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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JAMES C. KIRK, MATEJ DUSIK,  
ONDREJ POKORNY, and ANDREW F. LAMKIN

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Appeal 2017-003486  
Application 14/281,627  
Technology Center 3600

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Before JOSEPH L. DIXON, LARRY J. HUME, and  
AARON W. MOORE, *Administrative Patent Judges*.

DIXON, *Administrative Patent Judge*.

DECISION ON APPEAL

### STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from a rejection of claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

The claims are directed to an aircraft strike zone display. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method comprising:

detecting, by a processor, an object in an image captured by a camera on an aircraft;

determining, by the processor, a distance range of the object relative to a portion of the aircraft;

generating, by the processor, a graphical user interface comprising a strike zone indication based on the determined distance range of the object, wherein the strike zone indication is scaled to indicate a strike zone of the aircraft if the aircraft was at the distance range of the detected object, the strike zone being a volume of space that at least a part of the aircraft would occupy if the at least the part of the aircraft was at the distance range of the detected object; and

displaying, via a display device, the graphical user interface

### REFERENCES

The prior art relied upon by the Examiner as evidence in rejecting the claims on appeal is:

Lin	US 2008/0243383 A1	Oct. 2, 2008
Durand	US 2014/0142838 A1	May 22, 2014

## REJECTIONS

The Examiner made the following rejections:

Claims 1–20 stand rejected under 35 U.S.C. § 101 as not being directed to patent eligible subject matter.

Claims 1–20 stand rejected under 35 U.S.C. § 102(a)(2) as being disclosed by Durand.

Claims 1–20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Durand in view of Lin.

## ANALYSIS

### Grouping of Claims

Appellants address the patent eligible subject matter rejection in three separate groups for each of the three independent claims, but Appellants rely upon the same arguments for each of the three separate groups. As a result, we will address the patent eligibility question as a single group with claim 1 as the representative claim.

Appellants set forth numerous separate groups of claims and address each under a separate heading. The Examiner has identified eight separate groups for the prior art anticipation rejection. From our review of the claims and Appellants' arguments, we agree with the Examiner that each of claims 1–8 are directed to a separate group and the additional dependent claims from independent claims 9 and 17 are various combinations of the limitations in claims 2–8. Additionally, we address claims 9 and 17 together as a group. We find Appellants merely repeat the language of the claims, and rely upon the previously proffered distinctions from the arguments for claims 2–8. Consequently, we agree with the Examiner that claims 1–8 are

separate groupings, but the dependent claims from independent claims 9 and 17 will stand or fall with their parent grouping.

With respect to the obviousness rejection, Appellants again repeat the language of the claims and refer to the arguments set forth in the corresponding anticipation rejection. Appellants set forth some additional arguments, and we address those claims as separate groupings as addressed with respect to the anticipation rejections.

In reaching this decision, we consider all evidence presented and all arguments actually made by Appellants. We do not consider arguments which Appellants could have made but chose not to make in the Briefs so that we deem any such arguments as waived. 37 C.F.R. § 41.37(c)(1)(iv).

We disagree with Appellants' arguments with respect to claims 1–20, and we incorporate herein and adopt as our own: (1) the specific findings and reasons set forth by the Examiner in the action from which this appeal is taken, and (2) the reasons and rebuttals set forth in the Examiner's Answer in response to Appellants' arguments. We incorporate such specific findings, reasons, and rebuttals herein by reference unless otherwise noted. However, we highlight and address specific findings and arguments for emphases as follows.

#### 35 U.S.C. § 101

The Examiner rejects the claims under 35 U.S.C. § 101 because they are directed to patent ineligible subject matter. In particular, the Examiner finds the claims are directed to an abstract idea, that is:

The claims are at least mathematical relationships/formulas or certain methods of organizing human activities. The limitations, detecting an object; determining a distance range of the object relative to a portion of the aircraft; and generating a

strike zone indication based on the determined distance range of the object, wherein the strike zone indication is scaled to indicate a strike zone of the aircraft if the aircraft was at the distance range of the detected object, the strike zone being a volume of space that at least a part of the aircraft would occupy if the at least the part of the aircraft was at the distance range of the detected object, are considered mathematical relationships/formulas for determining the relative position of an object/target to a moving reference frame.

(Ans. 15). The Examiner further finds the claims use generic computer components to perform generic computer functions. (Ans. 14).

Appellants set forth arguments regarding *Rapid Litigation Management Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042 (Fed. Cir. 2016). (App. Br. 8–11). We find Appellants’ reliance upon the *Rapid Litigation* case to be unavailing. We find the pending claims under review to be significantly different than those in the *Rapid Litigation* case.

Appellants contend the Office has not identified an abstract idea or a law of nature in claim 1, as recited, and has not explained why the subject matter of claim 1 allegedly corresponds to a concept that the courts have identified as an abstract idea. (App. Br. 10). We disagree with Appellants and find the Examiner has identified an abstract idea, and that Appellants have not shown how the proffered limitations are not an abstract idea.

Appellants further contend “[t]he claims, when viewed as a whole, recite elements which make clear that the claims are directed to improvements in the technological field of obstacle detection for aircraft.” (App. Br. 11).

The Examiner maintains:

The limitations, detecting an object; determining a distance range of the object relative to a portion of the aircraft; and generating a strike zone indication based on the determined distance range of

the object, wherein the strike zone indication is scaled to indicate a strike zone of the aircraft if the aircraft was at the distance range of the detected object, the strike zone being a volume of space that at least a part of the aircraft would occupy if the at least the part of the aircraft was at the distance range of the detected object, are considered mathematical relationships/formulas for determining the relative position of an object/target to a moving reference frame.

(Ans. 23–24). The Examiner further maintains Claim 1 describes generic, fungible processors/computers that admittedly have already gained “widespread acceptance” in the field of motion tracking. (Ans. 25). We agree with the Examiner and find Appellants have not identified how the mere recitation of a processor, a display, or a camera are used in a manner to provide significantly more than the mathematical processing performed by the processor.

We agree with the Examiner that independent claim 1 is directed to an abstract idea of mathematical relationships/formulas for determining the relative position of an object/target to a moving reference frame.

Additionally, we agree with the Examiner that the language of independent claim 1 merely sets forth a generic hardware used in its ordinary manner. Moreover, Appellants have not identified how the claim is directed to substantially more than the abstract idea.

Appellants have not persuaded us of error. Section 101 of the Patent Act provides “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C. § 101. That provision “contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,

134 S. Ct. 2347, 2354 (2014) (quoting *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013)). According to the Supreme Court:

[W]e set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts. First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. . . . If so, we then ask, “[w]hat else is there in the claims before us?” . . . To answer that question, we consider the elements of each 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. . . . We have described step two of this analysis as 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 Corp.*, 134 S. Ct. at 2355.

The Federal Circuit has described the *Alice* step-one inquiry as looking at the “focus” of the claims, their “character as a whole,” and the *Alice* step-two inquiry as looking more precisely at what the claim elements add—whether they identify an “inventive concept” in the application of the ineligible matter to which the claim is directed. *See Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015).

Regarding *Alice* step one, the Federal Circuit has “treated *collecting information*, including when limited to particular content (which does not change its character as information), as within the realm of abstract ideas.” *Elec. Power*, 830 F.3d at 1353 (emphasis added); *see also Internet*



*Patents*, 790 F.3d at 1348–49; *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015); *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343, 1347 (Fed. Cir. 2014). “In a similar vein, we have treated *analyzing information* [including manipulating information] by steps people go through in their minds, or by mathematical algorithms, without more, as essentially mental processes within the abstract-idea category.” *Elec. Power*, 830 F.3d at 1354 (emphasis added); *see also id.* at 1351–1354; *In re TLI Commc’ns. LLC Patent Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). “And we have recognized that *merely presenting the results of abstract processes of collecting and analyzing information, without more* (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis.” *Elec. Power*, 830 F.3d at 1354 (emphasis added); *see also Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 714–15 (Fed. Cir. 2014).

The rejected claims “fall into a familiar class of claims ‘directed to’ a patent-ineligible concept.” *Elec. Power*, 830 F.3d at 1353. Contrary to Appellants’ arguments (App. Br. 8–14; Reply Br. 3–6), the claims are similar to the claims of *Electric Power*, and are focused on the combination of abstract-idea processes or functions. *See Elec. Power*, 830 F.3d at 1354. For example, claim 1 is directed to receiving or collecting information (“detecting, by a processor, an object in an image captured by a camera on an aircraft”), analyzing and manipulating information (“determining, by the processor, a distance range of the object relative to a portion of the aircraft; generating, by the processor, a graphical user interface comprising a strike zone indication based on the determined distance range of the object, wherein the strike zone indication is scaled to

indicate a strike zone of the aircraft if the aircraft was at the distance range of the detected object, the strike zone being a volume of space that at least a part of the aircraft would occupy if the at least the part of the aircraft was at the distance range of the detected object”), and “displaying, via a display device, the graphical user interface.”

Regarding *Alice* step two, contrary to Appellants’ assertion (App. Br. 11–13; Reply Br. 5–6), Appellants have not shown the claims in this case require an arguably inventive set of components or methods, or invoke any assertedly inventive programming. *See Elec. Power*, 830 F.3d at 1355.

Further, contrary to Appellants’ arguments (App. Br. 11–13; Reply Br. 5–6), the claims are similar to the claims of *Electric Power*, because they do not require any nonconventional computer or network components, or even a “non-conventional and non-generic arrangement of known, conventional pieces,” but merely call for performance of the claimed information collection, analysis and manipulation functions on generic computer or network components. *See Elec. Power*, 830 F.3d at 1355.

Contrary to Appellants’ assertion (Reply Br. 3), the rejected claims are unlike the claims in *Enfish*. In *Enfish*, the court finds:

The . . . patents are directed to an innovative logical model for a computer database. . . . A logical model generally results in the creation of particular tables of data, but it does not describe how the bits and bytes of those tables are arranged in physical memory devices. Contrary to conventional logical models, the patented logical model includes all data entities in a single table, with column definitions provided by rows in that same table. The patents describe this as the “self-referential” property of the database.

*Enfish*, 822 F.3d at 1330.

[T]he plain focus of the claims is on an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity.

[T]he claims . . . are directed to a specific improvement to the way computers operate, embodied in the self-referential table.

*Enfish*, 822 F.3d at 1336.

The rejected claims are unlike the claims of *Enfish* because they are not “an improvement to computer functionality itself.” *Enfish*, 822 F.3d at 1336. Instead, they are similar to the claims of *Electric Power*, because “the focus of the claims is not on such an improvement in computers as tools, but on certain independently abstract ideas that use computers as tools.” *Elec. Power*, 830 F.3d at 1354.

In short, Appellants have not shown the claims, read in light of the Specification, require anything other than conventional computer technology for collecting, analyzing, and manipulating the desired information. *See Elec. Power*, 830 F.3d at 1354. Such invocations of computers is “insufficient to pass the test of an inventive concept in the application” of an abstract idea. *See Elec. Power*, 830 F.3d at 1355.

Because Appellants have not persuaded us the Examiner erred, we sustain the Examiner’s rejection of representative independent claim 1 under 35 U.S.C. § 101.

With respect to dependent claims 2–8, Appellants contend the Examiner has failed to address the claims. (Reply Br. 6). We find Appellants’ did not provide separate arguments for patentability of dependent claims 2–8 in the Appeal Brief. Consequently Appellants have waived any arguments to dependent claims 2–8 regarding patent eligibility. *See 37 C.F.R. § 41.37(c)(1)(iv)*.

With respect to claims 9–20, Appellants contend that the Examiner failed to present any specific remarks regarding these claims under 35 U.S.C. § 101. The Examiner maintains that the similar limitations of the three independent claims are grouped together. (Ans. 18). Moreover, we note Appellants did not set forth separate arguments for patentability, and merely relied upon “the reasons discussed with respect to claim 1.” (App. Br. 13–14). Consequently, we agree with the Examiner, and we group the claims as falling with independent claim 1.

*Reply Brief*

Appellants generally contend the Examiner has not made a showing that independent claim 1 is directed to an abstract idea and, even if there is an abstract idea, that the claims are not directed to significantly more than the abstract idea. (App. Br. 10–13; Reply Br. 3–6). Appellants’ argument generally contends the Examiner has not shown the claim limitations are “considered mathematical relationships/formulas for determining the relative position of an object/target to a moving reference frame.” (Reply Br. 3). We disagree with Appellants and find that the Examiner has characterized the limitations in this manner because Appellants’ Specification similarly addresses the abstract functions at a high level of description without further detail thereto. Nor have Appellants identified how these limitations are not directed to mathematical relationships between two points.

Appellants further contend that even if the claim includes an abstract idea, the *Rapid Litigation* case provides that “[a] new and improved technique, for producing a tangible and useful result, falls squarely outside those categories of inventions that are ‘directed to’ patent ineligible concepts.” (Reply Br. 4). Appellants further contend that

the Office has not shown that the claims amount to nothing more than observing or identifying an ineligible concept. If, *arguendo*, claim 1 was a “mathematical relationship[]/formula[] for determining the relative position of an object/target to a moving reference frame,” which Appellant certainly does not concede, then presumably the claim language would recite a particular mathematical relationship or formula for determining the position of an object relative to a moving reference frame.

(Reply Br. 4–5).

We find Appellants’ argument unavailing and note Appellants have not identified any aspect of the claimed invention that is “significantly more” than the abstract idea, but merely contend that the Examiner has not shown the unclaimed and undisclosed algorithm is mathematically based. Appellants’ Specification and claims essentially encompass all abstract ideas to determine distance between two points because no specific algorithm is claimed or disclosed. As a result, Appellants’ arguments do not show error in the Examiner’s factual findings or conclusion of a lack of patent eligible subject matter of claims 1–20.

#### Prior Art Rejections

With regards to the anticipation rejection, we find the Examiner has only made a rejection based upon the Durand reference. (Final Act. 9–15) (Ans. 2–10). We note the Examiner provides commentary in the Examiner’s Answer regarding both the Durand reference and the Lin reference individually, but the Examiner did not expressly set forth a new ground of rejection. (Ans. 19). Consequently, we review only the anticipation rejection based upon the Durand reference alone and the obviousness rejection based upon the Durand reference in combination with the Lin reference. (Ans. 19–23).

35 U.S.C. § 102

Appellants' contention amounts to a general denial that fails to address the Examiner's findings and is, therefore, insufficient to be considered an argument for separate patentability. *See* 37 C.F.R. § 41.37(c)(1)(iv) ("A statement which merely points out what a claim recites will not be considered an argument for separate patentability of the claim."); *In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) ("[W]e hold that the Board reasonably interpreted Rule 41.37 to require more substantive arguments in an appeal brief than a mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the prior art.").

With respect to independent claim 1, Appellants contend "Durand fails to disclose that "the visual image [that] may include a representative image of an obstacle' includes a strike zone indication, 'the strike zone being a volume of space that at least a part of the aircraft would occupy if the at least the part of the aircraft was at the distance range of the detected object,' as recited in claim 1." (App. Br. 16) (footnote omitted). Appellants further contend the Examiner has not cited to any portion of Durand describing that any part of the visual image includes any indication, to a user, of a strike zone of an aircraft. (App. Br. 16).

We disagree with Appellants and find the Examiner has identified "(p's 15-18, 2-5; ab, fig's 1, 5 and 4; p's 22 and 27)" repeatedly in the grounds of the rejection. (Final Act. 9-10). From our review of the Durand reference, we find Durand discloses:

GCAU **420** may include a screen or display **422** for providing a visual image to the crew. The visual image may include a representative image of an obstacle in relation to a part of the

aircraft such as a wingtip. The display **422** may also show other data relevant to a distance between the aircraft and the obstacle and/or to an action for avoiding or preventing a collision.

(Durand ¶ 27). We further find that the Durand reference further discloses:

the GCAS continually monitors distance to the obstacle; if the GCAS predicts the aircraft will collide with the obstacle, it issues an alert and the pilot stops the aircraft or implements other evasive action preventing the collision; if stopped, the pilot determines the appropriate maneuver before continuing to taxi the aircraft; and if the GCAS predicts the aircraft will not collide with the obstacle, then no alert is issued and the crew continues taxiing.

(Durand ¶ 28). Although we agree with Appellants that the Durand reference performs its distance calculations with RF sensors, the language of independent claim 1 does not limit what data is used by the processor, but the claim language merely recites the presence of a camera and an output image. We find the Durand reference clearly discloses the claimed invention as recited in the language of independent claim 1.

Appellants additionally contend the Examiner has not identified “a graphical user interface comprising a strike zone indication.” (App. Br. 16). Appellants further contend:

However, even if a person having ordinary skill in the art would have understood the visual image described by Durand to have been a “graphical user interface,” and further would have understood Durand to have described determining a distance range of an obstacle because it discloses “determining an expected location of the obstacle with respect to [an] aircraft,” none of which Appellant concedes, Durand fails to disclose that “the visual image [that] may include a representative image of an obstacle” includes a strike zone indication, “the strike zone being a volume of space that at least a part of the aircraft would occupy if the at least the part of the aircraft was at the distance range of the detected object,” as recited in claim 1. Indeed, the Office has

not cited to any portion of Durand that describes that any part of the visual image includes any indication, to a user, of a strike zone of an aircraft.

(App. Br. 16) (footnotes omitted).

We disagree with Appellants and find their argument is not commensurate in scope with the language of independent claim 1, which sets forth “generating . . . a graphical user interface comprising a strike zone indication” and “displaying . . . the graphical user interface” and does not differentiate the claimed invention from the Durand reference.

Moreover, Appellants have not identified any express definition of a “strike zone indication,” and only generally contend the Durand reference does not disclose the claimed “strike zone indication” in the claimed method

Appellants contend Figures 1–3 of the Durand reference have not been shown to describe examples of visual images. (App. Br. 17). We agree with Appellants, but find the Examiner has not relied upon Figures 1–3 as the display indication, but merely the configuration of the computer and the sensors of the claimed invention. As a result, Appellants’ argument does not show error in the Examiner’s finding of anticipation.

Consequently, we find Appellants’ argument to be unavailing where the Durand reference clearly discloses determining a distance range to an object with respect to collision avoidance which is within a strike zone of the aircraft, i.e., a volume of space relative to the aircraft.

Additionally, we find the graphical user interface merely recites nonfunctional descriptive material which does not change the steps performed by the processor in the claimed “method” of independent claim 1. *See Ex parte Curry*, 84 USPQ2d 1272, 1274 (BPAI 2005) (informative), *aff’d*, No. 06-1003 (Fed. Cir. June 12, 2006) (Rule 36) (“wellness-related”



data in databases and communicated on distributed network did not functionally change either the data storage system or the communication system used in the claimed method).

Non-functional descriptive material refers to data content that does not exhibit a functional interrelationship with the substrate and does not affect the way the computing processes are performed. *See* MPEP § 2106.01. In a precedential decision, an expanded panel held that elements that do not affect the claimed process are non-functional material and are merely descriptive. *See Ex parte Nehls*, 88 USPQ2d 1883, 1887–1888 (BPAI 2008) (precedential).

As such, the Examiner need not give patentable weight to descriptive material absent a new and unobvious functional relationship between the descriptive material and the substrate. *See In re Lowry*, 32 F.3d 1579, 1582–1583 (Fed. Cir. 1994); *In re Ngai*, 367 F.3d 1336, 1339 (Fed. Cir. 2004) (nonfunctional descriptive material cannot render nonobvious an invention that would have otherwise been obvious); *see also Ex parte Mathias*, 84 USPQ2d 1276 (BPAI 2005) (nonprecedential), *aff'd*, 191 F. App'x. 959 (Fed. Cir. 2006).

Our reviewing court has held that non-functional descriptive material cannot lend patentability to an invention that would have otherwise been anticipated by the prior art. *See In re Ngai*, 367 F.3d at 1339; *cf. In re Gulack*, 703 F.2d 1381, 1385 (Fed. Cir. 1983) (when descriptive material is not functionally related to the substrate, the descriptive material will not distinguish the invention from the prior art in terms of patentability). The *content* of non-functional descriptive material is not entitled to weight in the patentability analysis. *See In re Lowry*, 32 F.3d at 1583 (“Lowry does not

claim merely the information content of a memory.”); *see also Ex parte Nehls*, 88 USPQ2d at 1887–90 (precedential) (discussing non-functional descriptive material).

As a result, we find Appellants’ arguments to be unpersuasive to show error in the Examiner’s factual finding of anticipation, and we sustain the anticipation rejection of representative independent claim 1.

With respect to dependent claim 2, Appellants contend the Examiner has relied upon the same citation and that “it is unclear which portion of Durand the Office has interpreted as having disclosed using ‘a stereo vision technique or a focal distance processing technique.’” (App. Br. 17).

The Examiner repeats the same statement of the rejection as set forth in the Final Action without specifically identifying a disclosure of “stereo vision technique or a focal distance processing technique” (Ans. 8). As a result, the Examiner has not set forth a sufficient finding of anticipation, and we cannot sustain the rejection of dependent claim 2 based upon anticipation.

With respect to dependent claim 3, Appellants contend the Examiner merely recites the claim language and the same citation to the Durand reference and the Office failed to specify, with any particularity, the features of the cited portion of the Durand reference that the Office relied upon in rejecting claim 3. (App. Br. 18–19). The Examiner merely repeats the claim language and the same citations. (Ans. 8). We agree with Appellants, and we cannot sustain the anticipation rejection of dependent claim 3.

With respect to dependent claim 4, Appellants rely upon the dependency from dependent claim 3. (App. Br. 19). We agree with Appellants based upon the dependency, but we note the Durand reference

discloses object type determination based upon shape templates with the RF signals. (Durand ¶¶ 23, 33). As a result, the Examiner has not made a proper finding of anticipation of dependent claim 4.

With respect to dependent claim 5, Appellants repeat the language of the claim and maintain the Office has not pointed to any portion of the Durand reference that discloses overlaying a strike zone indication on the one or more images. (App. Br. 19–20). The Examiner only repeats the language of the claim and provides the same citations. As a result, we cannot sustain the rejection of dependent claim 5 based upon anticipation.

With respect to dependent claims 6, 7, and 8, Appellants repeat the language of the claim and contend that the Examiner has failed to specify with any particularity how the Durand reference teaches the claimed invention. (App. Br. 20–22). The Examiner merely provides the same citation and does not specifically identify where the Durand reference discloses the “object is not a hazard” and “object does not fall within the strike zone of the aircraft.” (Ans. 8–9). We note the Durand reference discloses false alarms and background clutter as not being a hazard, but does not necessarily provide an indication thereof. (Durand ¶ 24). Therefore, we cannot sustain the anticipation rejection of dependent claims 6–8.

#### Claims 9–20

With respect to independent claims 9 and 17, Appellants repeat the language of the claim and rely upon the arguments advanced with respect to independent claim 1. Appellants further contend “the Office failed to establish that Durand’s ‘visual image [that] may include a representative image of an obstacle’ comprises ‘a strike zone indication based on the distance range of an object . . . the strike zone being a volume of space that

at least a part of the aircraft would occupy if the at least the part of the aircraft was at the distance range of the detected object,’ much less that ‘the strike zone indication is scaled to indicate a strike zone of the aircraft if the aircraft was at the distance range of the detected object.’” (App. Br. 23, 27–28). We disagree with Appellants and find the Durand reference discloses the processing and scaling of objects to determine probable collisions and issuing alarms or warnings. (Durand ¶¶ 23–28). As a result, Appellants’ reliance upon the arguments advanced with respect to independent claim 1 do not show error in the Examiner’s finding of anticipation of independent claims 9 and 17.

With respect to dependent claims 10–16 and 18–20, Appellants rely upon the arguments advanced with respect to independent claims 1, 9, and 17, along with the arguments for dependent claims 2–8. (App. Br. 24–29). The Examiner has grouped these claims with dependent claims 2–8 and relied upon the same prior art citations (Ans. 8–10, 19). Therefore, we cannot sustain the rejection of dependent claims 10–16 and 18–20 based upon anticipation over the Durand reference for the same reasons discussed above with respect to dependent claims 2–8.

35 U.S.C. § 103

With respect to independent claim 1, Appellants rely upon the arguments set forth with respect to the anticipation rejection based upon the Durand reference, and Appellants further contend that “Lin fails to disclose a strike zone indication, much less a strike zone indication scaled to indicate a strike zone of the aircraft if the aircraft were at the distance range of a detected object.” (App. Br. 30). We find Appellants’ argument with respect

to representative independent claim 1 to be unavailing for the same reasons addressed above with respect to the anticipation rejection.

We disagree with Appellants' additional contention that the Office has failed to establish an apparent reason for the combination (App. Br. 30–31), because we find the Examiner has set forth a rational line of reasoning for combining imaging of Lin with the RF based measurements of the Durand reference.

With respect to the obviousness rejection, the Examiner maintains:

if Durand is or might be interpreted such that it might not explicitly disclose capturing an image, then Lin discloses capturing an image (p's 10, 12-13, 26, ab, fig's 3-4 & 9). If this interpretation is taken, then it would have been obvious to modify Durand to include capturing an image such as that taught by Lin in order such that cameras are used to provide range and 3D measurements of a target (Lin, p12).

(Ans. 11–12). The Examiner further maintains “the art rejection, [because] each of the two prior arts, Durand, USPAP 2014/0142838 or Lin, USPAP 2008/0243383 taken alone, disclose the limitations of the proposed invention.” (Ans. 19). We agree with the Examiner that the Lin reference discloses vision based object detection and tracking with range determination with stereo cameras. (Lin ¶ 10). We further find Lin discloses obstacle recognition used to aid the decision of the ground proximity warning system (GPWS) using stereo cameras to provide range and 3-D measurements of the target for positioning. (Lin ¶ 12).

Additionally, we find Lin teaches the use of a “map-like display of the nearby terrain.” (Lin ¶ 27). Lin further discloses the system “calculate[s] an envelope along the projected flight path of the aircraft and compares that to the terrain database. Since the enhanced ground proximity warning system

display can show nearby terrain, pilots are much less likely to continue flying toward that terrain.” (Lin ¶ 29). We find the Lin reference further teaches both midair and ground proximity and the tracking by a “fusion of stereo camera and other object detection sensors.” (Lin ¶¶ 32, 34). Consequently, we agree with the Examiner that Lin, in combination with Durand, would have taught or suggested the invention recited in independent claim 1.

With respect to dependent claim 2, because Lin teaches the use of two cameras in stereo for distance range determination, which would replace or supplement the two RF sensors as taught by Durand, we agree with the Examiner that dependent claim 2 would have been obvious to one of ordinary skill in the art at the time of the invention.

With respect to dependent claim 3, we agree with the Examiner that the Durand reference discloses determining distance to an object based upon a change in range (Durand ¶ 29, “In various embodiments, the one or more signals may be signals taken over a selected time period. Therefore, the location of the obstacle may be determined at several times during the selected time period and a trend of the obstacle’s location [overtime] may be used to determine a trajectory and/or velocity of the obstacle with respect to the aircraft.”). Given the disclosure of the Lin reference regarding stereo images, we agree with the Examiner that the combination would have suggested the use of a time sequence of frames to determine a change in the size of the object. Consequently, we agree with the Examiner’s factual findings and legal conclusion of obviousness of dependent claim 3.

With respect to dependent claim 4, as discussed above with respect to the anticipation rejection, we find the Durand reference teaches or suggests

the use of template matching using stored data with respect to predetermined object types. As a result, we agree with the Examiner and find Appellants' arguments do not show error in the Examiner's factual findings or legal conclusion of obviousness of dependent claim 4.

With respect to dependent claim 5, the Examiner has not identified where either the Durand reference or the Lin reference teach or suggest the use of overlays. (Ans. 21–22). We therefore cannot sustain the rejection of dependent claim 5 based upon obviousness.

With respect to dependent claims 6–8, the Examiner has not specifically identified where the Durand or Lin references specifically teach or suggest the claim limitations “generating an indication that the object is not a hazard in response to determining there is not relative movement between the object and the aircraft towards each other” (Claim 6); “generating an indication that the object is not a hazard in response to determining the object is not in the strike zone of the aircraft” (Claim 7); or “the object type of the object indicates the object does not fall within the strike zone of the aircraft” (Claim 8). While the Examiner may provide a claim interpretation where the display of an image of terrain, without an alarm, may be deemed to be an indication of an object which is not a hazard, the Examiner has not explained any such claim interpretation or specific teachings or suggestions from the two prior art references relied upon in the rejection. As a result, we cannot sustain the obviousness rejections of dependent claims 6–8.

With respect to dependent claims 10–12, we sustain the obviousness rejections for the same reasons set forth with respect to dependent claims 2–4.

With respect to dependent claims 13–16, we reverse these obviousness rejections for the reasons addressed above with respect to dependent claims 5–8.

With respect to dependent claims 18 and 19, we sustain these obviousness rejections for the same reasons addressed above with respect to dependent claims 2 and 3. We note Appellants have not set forth specific arguments for patentability based upon the “means” limitations (App. Br. 36), and we find those arguments to be waived. *See* 37 C.F.R. § 41.37(c)(iv).

With respect to dependent claim 20, we reverse the obviousness rejection for the same reasons set forth with respect to dependent claim 5.

#### CONCLUSIONS

The Examiner did not err in rejecting claims 1–20 under § 101 based upon a lack of patent eligible subject matter. The Examiner did not err in rejecting claims 1, 9, and 17 based upon anticipation over the Durand reference, but the Examiner did err in rejecting claims 2–8, 10–16, and 18–20 based upon anticipation over the Durand reference. The Examiner did not err in rejecting independent claims 1, 9, and 17 based upon obviousness over the over the Durand and Lin references, and the Examiner did not err in rejecting dependent claims 2–4, 10–12, 18, and 19 based upon obviousness. However, the Examiner erred in rejecting dependent claims 5–8, 13–16, and 20 based upon obviousness over the combination of the Durand and Lin references.

#### DECISION

For the above reasons, we sustain the Examiner’s patent eligibility rejection of claims 1–20; we sustain the Examiner’s anticipation rejection of



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independent claims 1, 9, and 17, but we reverse the Examiner's anticipation rejection of dependent claims 2–8, 10–16, and 18–20; and we sustain the Examiner's obviousness rejection of claims 1–4, 9–12, and 17–19, but we reverse the Examiner's obviousness rejection of claims 5–8, 13–16, and 20.

Because we have affirmed at least one ground of rejection with respect to each claim on appeal, we affirm the Examiner's decision. See 37 C.F.R. § 41.50(a)(1). 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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED