seattle Box Co. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984). Mathematical precision is not required; the specification must simply provide sufficient certainty to one of ordinary skill in the art. *See Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014).

We determine that Appellants' Specification satisfies this standard. Paragraph 290 of the Specification discloses, for example, that "there may be thousands of variables on spending frequency and amount" and the factor analysis can "reduce the factor number to less than one hundred (and even less than twenty)." This paragraph also discloses, in another example, that "a twelve-factor solution is obtained," so that "the spending behavior in thousands of merchant categories can be summarized via twelve factor values." Thus, Appellants' Specification discloses examples that can be used to determine when the factors are "substantially fewer" than the spending variables—a range from thousands of spending variables to one hundred, twenty, or twelve factors. Although this is not a precise definition of how much the spending variables must be reduced, such precision is not required, and the examples provide sufficient, and objective, certainty as to the magnitude of the reduction for there to be "substantially fewer" factors than spending variables. Furthermore, our reviewing court points out that a claim which is of such breadth that it reads on subject matter disclosed in the prior art is rejected under 35 U.S.C. §§ 102 or 103 rather than under 35 U.S.C. § 112, second paragraph. *See In re Hyatt*, 708 F.2d 712, 715 (Fed. Cir. 1983).

Accordingly, we do not sustain the Examiner's rejection of claims 1 and 3–19 under § 112, second paragraph.

III. Section 103(a) Rejections

The Examiner rejects claims 1, 3–12, and 16–19 for obviousness over the combination of Fordyce, Hammad, Yaskin, and Blume.¹⁰ Final Act. 9. The Examiner finds that Fordyce does not teach “factor analysis,” as recited in claim 1, but Yaskin does. *Id.* at 13–15. In particular, the Examiner finds that Yaskin teaches compressing the second transaction data into a set of factor values by performing a factor analysis of the predefined spending variables based on the first set of values. *Id.* at 13–14 (citing Yaskin ¶ 4 (as teaching the first time and first transactions), and Yaskin ¶¶ 4–12 (as teaching the second time, second transactions)).

Appellants argue that Yaskin “does not teach or suggest compressing second transaction data using values for first users and a second user, as claimed,” but “solely focuses on analyzing data for a single student.” App. Br. 20 (citing Yaskin ¶¶ 3–4); Reply Br. 8. According to Appellants, the Examiner is misreading Yaskin's “second student” to imply a second person, and a person of ordinary skill would recognize that “Yakin uses the word ‘second’ only to modify the additional recommendations provided to the same single student that receives the first recommendations.” Reply Br. 8–9.

We are not persuaded by Appellants' arguments that the Examiner erred. Instead, we agree with the Examiner that Yaskin teaches a first student and that the first student is the training set for other students,

¹⁰ The Examiner rejects claims 13–15, which depend from claim 1, for obviousness over the same four references, as well as Levine. Final Act. 23.

including the “second student.” Ans. 7 (citing Yaskin ¶¶ 4, 11). In that regard, we agree with the Examiner that Yaskin teaches providing recommendations to more than one student because paragraph 4 of Yaskin states that systems and methods of the disclosure “relate to providing spending information and budgeting recommendations to students based upon financial account usage associated with a student’s personal identification card.” (Emphasis added). We also agree with the Examiner that Yaskin teaches providing recommendations to more than one student because paragraph 11 of Yaskin discloses “compar[ing] the student account usage with the first student spending recommendations” and “provid[ing] one or more second student spending recommendations” based in part “on the student role and the compared student financial account usage with the first student spending recommendations.” (Emphasis added). We understand these disclosures of Yaskin to teach or at least suggest analyzing the transactions of more than one student and making spending recommendations in part based on the second student’s role and the compared second student’s financial usage with the spending recommendations to the first student.

Accordingly, for these reasons, we sustain the Examiner’s rejections of claims 1, 16, and 17, and claims 3–15, 18, and 19, which depend from either claim 1 or claim 17, under § 103(a).

DECISION

We affirm the Examiner’s rejection of claims 1 and 3–19 under 35 U.S.C. § 101.

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We reverse the Examiner's rejection of claims 1 and 3–19 under 35 U.S.C. § 112, second paragraph.

We affirm the Examiner's rejection of claims 1 and 3–19 under 35 U.S.C. § 103(a).

No period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv). *See* 37 C.F.R. § 41.50(f).

AFFIRMED