NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

STYLWAN IP HOLDING, LLC, STYLWAN, INC., STYLWAN IIT, LLC,
Plaintiffs-Appellants

v.

STRESS ENGINEERING SERVICES, INC.,
Defendant-Cross-Appellant

2023-1269, 2023-1271

Appeals from the United States District Court for the Southern District of Texas in No. 4:20-cv-03297, Judge Keith P. Ellison.

Decided: May 27, 2025

WILLIAM PETERSON RAMEY, III, Ramey LLP, Houston, TX, argued for plaintiffs-appellants.

CHRISTOPHER MCKEON, Saunders McKeon PLLC, Houston, TX, argued for defendant-cross-appellant. Also represented by GORDON ARNOLD, JASON SAUNDERS.

Before REYNA, TARANTO, and CHEN, *Circuit Judges*.

REYNA, *Circuit Judge*.

Stylwan IP Holding, LLC, Stylwan, Inc., and Stylwan IIT, LLC appeal from a final judgment of the United States District Court for the Southern District of Texas. The district court entered the judgment after the parties stipulated to noninfringement of six asserted patents based on the court's claim constructions. For the reasons stated below, we affirm.

BACKGROUND

I.

Stylwan IP Holding, LLC, Stylwan, Inc., and Stylwan IIT, LLC (collectively, "Stylwan") own U.S. Patent Nos. 7,231,320 ("'320 patent"); 7,403,871 ("'871 patent"); 8,050,874 ("'874 patent"); 8,086,425 ("'425 patent"); 8,428,910 ("'910 patent"); and 8,831,894 ("'894 patent") (collectively, the "Asserted Patents").[1] The Asserted Patents relate to non-destructive systems and methods for assessing material integrity, such as in pipelines and pressure vessels commonly used in the oil and gas industry. *See, e.g.*, '320 patent, 1:15–21, 1:51–58. This includes non-destructive inspection ("NDI"), remaining useful life estimation ("RULE"), and fitness for service ("FFS") assessment systems. In such industries, equipment material may be selected "based on criteria including minimum strength requirements, useable [sic] life, and anticipated normal wear." *Id.* at 1:25–41. But over time, a material can weaken from mechanical or environmental stress, leading to safety and operational concerns, among other issues. *Id.* at 32–38.

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[1] The Asserted Patents are continuations-in-part of a common patent application—U.S. Patent App. No. 10/995,692—and share related, though not identical, specifications.

Non-destructive methods assess materials or equipment without causing damage, unlike techniques that require cutting the material or other destructive actions. *Id.*; *see also id.* at 1:59–63, 9:30–33. These methods employ various non-destructive sensing mechanisms such as magnetism, sound, or radiation to detect cracks, corrosion, or other material imperfections. *Id.* at 1:42–48, 2:29–33, 3:26–29. Prior art NDI techniques often rely on one-dimensional signal processing to assess these imperfections—i.e., using one sensor per inspection area. *Id.* at 2:6–34. But these prior art techniques frequently yield inaccurate results, in part, because they cannot effectively evaluate the multidimensional nature of material defects. *Id.* at 2:6–3:12. As a result, the identified defects typically require costly and time-consuming manual verification. *Id.* at 4:14–24.

The Asserted Patents sought to address the aforementioned problems by providing systems that use complex signal analysis and computational methods to accurately detect material defects, assess structural integrity and fitness-for-service, and estimate the remaining useful life of an inspected material, without the need for manual verifications. *See, e.g.*, *id.* at 6:57–7:24, 9:20–10:27. Claim 1 of the '874 patent is representative of a system for estimating the remaining useful life of a material—i.e., one type of system claimed in the Asserted Patents—and recites:

> 1. An evaluation system for materials comprising:
>
> at least one computer;
>
> a *material features acquisition system* operable to receive signals indicative of a plurality of material features while said material is not in operation;
>
> utilizing a plurality of identifier equations and coefficients for analyzing said signals;
>
> at least one database comprising at least one of constraints and material historical data;

> wherein said at least one computer is *programmed* to utilize said plurality of identifier equations and coefficients and said at least one database to estimate a remaining useful life of a material under evaluation.

'874 patent, claim 1 (43:56–44:2) (emphases added).

II.

On September 23, 2020, Stylwan sued Stress Engineering Services, Inc. ("SES") in the United States District Court for the Southern District of Texas. Two days later, it filed an amended complaint alleging infringement of the six Asserted Patents. In response, SES moved to dismiss the amended complaint, arguing that the Asserted Patents were directed to patent-ineligible subject matter under 35 U.S.C. § 101. The district court disagreed and found that the Asserted Patents were not directed to patent-ineligible subject matter. On February 22, 2022, the district court issued a claim construction order, construing three categories of disputed terms referred to here as the "sensor/signal," "excitation," and "program" limitations.[2] *Stylwan IP Holding, LLC, et al. v. Stress Eng'g Servs., Inc.*, No. 4:20-

[2] We primarily reference the construed terms as categorized in Stylwan's briefing. Accordingly, the sensor/signal limitations include the terms "imperfection detection sensor," "sensor(s)," "imperfection signal(s)," "signal(s)," "producing an imperfection signal," "receive signals," "detect a plurality of material features," "operable to detect," and "detect." Appellant Br. 9. The excitation limitations include the terms "induction of an excitation" and "excitation." The program limitations include the terms "program," "programming," "programmed," "programmable," "processor," and "material features acquisition system." *Id.*

cv-3297 (S.D. Tex. Feb. 22, 2022) ("*Markman Order*"), at J.A. 17–18.

On October 13, 2022, as a result of claim construction, the parties jointly stipulated to a judgment of noninfringement of all Asserted Patents.[3] J.A. 11–14. On June 28, 2023, the court entered a final judgment of noninfringement pursuant to the parties' joint stipulation. J.A. 1–2. The final judgment observed that the parties reserved their rights to appeal the district court's claim construction and corresponding clarification orders. *Id.* SES separately reserved its right to appeal the district court's determination of patent eligibility under 35 U.S.C. § 101. *Id.*

Stylwan timely appealed, and SES cross-appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

On appeal, Stylwan challenges the district court's constructions of the sensor/signal, excitation, and program limitations. Appellant Br. 2. We address only the program limitations because, during oral argument, counsel for Stylwan acknowledged that an affirmance of the district court's construction of the program limitations would resolve this case. Oral Arg. at 40:30–50.[4] We agree, and since we affirm the district court's construction of the program limitations, we do not reach the remaining issues raised on appeal, including the district court's construction of the sensor/signal and excitation limitations. *See Inpro*

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[3] The following claims of the Asserted Patents are at issue on appeal: '320 patent (claims 1 and 14), '871 patent (claim 1), '874 patent (claims 1, 7–8, 21–25, 30, 31, 36, 43, and 47), '425 patent (claims 1, 7, 20, 22, 28, 29, 37, 44, 46, 47, and 55), '910 patent (claims 24, 29–34), and '894 patent (claims 1, 4–6) (collectively, the "Asserted Claims").

[4] Available at https://oralarguments.cafc.uscourts.gov/default.aspx?fl=23-1269_12062024.mp3.

II Licensing, S.A.R.L. v. T-Mobile USA, Inc., 450 F.3d 1350, 1352 (Fed. Cir. 2006).

SES cross-appeals the district court's judgment of patent eligibility under 35 U.S.C. § 101. Appellee Br. 1. SES confirmed at oral argument that the § 101 challenge was raised solely as an alternative ground for affirmance. Oral Arg. at 41:32–42:20. Because SES seeks to uphold—not modify—the district court's § 101 judgment, we treat this argument as an alternative ground for affirmance rather than a proper cross-appeal. *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1252 (Fed. Cir. 2004); *see also Bailey v. Dart Container Corp. of Michigan*, 292 F.3d 1360, 1362 (Fed. Cir. 2002) (noting "a party must file a cross-appeal when acceptance of the argument it wishes to advance would result in a reversal or modification of the judgment rather than an affirmance"). As we affirm on other grounds, we do not reach SES's alternative § 101 argument.

We now turn to the district court's construction of the program limitations.

I.

The district court construed the program limitations—"program," "programming," "programmed," "programmable," "processor," and "material features acquisition system"—to mean:

> [C]omputer program that autonomously recognizes the nature of the material features using three identifier equations
>
> $$Ya_{ij} = M\sum_{k=1}^{N} a_{ik}X_{a_{kj}}$$
>
> $$Ya_{ij} = T_{(M\sum_{k=1}^{N} a_{ik}Xa_{kj})}$$
>
> $$Ya_{ij} = M[1 + e^{-\sum_{k=1}^{N} a_{ik}Xa_{kj}}]^{-1}$$
>
> and autonomously distinguishes between defective and non-defective material features.

Markman Order, at J.A. 17–18. Stylwan argues the district court erred by incorporating in its claim construction two features taken from embodiments in the Asserted Patents—namely, the "autonomous[]" functionality and the "three identifier equations." *Id.*; *see* Appellant Br. 2. We disagree.

"Claim construction requires determining how a skilled artisan would understand a claim term 'in the context of the entire patent, including the specification.'" *Grace Instrument Indus., LLC v. Chandler Instruments Co.*, 57 F.4th 1001, 1008 (Fed. Cir. 2023) (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc)). "Regarding questions of claim construction, [] the district court's determinations based on evidence intrinsic to the patent as well as its ultimate interpretations of the patent claims are legal questions that we review de novo." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346 (Fed. Cir. 2015). If the district court makes underlying findings of fact based on extrinsic evidence, we review such findings for clear error. *Id.* Under the clear-error standard, we defer to the district court's findings "in the absence of a definite and firm conviction that a mistake has been made." *Par Pharm., Inc. v. Eagle Pharms., Inc.*, 44 F.4th 1379, 1383 (Fed. Cir. 2022) (citation omitted).

A.

Stylwan argues that the district court erred by construing the program limitations to require autonomous functionality. Appellant Br. 31. We disagree and conclude that the district court correctly construed the program limitations as requiring autonomous functionality.

The intrinsic record supports autonomous functionality. First, the Asserted Patents repeatedly characterize the claimed inventions as "autonomous." *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1318 (Fed. Cir. 2014) (citation omitted) ("The fact that [a feature] is 'repeatedly and consistently' used to characterize the invention strongly

suggests that it should be read as part of the claim."). Here, four of the Asserted Patents characterize the invention as "autonomous" in the title of the patent, and the remaining two do so in the first sentence of the abstract. *See, e.g.*, '320 patent, Abstract; '874 patent, Title. The patents further describe the inventions as "[a]utonomous non-destructive inspection equipment," "[a]utonomous remaining useful life estimation equipment," and "[a]utonomous fitness for continuing service assessment equipment." *See, e.g.*, '320 patent, Abstract; '874 patent, Abstract; '425 patent, Abstract.

Further, autonomous functionality aligns with the language of the independent claims. That is, the claim construction confines the program limitations to autonomously performing two core functions: recognizing material features and distinguishing between defective and non-defective features. *See Markman Order*, J.A. 17–18. Consistent with this construction, claim 1 of the '425 patent recites, for example, "at least one program being executed on said at least one computer to utilize said material features recognition equations for identifying said plurality of material features." '425 patent, claim 1. Claim 1 of the '874 patent recites that "at least one computer is programmed to utilize said plurality of identifier equations and coefficients and said at least one database to estimate a remaining useful life of a material under evaluation." '874 patent, claim 1. These provisions make clear that the relevant analysis is executed autonomously by a computer without human intervention.

The patent specifications define "autonomous" as "able to function without external control or intervention." *See, e.g.*, '320 patent, 5:48–49. The specifications describe the claimed inventions as using computer programs to replicate pattern recognition and inspection tasks traditionally performed by human inspectors. *See, e.g.*, *id.* at 10:7–24. The Asserted Patents expressly criticize manual processes, warning that "uncontrollable 'human factors'" and human

decisions "may lead to a catastrophic failure." *See, e.g.*, '874 patent, 11:38–40, 12:9–12.

The prosecution history also reinforces that the inventors limited their claims to autonomous systems. Express statements made during prosecution to distinguish the claimed invention from prior art may also narrow the scope of the claim. *Purdue Pharma L.P. v. Endo Pharms. Inc.*, 438 F.3d 1123, 1136 (Fed. Cir. 2006). For example, during prosecution of the application for the '425 patent, the applicants amended their claims to require that a computer program make the fitness for service determination in order to reduce human intervention error. J.A. 2267. The applicants argued that the cited prior art, where human inspections are required to determine whether a material is fit for service, "does not apply [where] the computer is programmed to determine whether or not the material should be removed from service." *Id.*

In sum, because the intrinsic record shows that the claimed inventions autonomously perform the core functions of recognizing material features and distinguishing between defective and non-defective features, we conclude that the district court properly construed the program limitations to require autonomous functionality.

B.

Stylwan argues that the district court erred by incorporating the disclosed identifier equations into its construction of the program limitations, asserting that these equations are unnecessary for the invention to function because the invention can function using other mathematical formulas as well. Appellant Br. 37–38. We disagree.

First, the patents expressly state that "[t]he *fundamental operation* of the autonomous NDI is performed by the identifier equations." *See, e.g.*, '320 patent, 10:38–41 (emphasis added). The "identifier equations" that are described in the patents are the three equations that the

district court incorporated in its claim construction. *Compare id.* at 11:10–36, *with Markman Order*, J.A. 18. The patents further explain that "[i]t should be understood that each stage may comprise multiple identifier equations utilizing equations 1, 2, or 3." '320 patent, 11:37–38. This is consistent with the claim construction's limitation that the autonomous detection of material features depends on using the three disclosed equations. *See Markman Order*, J.A. 17–18.

Second, the district court's construction is proper because, as SES highlights, the identifier equations satisfy the enablement requirement under 35 U.S.C. § 112. *See, e.g.*, '320 patent, 10:24–27 ("The detailed mathematical procedures are described hereinbelow and enable one skilled in the art to implement the autonomous NDI described herein without undue experimentation."); *see also* Appellee Br. 13. Stylwan does not dispute this assertion. Appellant Br. 38 (noting the identifier equations "were provided only to assist one of ordinary skill in the art with enablement").

It is well established by our precedent that the scope of the claims must align with the scope of the enablement. *MagSil Corp. v. Hitachi Glob. Storage Techs., Inc.*, 687 F.3d 1377, 1380–81 (Fed. Cir. 2012). As we have explained:

> Enablement serves the dual function in the patent system of ensuring adequate disclosure of the claimed invention and of preventing claims broader than the disclosed invention. This important doctrine prevents both inadequate disclosure of an invention and overbroad claiming that might otherwise attempt to cover more than was actually invented. . . . The scope of the claims must be less than or equal to the scope of the enablement to ensure that the public knowledge is enriched by the patent specification to a degree at least commensurate with the scope of the claims.

Id. (cleaned up). Notably, although Stylwan argues the claimed inventions could operate with other mathematical formulas, it does not assert—nor do we find—that the inventors enabled the use of any formulas beyond the three disclosed identifier equations. Thus, even assuming the claimed inventions could operate using other formulas, the district court did not err by limiting the claims to the identifier equations in its construction.

CONCLUSION

We have considered the parties' remaining arguments and find them unpersuasive. Based on the reasons stated above, we hold that the district court's claim construction of the program limitation terms is supported by the intrinsic evidence and, as such, the claim construction was not erroneous. We hereby affirm the district court's final judgment of noninfringement of the Asserted Patents.

AFFIRMED

COSTS

Costs against Stylwan.