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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HESHAM EL-DAMHOUGY and
KEITH JARETT, LAFAYETTE

Appeal 2016-003361
Application 11/749,172¹
Technology Center 2400

Before MARC S. HOFF, JENNIFER L. McKEOWN, and SCOTT E. BAIN,
Administrative Patent Judges.

McKEOWN, *Administrative Patent Judge.*

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1–26, 28–30, and 32–34. App. Br. 2. Claims 27 and 31 have been cancelled. App. Br. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ The real party in interest is The Boeing Company.

STATEMENT OF THE CASE

Appellants' invention generally relates to ad-hoc communications networks and, more particularly, to an ad-hoc interplanetary communications network for adaptable deep-space communications in an unstructured and self-supervised interplanetary or sub-planetary environment, such as between deep-space or lunar probes and earth. Spec. p. 2, ¶ 2.

Claim 1 is illustrative and is reproduced below:

1. A computer implemented method of optimizing a communications network, said computer implemented method comprising:
 - providing, an initial network configuration for an interplanetary communications network, said interplanetary communications network having a plurality (k) of nodes;
 - providing forecasts of traffic demand in said interplanetary communications network;
 - determining objective functions by a computer responsive to said demands and characterizing communications over links between said nodes in said network;
 - determining by said computer at least one limit for each said objective function; and
 - adjusting said initial network configuration responsive to determined objective function limits.

THE REJECTION

Claims 1–26, 28–30, and 32–34 stand rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. Final Act. 2.

ANALYSIS

Claims 1–26, 28–30, and 32–34

Based on the record before us, we are not persuaded that the Examiner erred in rejecting the claims under 35 U.S.C. § 101 as directed to non-statutory subject matter.

Following the decision in *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2350 (2014) (citing *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1300 (2012)), we analyze claims under the two-part analysis set forth in *Mayo* to determine subject matter eligibility. First, we consider whether the claim is directed to an abstract idea and, second, if an abstract idea is present in the claim, we determine whether any element, or combination of elements, in the claim is sufficient to ensure that the claim amounts to significantly more than the abstract idea itself. *See Alice*, 134 S. Ct. at 2350.

“Under *Alice* step one, ‘claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject matter.’” *Smart Systems Innovations, LLC v. Chicago Transit Authority*, 873 F.3d 1364, 1371 (Fed. Cir. 2017) (citing *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)). Independent claims 1, 10, and 34 here each recite forecasting traffic between interplanetary communication network nodes, selecting a objective function limits, and then adjusting the network configuration to optimize the network configuration. These claims, as a whole, are directed to the abstract idea of optimizing a network configuration.

The Examiner determines that claim 1, as a whole, is directed to the abstract idea represented by the “adjusting step” for optimizing the network

and is based on mathematical relationships and formulas. Ans. 4; Final Act. 3. The Examiner also determines that the limitations do not include “significantly more” than the abstract idea. Final Act. 3. Specifically, “[a] ‘meaningful limit’ of a mathematical relationship is not considered significantly more than the abstract idea of creating or optimizing a configuration of a network.” Ans. 4.

On the other hand, Appellants assert that the Examiner’s rejection is in error because the claims include “significantly more” than the recited mathematical relationships. App. Br. 5–6. In particular, Appellants point to the limitations of: “providing an initial network configuration for an interplanetary communications network having a plurality (k) of nodes, providing forecasts of traffic demand in the interplanetary communications network, and adjusting the initial network configuration.” App. Br. 5–6.

Appellants further explain that

The claim does not merely recite mathematical relationships in isolation, but integrates them into the claimed process of optimizing a communications network. The totality of the steps acts in concert to improve another technical field, specifically the field of ad-hoc interplanetary communications networks for adaptable deep-space communications in an unstructured and self-supervised interplanetary or sub-planetary environment, such as between deep-space or lunar probes and earth. *See* Pat. Appl., para. [0002]. In addition, the claimed steps taken as a combination effect a transformation of an interplanetary communications network into a different state or thing, *i.e.*, from an initial network configuration to an adjusted network configuration. Thus, the claim amounts to significantly more than any alleged mathematical relationships. The claim therefore recites patent eligible subject matter.

App. Br. 6. *See also* Reply Br. 2 (asserting that the combination of steps of the claimed method, including at least the adjustment of an initial network

configuration for an interplanetary communications network, adds meaningful limits on the use of mathematical relationships and amounts to significantly more).

We disagree. The claimed steps of collecting of data for a communications network, setting objective function limits, and adjusting the network configuration are merely conventional computer and network technology steps. *See Mayo*, 132 S. Ct. at 1300 (finding that “simply appending conventional steps, specified at a high level of generality, to laws of nature, natural phenomena, and abstract ideas cannot make those laws, phenomena, and ideas patentable.”); *see also Intellectual Ventures I LLC v. Capital One Financial Corp.*, 850 F.3d 1332 (Fed. Cir. 2017)(finding there is not significantly more when there is a “a generic computer element—a processor—and a series of generic computer ‘components’ that merely restate their individual functions. . . That is to say, they merely describe the functions of the abstract idea itself, without particularity. This is simply not enough under step two.)(citations omitted).

As the Examiner further explains with respect to the adjusting step, Appellant does not actually reconfigure the network in the claim language. ‘Adjusting said initial network configuration’ is broad enough that it does not necessarily implement a network re-configuration, but could also cover manipulating a generic design template that is not actually implemented in a network, such as changing a network topology description (see dependent claim 2).

Ans. 4. *See also* Ans. 5 (“The claimed invention never states that the initial network configuration, or the optimized network configuration, are actually applied or implemented in any communications network. Therefore, only the ‘network configuration’ - an abstract idea in itself relating only to the

potential design of an interplanetary communications network – is ‘transformed’. No communications network is actually transformed by the claim language”).

Contrary to Appellants’ assertions (Reply Br. 2–3), the Examiner’s interpretation is consistent with the Specification. For example, the Specification expressly contemplates optimizing network configuration “during planning and before network deployment” and “optimizing an interplanetary network by design.” Spec. ¶¶ 12–13. As such, we are not persuaded that the Examiner erred in finding the claimed subject matter to be directed to non-statutory subject matter. *See also Two-Way Media Ltd. v. Comcast Cable Communications, LLC*, 874 F.3d (Fed. Cir. 2017)(finding ineligible claims directed routing data); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1351 (Fed. Cir. 2016)(finding ineligible claims directed to monitoring performance of an electric power grid).

Therefore, for the reasons discussed above and by the Examiner, we sustain the Examiner’s rejection of claims 1–26, 28–30, and 32–34 as directed to non-statutory subject matter.

DECISION

We affirm the Examiner’s decision rejecting claims 1–26, 28–30, and 32–34 as directed to unpatentable subject matter.

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)(iv).

AFFIRMED