In the United States Court of Federal Claims

No. 17-825 (Filed: January 19, 2018)

SCIENCE APPLICATIONS INTERNATIONAL CORP.,

Plaintiff,

Patents; motion to dismiss for patent-ineligible subject matter; 35 U.S.C. § 101 (2012); whether plaintiff's claims are directed to an abstract idea

v.

THE UNITED STATES,

Defendant.

Christopher C. Campbell, Washington, DC, with whom was *DeAnna D. Allen*, for plaintiff.

Alex Hanna, United States Department of Justice, Civil Division, Commercial Litigation Branch, Washington, DC, for defendant.

<u>ORDER</u>

This is a claim for patent infringement. Plaintiff, Science Applications International Corp. ("SAIC"), claims that the government has infringed four patents by entering into contracts with plaintiff's competitors for the procurement of specialized heads up displays ("HUD") and night vision goggles that allegedly use SAIC's patented technology. Defendant moves to dismiss for failure to state a claim under Rule 12(b)(6) of the Rules of the United States Court of Federal Claims ("RCFC"), contending that plaintiff's patents claim ineligible subject matter under 35 U.S.C. § 101 (2012).

At the motion to dismiss stage, we assume that the facts as stated in the

complaint are true and draw all reasonable inferences in favor of the nonmoving party. Defendant's motion raises a question of law: whether plaintiff's patent claims recite patent-eligible subject matter. Accenture Global Servs., *GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1340–41 (Fed. Cir. 2013). Section 101 sets out the list of patentable subject matter: "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. Although this statutory grant is expansive, the Supreme Court has held that section 101 is subject to implicit exceptions for "laws of nature, natural phenomenon, and abstract ideas," which are not patentable. Alice Corp. Pty. Ltd. v. CLS Bank Int'l, 134 S. Ct. 2347, 2354 (2014). These three concepts are ineligible for patenting because they form the "basic building blocks of human ingenuity." Alice, 134 S. Ct. at 2354. Claiming a law of nature, natural phenomena, or abstract idea would preempt its use in future inventions, abusing the purpose of patent law and hampering the process of human innovation. Id. (citing Mayo Collaborative Servs. v. Prometheus Labs., Inc., 566 U.S. 66, 71 (2012)).

The Supreme Court has set out the two-part *Alice/Mayo* test for determining whether a patent claims ineligible subject matter. First, this court must determine whether the patent is directed to a patent-ineligible concept, such as an abstract idea. *Id.* at 2355 (citing *Mayo*, 566 U.S. at 72-73). If the patent is directed to a patent-ineligible concept, the second step is to determine, considering the claims "both individually, and 'as an ordered combination," whether the patent claims sufficiently transform the ineligible subject matter with an inventive concept. *Id.* (quoting *Mayo*, 566 U.S. at 72-73).

The Federal Circuit has acknowledged overlap in the two steps in the *Alice/Mayo* test, but has emphasized, "[T]he first-stage filter is a meaningful one, sometimes ending the inquiry." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016). The "directed to" inquiry is not simply asking whether an ineligible concept is involved in the patent claims, because all inventions "embody, use, reflect, rest upon, or apply" ineligible concepts to some extent, but rather if the patent is claiming the abstract idea itself. *Mayo*, 566 U.S. at 72-73; *see also Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). The first step "calls upon us to look at the 'focus of the claimed advance over the prior art' to determine if the claim's 'character as a whole' is directed to excluded subject matter." *Affinity Labs of Texas, LLC v. DIRECTV Dig. LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (quoting *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1375 (Fed. Cir. 2016); *Internet*

Patents Corp. v. Active Network, Inc., 790 F.3d 1343, 1346 (Fed. Cir. 2015)). Under *Alice/Mayo* step one, when determining if the claim's character is to preempt the ineligible concept or if the claim is sufficiently limited, the Federal Circuit considers the advance or advantages that the claim presents when compared to prior art and reads the claim language in light of the specification. *Thales Visionix Inc. v. United States*, 850 F.3d 1343 (Fed. Cir. 2017); *Enfish*, 822 F.2d at 1335, 1337; *Genetic Techs. Ltd.*, 818 F.3d at 1375-76. In addition to the claim's language and the specification, the first step calls for comparing the claims at issue to claims that have been found eligible or ineligible in prior cases. *Enfish*, 822 F.2d at 1334.

With that framework, we turn to the parties' arguments regarding patent eligibility for each of the four patents at issue and apply the *Alice/Mayo* first-stage filter to the patent claims. Both defendant in its motion to dismiss and plaintiff in its response put forth arguments that apply to all four patent claims. We therefore will set out the claim language from each patent claim analyzed in the briefing before considering the parties' arguments and comparing each patent's claim language to claims formerly found eligible or ineligible by the Federal Circuit.

I. The SERVAL Patents

The patents at issue here are U.S. Patent No. 7,787,012 ("the '012 Patent"), U.S. Patent No. 8,817,103 ("the '103 Patent"), U.S. Patent No. 9,229,230 ("the '230 Patent") and U.S. Patent No. 9,618,752 ("the '752 Patent") (collectively, the "SERVAL patents"). The four patents form two patent families due to the interrelatedness of the applications. The first patent family is formed by the '012 Patent and the '103 Patent; the '103 Patent is a division of the '012 Patent. The second patent family is formed by the '230 Patent. The second patent family is formed by the '230 Patent. The four independent claims the parties analyzed in briefing are claim 1 of '012 Patent, claim 1 of the '103 Patent, claim 15 of the '230 Patent.

¹ The parties also dispute which claims are representative. In its complaint, SAIC argues that all four patents have been infringed, but "at least" claim 1 of '012 Patent, claim 1 of the '103 Patent, claim 15 of the '230 Patent, and claim 7 of the '752 Patent. Plaintiff discusses these four independent claims in its complaint without discussing the other independent claims found in its patents.

A. Patent Family One

The first patent family consists of the '012 Patent and the '103 Patent. The '012 Patent is entitled "System and Method for Video Image Registration in a Heads Up Display." Pl.'s Compl. Ex. A ('012 Patent). It issued on August 31, 2010, with nineteen claims, all of which are method claims. The independent claims are claim 1 and claim 17. Claim 1 of the '012 Patent recites:

1. A method of registering video images with an underlying visual field comprising the steps of:

(1) determining a source orientation of a video source providing a video feed containing data for a series of video images representing portions of a visual field;

(2) determining a display orientation of a transparent display overlaying the visual field, wherein the video source and the transparent display are independently movable about multiple axes; and

(3) displaying the video images in positions on the transparent display that overlay portions of the visual field represented by the displayed video images,

wherein boundaries of the displayed video images are in

Defendant designated the four independent claims referenced in the complaint as representative. Def.'s Mot. to Dismiss 21 n.9, n.11. Plaintiff disputes this designation and argues that all independent claims should be evaluated when assessing whether the patents claim eligible subject matter. A representative claim is one that is determinative of the issue before the court. *In re Am. Acad. Of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). We find it unnecessary to designate the representative claims at this stage, because evaluating the four independent claims discussed in the briefing is sufficient to hold that plaintiff's patents claim eligible subject matter. We encourage the parties to stipulate to the representative claims.

registration with boundaries of portions of the visual field represented by the displayed video images.

'012 Patent col. 9-10.

The '103 Patent is likewise entitled "System and Method for Video Image Registration in a Heads Up Display." Pl.'s Compl. Ex. B ('103 Patent). The '103 Patent is a division of the '012 Patent and shares a common specification with the '012 Patent. It issued on August 26, 2014, with twelve claims. The only independent claim is system claim 1. Claim 1 of the '103 Patent recites:

1. A system comprising:

a video camera adapted to provide, in a video feed, data for a series of video images representing portions of a visual field;

a first orientation sensor adapted to detect an orientation of the video camera;

a heads up display (HUD) adapted for viewing of the visual field by a user of the system wherein the HUD comprises a transparent display, and wherein the HUD and the video camera are independently movable about multiple axes;

a second orientation sensor adapted to detect an orientation of the HUD; and

a computer adapted to receive sensor data from the first and second orientation sensors, to receive the video feed from the video camera, and to display the video images, on the transparant [sic] display and based on the received sensor data, in positions that overlay portions of the visual field represented by the displayed video images wherein boundaries of the displayed video images are in registration with boundaries of portions of the visual field represented by the displayed video images, and wherein the computer is adapted to determine a source orientation of the video camera, and determine a display orientation of the transparent display. '103 Patent col. 10.

B. Patent Family Two

The second patent family consists of the '230 Patent and the '752 Patent. The '230 Patent is entitled "System and Method for Video Image Registration and/or Providing Supplemental Data in a Heads Up Display." Pl.'s Compl. Ex. C ('230 Patent). It issued on January 5, 2016, with forty-two claims. System claim 1, method claim 15, and non-transitory machine-readable medium 29 are independent claims. Claim 15 of the '230 Patent recites:

15. A method, comprising:

(a) receiving video images from a first video source and from a second video source representing portions of an external environment;

(b) receiving motion data indicative of motion of the first and second video sources;

(c) identifying, based on the received motion data, a part of a first video source image that potentially represents a portion of the external environment represented in a part of a second video source image;

(d) evaluating, based on a comparison of data from the first and second video source images, the identification performed in step (c); and

(e) displaying at least a portion of the first video source image and at least a portion of the second video source image such that the second video source image portion overlays a corresponding region of the first video source image portion, wherein the corresponding region represents a portion of the external environment represented in the second video source portion.

'230 Patent col. 26.

The '752 Patent is also entitled "System and Method for Video Image Registration and/or Providing Supplemental Data in a Heads Up Display." Pl.'s Compl. Ex. D ('752 Patent). The '752 Patent is a continuation of the '230 Patent and shares a common specification with the '230 Patent. It issued on April 11, 2017, with eighteen claims. It issued with three independent claims: system claim 1, method claim 7, and non-transitory machine-readable medium claim 13. Claim 7 of the '752 Patent recites:

7. A method comprising:

receiving first video data of images representing portions of an external environment within a field of view of a first video source;

receiving second video data of images representing portions of the external environment within a field of view of a second video source;

receiving first motion data corresponding to the first video source and second motion data corresponding to the second video source;

identifying, based on the received first motion data and the received second motion data, a region of a first image generable from the first video data for comparison with a region of a second image generable from the second video data;

comparing data corresponding to the identified region of the first image and data corresponding to the region of the second image; selecting, based on the comparing, a part of the first image and a part of the second image that represent a same portion of the external environment; and

displaying at least a portion of the first image and the selected part of the second image such that the selected part of the second image replaces the selected part of the first image and is in registration with regions of the first image surrounding the selected part of the first image.

'752 Patent col. 26.

II. Section 101 Patent Claim Analysis

Defendant contends that SAIC's patents claim the abstract idea of superimposing a video image in a location on a display, thereby preempting future innovation in how images can be manipulated to appear in the same field of vision. Plaintiff responds that its patents claim methods and systems of accurately positioning images from two independently movable sources by using orientation and motion sensors and data in an unconventional way. After considering the character of each claim in light of its specification, we find that plaintiff's patent claims are not directed to an abstract idea.

The government's arguments regarding the first and second patent family can be set out together. Defendant argues that the first patent family claims are directed to the abstract idea of superimposing video images based on relative orientation. Defendant contends that the '012 and the '103 Patents claim language lacks a concrete structural element, a tie to a particular machine or transformative process, or an improvement in the computer technology. Instead, the government argues, the first patent family claims recite generic computer components and calculations without a required combination for implementation or some other unique element. The '012 Patent claim 1, the government argues, amounts to a monopoly on a process that can be performed by the human mind, namely "the age-old practice of looking at a target, through a weapon sight or telescope" Def.'s Mot. to Dismiss 23.

The government argues that the second patent family claims are directed to the abstract idea of superimposing video images based on relative motion data. The government contends that the additional feature of minimizing the need for manual sensor recalibration does not alter the character of the claims from superimposition of images. It argues that plaintiff's claims offer only well-known, patent-ineligible calculations to accomplish the result of the claims, without providing any patentable structure or algorithm.

SAIC responds that none of the claims are directed to the underlying idea of superimposing images. It contends that claiming the method and system of registering images based on the use of orientation and motion sensors does not constitute an abstract idea, avoiding preemption of other methods of registering images. Plaintiff alleges that its patents focus on solving a problem in the technology available for registering images by combining orientation sensors and data, inertial sensors and motion data, boundary registration, and independently movable components. SAIC argues that patent law does not require an improvement in the computer or a tie to a specific machine or apparatus, but that a patentee may instead patent an unconventional solution to a problem in a method previously employed in the industry.

At a high level, all four claims undoubtedly involve the idea of superimposition of images. But the Federal Circuit has admonished that just because the claims involve an abstract idea does not mean that they are directed to an abstract idea. *Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1050 (Fed. Cir. 2016). The question here is whether the claims are directed to the idea of superimposing one image on another or whether the claims "recite more than a mere result." *Finjan, Inc. v. Blue Coat Sys., Inc.,* 2018 WL 341882, *3 (Fed. Cir. Jan. 10, 2018).

First, before comparing plaintiff's claim language to other eligible subject matter, the claims offer an advance beyond the prior art. The '012 Patent claim 1 represents an advance over the prior art by detecting orientation of a video and display, independently moveable about multiple axes, in order to register images within accurate boundaries. The third step of the '012 method claim ties together orientation detection with the increased accuracy of how images are displayed, avoiding blurred, duplicative, or obscured images. The '103 Patent claim 1 likewise represents an advance over what SAIC alleges was previously possible when connecting two fields of vision in one display. The system recited in '103 Patent claim 1 couples orientation sensors with a HUD, a video feed, and a computer adapted to receive the orientation data from both sources and then translate the relative orientations into one display with images within proper boundaries.

The common specification of the '012 Patent and the '103 Patent explains that the prior art also placed one image on top of another, using a beam combiner, but it could not dynamically compare, adjust, or reposition an image using orientation data such that the narrower field of vision was displayed accurately in the transparent display. The prior technique superimposed by simply placing the narrower field of vision within the broader field of vision. Although a user could view both fields, the user ran the risk of mismatched boundaries, repetitive or obscure images, and the inability to recalculate with movement. Plaintiff's patent claims purport to solve these problems in the process of registering two independently moveable fields of vision.

The second patent family claims also offer an advance over the prior art. Not unlike the '012 and '103 Patents, the '230 and '752 Patents are concerned with the problem of identifying matching regions in two fields of vision and accurately registering or replacing a portion of what can be viewed through the transparent display with the matching image from the video feed. The independent method claim 15 in the '230 Patent recites receiving video images and motion data from two video sources and then using the relative motion data captured by sensors to identify and evaluate matching portions before displaying. The common specification explains that the identification and comparison system dynamically places images within the transparent display such that matching images appear despite movement of either the display or the second video source and without obscuring relevant portions of the scene with mismatched images. The '230 and '752 Patents also purport to offer an advance over the requirement for manual recalibration found in prior approaches. The patent claims minimize the manual recalibration by using the location comparison data to adjust how "subsequent sensor-based locations are determined." '752 Patent col. 2, ll. 28-29. Plaintiff's claims thus build on the previous techniques for superimposition by increasing accuracy and decreasing the need for manual adjustments.

Plaintiff's patent claims each offer advancement over the prior approach, but defendant argues that regardless of any advance the SAIC claims are directed to an abstract idea, because its inventions are tied only to using conventional sensors and patent-ineligible calculations. Yet the character of these patent claims is not unlike others that have survived section 101 scrutiny. The most similar patent claims are found in *Thales Visionix*, 850 F.3d 1343, 1344. The court held that the claims at issue in *Thales Visionix* were not directed to an abstract idea. First, the *Thales Visionix* claims offered an improvement to accuracy when "measuring relative position and orientation of a moving object on a moving reference frame." *Id.* at 1348. Although the claims involved a patent-ineligible equation, the patents coupled that equation with an arrangement of sensors and an unconventional reference point. The claims constituted an improvement over prior approaches and were limited to patenting a particular way to measure relative position and orientation, rather than claiming laws of nature governing motion. *Id.* at 1346.

Moreover, the Federal Circuit in *Thales Visionix* reflected on the Supreme Court's decision in *Diamond v. Diehr*, 450 U.S. 175, 177 (1981), in which the Court held patent claims eligible despite their inclusion of a mathematical formula and a generic computer component in a claimed method

for molding raw, uncured rubber into cured rubber products. The invention in *Diamond* used a well-known equation and elements of the prior art, improving upon what was present in the industry by measuring temperature constantly from inside the mold such that the opening of the press could be accurately timed. *Id.* The invention produced "a result heretofore unknown in the art." *Id.* at 193 n.15. The Supreme Court reasoned that, when a patentee devises a process in which it incorporates an equation to reach a more efficient solution, "that process is at the very least not barred at the threshold by § 101," even if it may later be invalidated for lack of novelty or obviousness. *Id.* at 188. When plaintiff's patent claims are compared to those in *Thales Visionix*, and in light of these principles, plaintiff's patent claims provide the same type of limitations found in the *Thales Visionix* claim language as well as an unconventional solution to problems present in the prior art.

The *Thales Visionix* method claim comprised "determining an orientation of an object relative to a moving reference based on signals from two inertial sensors mounted respectively on the object and on the moving reference frame." *Thales Visionix*, 850 F.3d at 1345. The '012 Patent independent method claim likewise comprises determining source orientation of a video source and the source orientation of a transparent display, when both are "independently movable about multiple axes," and then displaying the images such that the boundaries of the displayed images register with the boundaries of the visual field that match those images. '012 Patent col. 9-10. The '012 Patent does not state that sensors will be the tool to accomplish the orientation detection, but the specification sheds light on the character of the patent by explaining that sensors are used to allow an adapted control computer to "dynamically position[] within the visual field." '012 Patent col. 3-4, ll. 67-2.

The '230 and '752 method claims do not recite steps in terms of determining relative orientation, but they provide a comparable level of detail to the *Thales Visionix* method claim. The second patent family method claims combine a first video source and a second video source to create image registration by "receiving motion data," "identifying, based on the received motion data " the part of the video sources that are identical, performing a "comparison of data from first and second video source images," before finally displaying some portion of the first video source in the second video source. The '230 and '752 independent method claims 7 and 15 track the relationship between two video sources and accompanying motion data rather than tracking the relationship between an object and a moving reference frame, but both

inventions use sensors to perform a calculation and provide more accurate data.

The system claim language in plaintiff's '103 Patent is also analogous to the system claim in Thales Visionix. The independent system claim in Thales Visionix claimed a system comprising: "(1) a first inertial sensor mounted on a tracked object; (2) a second inertial sensor mounted on the moving platform; and (3) an element that uses the data from the two inertial sensors to calculate the orientation of the tracked object relative to the moving platform, as disclosed in the specification." 850 F.3d at 1345-46. Plaintiff's '103 independent system claim likewise comprises "a first orientation sensor adapted to detect an orientation of the video camera;" "a second orientation sensor adapted to detect an orientation of the HUD;" and "a computer adapted to receive sensor data from the first and second orientation sensors ...," coupled with the video camera adapted to provide a feed representing portions of the visual field and the HUD adopted to view the visual field, both movable about independent axes. '103 Patent col. 10. The specification is useful for explaining that the calculations that are involved use the sensors and video feeds to map the calculations to pixels, cropping, discarding, and enhancing the overlay as necessary. '103 Patent col. 6-7. The difference between the two inventions is that the *Thales Visionix* claims changed the reference point for tracking relative orientation to an unconventional moving platform whereas SAIC purports to introduce a new method and system that was never used before by employing orientation sensors to relate and overlay location data between two fields of vision, in addition to solution by "repeat[ing] the process for each new frame," '103 col. 7, 11. 35-40.

The government argues that SAIC reaching a more accurate, continuous result by combining previously known components and a computer adapted to perform particular calculations is not sufficient to bring the claims within section 101 eligible subject matter. But the Federal Circuit has also highlighted the difference between a patent-eligible claim introducing a significantly improved process that incorporates known components and a patent-ineligible claim that "recites only 'well-understood, routine, conventional activity already engaged in by the scientific community." *Rapid Litig. Manag. Ltd.*, 827 F.3d at 1050-51 (quoting *Mayo*, 566 U.S. at 73). The Federal Circuit in *Thales Visionix* relied on the principle that known techniques or components may be included in a claim when used in an unconventional way to acquire a new and useful result.850 F.3d at 1349 (citing *Enfish*, 822 F.3d at 1337–38).

The '012 method claim and the '103 system claim are directed to improving the prior process by using known components in an unconventional way to register images within accurate boundaries. Moreover, the claims anticipate the use of independently movable image sources such that the orientation sensing and boundary recognition process must be continuous. The '752 and '230 method claims further describe how to combine known components, including inertial sensors, to communicate motion data such that the images can be accurately aligned and the calibration process can be tied to the collected location data. SAIC is not required to tie the claim language to a particular machine or apparatus, *Bilski v. Kappos*, 561 U.S. 593, 603-04 (2010), nor is SAIC required to demonstrate a change in the computer technology itself, for that is only one example of a patentable technology invention, *see Alice*, 134 S. Ct. at 2351, 2359 (discussing examples of what constitutes "enough" to transform an abstract idea into an inventive concept).

Plaintiff's patents' claim language does not suffer from the lack of structure the Federal Circuit identified in *Affinity*, 838 F.3d at 1259-60. There, the court concluded that a patent claiming to "disseminate regionally broadcast content to users outside the region" was directed to an abstract idea because the claims did not offer anything more concrete than a downloadable application to accomplish a longstanding business practice. *Id.* at 1257. Here, SAIC's claims disclosing how to accurately identify and place images by specifically using orientation sensors or motion data to allow a computer to identify, compare, and adjust images are more concrete than the general dissemination of content through a downloadable application.

Moreover, we are not persuaded by defendant's argument that plaintiff's claimed methods can be performed with just the human eye and a weapon scope. The first patent family claims present a solution to human limitations and to the problem in the prior art of boundary registration working in tandem with independently movable axes. Although the human brain is capable of matching images and evaluating differences, the '752 and '230 method claims recite a means of automatically and continuously performing the evaluation without the user needing to adjust the field of vision directly in front of her. *See SiRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319, 1333 (Fed. Cir. 2010) ("There is no evidence here that the calculations here can be performed entirely in the human mind."). The character of the claim language for each patent is to combine two fields of vision into one, creating an accurate feed of images, without the need for the user to focus on the vision through the weapon sight (or other component) at all.

We do, however, share defendant's concern regarding the degree of detail SAIC offers in its claim language to explain how the reciept and identification of images and sensor data translates into accurate superimposition. The least detailed of the four, the '012 Patent claim 1, adds boundary registration to determining a source orientation and a display orientation, but does not offer comparatively detailed steps to the other method claims. Each of the patent specifications also illustrate that any video source, transparent display source, corded or wireless connection, or brand of sensor may be employed to complete any of the patented processes. The specifications uniformly state that the steps prescribed by the claims are not required to be performed in a particular order.

The *Alice/Mayo* test for section 101 analysis, however, is not concerned with whether an artisan skilled in the art can perform the method claimed by the patent nor whether the claim language is sufficiently definite, novel, or non-obvious, but rather whether the character of a claim as a whole is directed to a patent-ineligible subject matter. Taken on the face of the claims and the specification, plaintiff's patents combine existing computer technology, sensors, and calculations in an unconventional way in order to reach a solution to the problem of alignment and consistently accurate display. Because SAIC did not stop at the concept of superimposition but instead provided a solution for achieving accuracy and consistency in image registration, plaintiff's claims are not directed to an abstract idea.

Given that the patent claims at issue, when considered as a whole and in light of their specifications, are directed to a particular solution to an industry problem and deploy an unconventional technique, it is unnecessary to progress to *Alice/Mayo* step two to determine whether the patents transform an abstract idea with an inventive concept. We therefore deny defendant's motion to dismiss for failure to state a claim pursuant to RCFC 12(b)(6).

> <u>s/Eric G. Bruggink</u> Eric G. Bruggink Senior Judge