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Hewlett Packard Enterprise
3404 E. Harmony Road
Mail Stop 79
Fort Collins, CO 80528

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hpe.ip.mail@hpe.com
chris.mania@hpe.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MANISH MARWAH,
CHANDRAKANT PATEL, and
AMIP J. SHAH

Appeal 2016-002494
Application 13/562,389¹
Technology Center 3600

Before HUBERT C. LORIN, BIBHU R. MOHANTY, and
AMEE A. SHAH, *Administrative Patent Judges*.

LORIN, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

Manish Marwah et al. (“Appellants”) seek our review under 35 U.S.C. § 134(a) of the Final Rejection of claims 2–4, 6–13, 15, 16, 18, 20–22, and 24–31. We have jurisdiction under 35 U.S.C. § 6(b).

SUMMARY OF DECISION

We AFFIRM-IN-PART and enter NEW GROUNDS OF REJECTION.

¹ The Appellants identify Hewlett-Packard Development Company, LP as the real party in interest. App. Br. 1.

THE INVENTION

Claim 4, reproduced below, is illustrative of the subject matter on appeal.

4. A method comprising:

receiving, by a system having a processor, identification of a constituent component;

clustering, by the system, components identified in bills of materials into clusters of the components, wherein the bills of materials are for corresponding product assemblies that are indicated as potentially containing the constituent component;

mapping, by the system, centroids of the clusters to respective nodes of a data structure that stores information containing at least one metric for each of a plurality of components, the at least one metric indicating an impact of the corresponding component on an environment;

determining, by the system in response to the mapping, an estimated quantity of the constituent component in a given product mix; and

modifying, by an enterprise, products provided by the enterprise based on the determined estimated quantity.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Ettl	US 5,946,662	Aug. 31, 1999
Hage	US 2003/0172008 A1	Sept. 11, 2003
Cesarotti	US 6,999,965 B1	Feb. 14, 2006

The following rejections are before us for review:

1. Claims 2–4, 6–13, 15, 16, 18, 20–22, and 24–31 are rejected under 35 U.S.C. § 101 as being directed to judicially-excepted subject matter.²
2. Claims 2–4, 6–13, 15, 16, 18, 20–22, 24–27, 29, and 30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hage and Ettl.³
3. Claims 28 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hage, Ettl, and Cesarotti.

ISSUES

Did the Examiner err in rejecting claims 2–4, 6–13, 15, 16, 18, 20–22, and 24–31 under 35 U.S.C. § 101 as being directed to non-statutory subject matter?

Did the Examiner err in rejecting claims 2–4, 6–13, 15, 16, 18, 20–22, 24–27, 29, and 30 under 35 U.S.C. § 103(a) as being unpatentable over Hage and Ettl?

Did the Examiner err in rejecting claims 28 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hage, Ettl, and Cesarotti?

² The statement of the rejection included claim 5. Final Act. 3. However, claim 5 has been cancelled. *See* App. Br., i (Claims App’x) (“Claims 1, 5, 14, 17, 19 and 23 have been cancelled.”)

³ The statement of the rejection included claim 23. Final Act. 6. However, claim 23 was cancelled. *See* n.2 *supra*.

ANALYSIS

The rejection of claims 2–4, 6–13, 15, 16, 18, 20–22, and 24–31 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

The rejection of claim 10 is reversed pro forma because it depends from a canceled claim (claim 1).

The Appellants argued these claims as a group. *See* App. Br. 7–15; Reply Br. 3–8. We select claim 4 as the representative claim for this group, and the remaining claims 2, 3, 6–9, 11–13, 15, 16, 18, 20–22, and 24–31 stand or fall with claim 4. 37 C.F.R. § 41.37(c)(1)(iv).

Alice Corp. Proprietary Ltd. v. CLS Bank International, 134 S. Ct. 2347 (2014) identifies a two-step framework for determining whether claimed subject matter is judicially-excepted from patent-eligibility under 35 U.S.C. § 101.

According to *Alice* step one, “[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept,” such as an abstract idea. *Alice*, 134 S. Ct. at 2355.

In that regard, the Examiner determined that the

[b]ased upon consideration of all the relevant factors with respect to the claim as a whole, claims 2 – 13, 15 – 16, 18, 20 – 22 and 24 – 31 are deemed to claim an abstract idea (receiving component identifications, determining estimate quantity of component in a given product mix, clustering components in a bill of material, and mapping the clusters to respective nodes of the data structure) and are rejected under § 101. The claim elements of receiving component identifications, determining estimate quantity of component in a given product mix, clustering components in a bill of material, and mapping the clusters to respective nodes of the data structure can be done by human activities and the claims merely amount to the application or instructions to apply the abstract idea on a computer, and amount to nothing more than requiring a generic

computer to perform generic computer functions that are well-understood, routine and conventional activities previously known to the industry. Furthermore, the claim elements of receiving component identifications, determining estimate quantity of component in a given product mix, clustering components in a bill of material, and mapping the clusters to respective nodes of the data structure does not improve to the function of a computer itself. Furthermore, the claim does not move beyond a general link of the use of an abstract idea to a particular technological environment.

Final Act. 3–4.

Step two is “a search for an ‘inventive concept’—*i.e.*, 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*, 134 S. Ct. at 2355 (quoting *Mayo*, 566 U.S. at 72–73).

In that regard, the Examiner determined

[t]here are no meaningful limitations that transform the exception into a patent eligible application. The claims only manipulate abstract data elements. The generic computing elements recited are known and conventional. None of the hardware recited “offers a meaningful limitation beyond generally linking ‘the use of the [method] to a particular technological environment,’ that is, implementation via computers.” *Id.*, slip op. at 16 (citing *Bilski v. Kappos*, 561 U.S. 610, 611 (U.S. 2010)).

Final Act. 4.

The Appellants disagree, “submi[ting] that [independent] claim 4 is directed to patent-eligible subject matter.” App. Br. 8. “Independent claim 9 and its method claim also recite patent-eligible subject matter, for reasons similar to those stated above for claim 4.” App. Br. 14. The central reason given by the Appellants for challenging the determination that claims

4 and 9 are not judicially-expected for covering an abstract idea is that they contain the limitation “*modifying, by an enterprise, products provided by the enterprise based on the determined estimated quantity*” (claims 4 and 9 (emphasis added)). Regarding the *Alice* step one analysis, the Appellants argue, *inter alia*, that “[t]he fact that claim 4 calls for physical interaction between the claimed process and a physical entity (namely, ‘modifying, by an enterprise, products provided by the enterprise based on the determined estimated quantity’) clearly establishes that claim 4 does not merely recite an ‘idea itself.’” App. Br. 11. Regarding step two, the Appellants argue

- “the subject matter in the ‘modifying’ clause of claim 4 transforms the process of claim 4 into an inventive application of the process that is recited in claim 4” (App. Br. 12);
- “[t]he presence of the subject matter in the ‘modifying’ clause of claim 4 supplies an inventive concept ‘in the physical realm of things’ that provides a ‘new and useful application’ of the claimed subject matter to the physical realm” (App. Br. 13);
- “claim 4 improves an existing technological process, namely using the process according to claim 4 to modify products provided by the enterprise based on an estimated quantity determined using the process of claim 4” (App. Br. 14); and,
- “[c]laim 4 specifically recites modifying **products** provided by the enterprise based on the determined estimated quantity-the products of claim 4 are **not** abstract data elements” (App. Br. 14).

In other words, according to the Appellants, because claims 4 and 9 call for “modifying . . . products,” they are necessarily patent-eligible.

However, we are not placed in a position to meaningfully review the question of whether the claims are patent-eligible because they include the limitation “modifying . . . products.” This is so because the record fails to

provide written descriptive support for “modifying . . . products.” That in turn raises a question of indefiniteness.

The Examiner takes the position that “modifying . . . products” “is mere data modification function due to it is data process of computer.” Ans. 19; *see also* Ans. 28 (“Modifying product data provided by the enterprise merely change data in a data storage.”)

The Appellants take the position that “modifying . . . products” involves physical objects.

As specifically stated in the Specification of the present application, “[a] constituent component, such as a raw material or other type of constituent component, can be present in various products that are offered by or used by an enterprise (*e.g.* business concern, government agency, educational organization, individual, etc).” Specification, ¶ [0003]. Examples of products provided in the Specification include a computer or a hard disk drive in a computer. *Id.* As further stated in the Specification, “[a]s an example, tantalum is a metal that is used in various electronic products, such as computers, mobile phones, display devices, and so forth.” *Id.*, ¶ [0003].

From at least the foregoing passages, it is clear that the term “products” as used in claim 4 refers to a physical entity which can include a raw material or other constituent component. The Examiner’s Answer has clearly erred in asserting that “products” is interpreted to be just “product data.”

Ans. 4.

But the Specification does not describe modifying, whether it be data or physical objects. “[M]odify” is used in the Specification but never in the context of “modifying . . . products” as that term is used in claims 4 and 9. *See Spec.*, paras. 23, 24, 25, 46 (describing modifying clusters and a distance metric). The Specification provides no written descriptive support for “modifying . . . products.”

Because there is no written descriptive support for the phrase “modifying . . . products” in claims 4 and 9, the meaning of “modifying . . . products” is unclear, as reflected in the differing positions of the Examiner and the Appellants on whether the products being modified is data or physical objects. Without written descriptive support for “modifying . . . products” in claims 4 and 9 and one that explains what type of product is intended to be modified, the meaning of “modifying . . . products” in claims 4 and 9 is a matter of considerable speculation. *In re Steele*, 305 F.2d 859, 862 (CCPA 1962) (“Our analysis of the claims indicates that considerable speculation as to meaning of the terms employed and assumptions as to the scope of such claims were made by the examiner and the board.”).

For these reasons, we will reverse the rejection as to claims 4 and 9 and claims 2, 3, 6–8, 21, and 25–28 that depend from claim 4.

The Appellants do not challenge the rejection of independent claims 11 and 20. They do not contain the aforesaid “modifying . . . products” limitation in claims 4 and 9. Accordingly, we sustain the rejection of claims 11 and 20, claims 10, 12, 13, 15, 16, 18, 22, 29, 30, and claims 24 and 31 that depend from claims 11 and 20, respectively.

The rejection of claims 2–4, 6–13, 15, 16, 18, 20–22, 24–27, 29, and 30 under 35 U.S.C. § 103(a) as being unpatentable over Hage and Ettl.

The rejection of claim 10 is reversed *pro forma* because it depends from a canceled claim (claim 1).

Claim 4 calls for “clustering, by the system, components identified in bills of materials into clusters of the components.” According to the Examiner,

[Hage] at least paragraph 6 and 11 – 12; via a “BOM” is any collection of data that identifies various components, elements, services, or processes that make up a product, a service, a process, or a project. For example, a bill of materials may identify multiple components that are used to assemble a finished product. In this example, the bill of materials may specify various information regarding each component, such as part numbers, quantities and the manner in which the multiple components are assembled with one another. In another example, a bill of materials identifies multiple services that are performed to complete a particular project . . . [.] A particular bill of materials may contain any number of entries related to any number of products, services, processes or projects. According to the www.thesaurus.com, cluster is defined is group of something. The Bill of material tree contains group of components therefore, bill of materials containing collection of components teach the limitation of the claim. Furthermore, Figure 2B 106 discloses retrieving data from rollup table wherein rollup table, which discloses components related data for different parts (See Figure 5). Abstract and Figure 4 of Hage discloses tree structures specification of BOM.

Final Act. 8.

But, as the Appellants point out,

[w]hat the Examiner has done is identified bills of materials in Hage, and argued that the presence of such bills of materials by themselves satisfies the clustering performed in claim 4. Such an assertion is clearly erroneous, as all the Examiner has done is establish that Hage describes bills of materials. There is no separate clustering of components identified in bills of materials into clusters of components, as claimed, in Hage.

App. Br. 17.

We agree. Hage uses the term “collection” rather than “cluster”. Hage par 12. Specifically, the cited disclosure describes bill of materials (BOMs) - “any collection of data that identifies various components, elements, services, or processes that make up a product, a service, a process, or a project.” *Id.* However, claim 4 requires more than just a collection. “[C]omponents identified *in bills of materials* [are clustered] into clusters of the components” (claim 4).

Accordingly, the rejection of independent claim 4 and claims 2, 3, 6-8, 21, and 25-28 depending therefrom is not sustained.

Independent claims 9 and 11 require clustering using “a distance metric that represents similarity of the components.”

The Examiner cites “at least paragraphs 9 and 12 – 13” of Hage as evidence that this is disclosed in the prior art. *See* Final Act. 14 (discussing claim 21 which includes said limitation).

We have reviewed the cited passages but cannot find there clustering using “a distance metric that represents similarity of the components”.

Accordingly the rejection of independent claims 9 and 11, and claims 12, 13, 15, 16, 18, 22, 29 and 30 depending from claim 11, is not sustained.

Independent claim 20 requires mapping centroids of “clusters to nodes of a data structure that stores information containing at least one metric for each of a plurality of components, the at least one metric indicating an impact of the corresponding component on an environment.” We agree with the Appellants that the Examiner has not shown this to be disclosed in Hage as alleged.

[T]he leaf nodes in the tree structure of Hage represent sub-assemblies, and can be “designated with internal part numbers (IPNs).” Hage, ¶ [0031]. There is no indication whatsoever that the tree structure including the leaf nodes in ¶ [0031] of Hage includes at least one metric “indicating an impact of the corresponding component on an environment,” as claimed. The IPNs merely identifies parts, namely the sub-assemblies mentioned in ¶ [0031] of Hage. The Examiner has not explained how part numbers constitute a metric indicating an impact of a corresponding component on an environment.

App. Br. 20.

Accordingly, the rejection of claim 20 and claim 24 depending therefrom is not sustained.

The rejection of claims 28 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hage, Ettl, and Cesarotti.

Claims 28 and 31 depend from claims 4 and 20, respectively. Their rejection is not sustained for the reasons discussed in not sustaining the rejection of claims 4 and 20.

NEW GROUNDS OF REJECTION

Claim 10 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 depends from cancelled claim 1. *See* App. Br., i (Claims App’x) (“Claims 1, 5, 14, 17, 19 and 23 have been cancelled.”).

Claims 2–4, 6–9, 21, and 25–28 are rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement.

Compliance with the written description requirement is a question of fact. *Ralston Purina Co. v. Far-Mar-Co, Inc.*, 772 F.2d 1570, 1575 (Fed. Cir. 1985). In that regard, we have reviewed the Specification but have been unable to find any mention of “modifying ... products.”

The Appellants direct our attention to Fig. 3 and paras. 40 and 41 of the Specification as providing support for said subject matter. See App. Br. 3 and 4 for claims 4 and 9, respectively.

Fig. 3 shows a graph of the cost impact of three product mixes over time. “The graph correlates time (horizontal axis) to the cost impact (vertical axis) due to presence of a particular constituent component (or constituent components) in a product mix.” Spec., para. 39.

Paras 40 and 41 read as follows:

[0040] The graph depicted in Fig. 3 is an example of an output that can be provided to a user to allow what-if analysis of cost impacts of different product mixes. Based on the graph, the user can select one of the product mixes as being more optimal than the other product mixes depicted in Fig. 3.

[0041] Using techniques or mechanisms according to some implementations, the effort of estimating the quantity of a particular constituent component in a product mix is reduced. Hot-spot analysis can be performed of products in terms of their usage of a particular constituent component. This allows an enterprise to quickly identify which of their products would be impacted by a particular constituent component. For example, if a government regulation specifies that enterprises are to perform diligence on their use of a particular raw material, starting at a particular time, then the enterprise can quickly perform hot-spot analysis to determine which of their products include the impacted raw material.

These disclosures do not describe modifying a product. They describe tools for more efficiently analyzing the cost impact of selecting a particular product. Fig. 3 “can be provided to a user to allow what-if analysis of cost

impacts of different product mixes. Based on the graph, the user can select one of the product mixes as being more optimal than the other product mixes” (para. 41). According to some implementations, certain techniques or mechanisms can reduce “the effort of estimating the quantity of a particular constituent component in a product mix” (para. 41).

“To satisfy this requirement, the specification must describe the invention in sufficient detail so ‘that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.’” *In re Alonso*, 545 F.3d 1015 (Fed. Cir. 2008) (quoting *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997)). Fig. 3 and paras. 40 and 41 do not provide sufficient detail to provide adequate written descriptive support for “modifying ... products” as claimed.

Claims 2–4, 6–9, 21, and 25–28 are newly under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase “modifying . . . products” renders claims 4 and 9 (and the claims depending therefrom) indefinite. The intrinsic record provides no guidance for ascertaining the types of products that are to be modified.

The Examiner assumes “products” means data. The Appellants dispute that, arguing that “products” refers to physical objects. The disagreement cannot be resolved because the Specification does not disclose “modifying . . . products” at all. There are no details that would help resolve the matter.

One of ordinary skill in the art reading the claims in light of the Specification would be uncertain about the types of products – data or physical objects – that the claimed methods are modifying.

CONCLUSIONS

The rejection of claims 2–4, 6–10, 21, and 25–28 under 35 U.S.C. § 101 as being directed to non-statutory subject matter is reversed.

The rejection of claims 11–13, 15, 16, 18, 20, 22, 24, and 29–31 under 35 U.S.C. § 101 as being directed to non-statutory subject matter is affirmed.

The rejection of claims 2–4, 6–13, 15, 16, 18, 20–22, 24–27, 29, and 30 under 35 U.S.C. § 103(a) as being unpatentable over Hage and Ettl is reversed.

The rejection of claims 28 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hage, Ettl, and Cesarotti is reversed.

Claim 10 is newly under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2–4, 6–9, 21, and 25–28 are newly under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2–4, 6–9, 21, and 25–28 are newly rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement.

DECISION

The decision of the Examiner to reject claims 2–4, 6–13, 15, 16, 18, 20–22, and 24–31 is affirmed-in-part.

Claims 2–4, 6–10, 21, and 25–28 are newly rejected.

NEW GROUND

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

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same Record. . . .

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

AFFIRMED-IN-PART
37 C.F.R. § 41.50(b)