United States Court of Appeals for the Federal Circuit

MICHAEL PHILIP KAUFMAN,
Plaintiff-Cross-Appellant

v.

MICROSOFT CORPORATION,
Defendant-Appellant

2021-1634, 2021-1691

Appeals from the United States District Court for the Southern District of New York in No. 1:16-cv-02880-AKH, Judge Alvin K. Hellerstein.

Decided: May 20, 2022

RONALD ABRAMSON, ALEX G. PATCHEN, Liston Abramson LLP, New York, NY, argued for plaintiff-cross-appellant. Also represented by ARI JASON JAFFESS.

CHRISTINA JORDAN MCCULLOUGH, Perkins Coie LLP, Seattle, WA, argued for defendant-appellant. Also represented by DAN L. BAGATELL, Hanover, NH; TARA LAUREN KURTIS, Chicago, IL; AHMED JAMAL DAVIS, LEAH A. EDELMAN, Fish & Richardson P.C., Washington, DC; JOHN STEPHEN GOETZ, EXCYLYN HARDIN-SMITH, New York, NY; JASON W. WOLFF, San Diego, CA.

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

TARANTO, *Circuit Judge*.

Michael Philip Kaufman owns now-expired U.S. Patent No. 7,885,981, on which he is a co-inventor. The patent describes and claims methods for using a computer to automatically generate an end-user interface for working with the data in a relational database. Mr. Kaufman brought the present action against Microsoft Corporation, asserting infringement of claims of the patent by Microsoft's making and selling of its Dynamic Data product. A jury found Microsoft liable and awarded damages of $7 million to Mr. Kaufman. The district court upheld the verdict against Microsoft's post-judgment challenges, *Kaufman v. Microsoft Corp.*, No. 1:16-cv-02880, 2021 WL 242672, at *1 (S.D.N.Y. Jan. 25, 2021) (*JMOL Order*), and it also denied Mr. Kaufman's motion to amend the judgment to include prejudgment interest, *Kaufman v. Microsoft Corp.*, No. 1:16-cv-02880, 2021 WL 260485, at *1 (S.D.N.Y. Jan. 25, 2021) (*Prejudgment Interest Order*).

Microsoft and Mr. Kaufman both appeal. We reject Microsoft's challenges and thus affirm the denial of Microsoft's post-judgment motions. But we agree with Mr. Kaufman's challenges and reverse the denial of prejudgment interest.

I

A

The '981 patent addresses the creation of user interfaces that permit users to interact with data in relational databases, which store data in multiple tables that are related to each other in defined ways. For a particular database, such an interface should permit the user to view and manipulate the data according to the structure of the tables and their relationships—*i.e.*, the "data model" or "schema" of the database. *See* '981 patent, col. 2, lines 29–52. The

specification notes that in the prior art, the database software itself and the user interface were typically developed separately, and significant manual programming was needed to create an interface that matched the data model built into the database software. *Id.*, col. 2, line 53, through col. 3, line 4. An object of the invention, the patent indicates, is to enable a developer to create "a complete and fully functional user interface (UI) for any arbitrarily complex or large database schema, without any custom software programming." *Id.*, col. 3, lines 8–11.

Claim 1 of the '981 patent is representative for purposes of the issues before us. It recites:

> 1. A method for ***operating a server comprising a processor for automatically generating an end-user interface*** for working with the data within a relational database defined within a relational DBMS whose data is stored in machine-readable media and which is accessible to said server, wherein said relational database comprises a plurality of tables, constraints and relationships stored in said DBMS in accordance with a data model comprising said tables and their column-complements and datatypes, said constraints, and the relationships across said tables, and wherein said relational database may be of any arbitrary size or complexity, said method comprising
>
> (a) providing an output stream from said server, for user display and input devices, defining a user interface paradigm comprising a set of modes for interacting with a given database table, said modes comprising create, retrieve, update and delete, and a corresponding display format for each mode;
>
> (b***) causing said server to scan said database and apply a body of rules to determine the table structures, constraints and relationships of said data model, and store representations***

> ***thereof in machine-readable media accessible to said server;*** and
>
> (c) causing said server to use said representations to construct a corresponding client application for access through said user display and input devices, ***wherein said client application*** provides a connection to said database, provides displays of the table contents of said database for each of said modes in accordance with the display formats of said paradigm, ***integrates into each said mode display processes for representing, navigating, and managing said relationships across tables***, for selecting among said modes, and for navigating across said tables and interacting in accordance the selected mode with the data in the tables that are reached by said navigation, while observing and enforcing relational interdependencies among data across said tables.

Id., col. 377, lines 2–38 (emphases added). As described in limitation (a), the interface created by the claimed method uses a known "CRUD" paradigm for categorizing the universe of user operations as "creating," "retrieving," "updating," and "deleting" records in the database. *See*, *e.g.*, J.A. 5162 (Microsoft documentation describing the accused product in terms of CRUD).

The '981 patent describes in detail a single embodiment of the claimed invention: an "implementation of the invention" called SCHEMALIVE™. '981 patent, col. 4, lines 34–38. The specification includes screen shots, *id.*, Figs. 1–4, 7–8, 9A–9E, textual description, *id.*, col. 4, line 51, through col. 26, line 52, and source code, *id.*, col. 27, through col. 376, describing SCHEMALIVE™, although certain features that are described are not implemented in the code included in the patent, *id.*, col. 4, lines 44–46.

The patent claims priority to a provisional patent application filed in October 2000, and it issued on February 8, 2011. *Id.*, title page.

B

In 2016, Mr. Kaufman sued Microsoft for infringing the '981 patent by making and selling certain "development tools for its .NET Framework software platform," which allegedly automate the generation of a software application for interacting with a database based on the underlying data model. J.A. 282–83 (Compl. ¶ 11). The complaint focuses on a Microsoft product called Dynamic Data, which, the complaint says, "automatically generates" a Web application for "viewing and editing data based on the schema of the data." J.A. 285 (Compl. ¶ 20) (citation omitted); *see* J.A. 5162.

1

In 2019, Microsoft moved for summary judgment of noninfringement. It argued that the phrase "automatically generating" found in the preamble of claim 1 is limiting, that "automatic" means "no human labor required," that limitation (b) ("causing said server to scan said database and apply a body of rules . . . and store representations . . .") must be performed "automatically," and that Microsoft does not infringe because "[t]he accused Dynamic Data functionality requires significant developer effort to 'scan said database' and to complete the claimed steps." J.A. 2083–87. In opposing summary judgment, Mr. Kaufman stated that the human involvement Microsoft had identified was "preliminary set-up by the user" that "does not affect the automatic nature of the scanning." J.A. 2334. In reply, Microsoft stated that there was a "fundamental legal dispute as to the meaning of 'automatic[]' in the claims," J.A. 2639, and it reiterated the "no human labor required" meaning, but it did not propose a construction that identified the line between what actions had to be automatic and what actions the developer could take

manually. J.A. 2640–41. Microsoft had previously argued during claim construction that the plain and ordinary meaning of "automatically" "permits some user intervention." J.A. 400 n.3.

Microsoft made a second argument in its summary-judgment motion, independent of its argument based on the claim's "automatic" language. It argued that its Dynamic Data software does not meet limitation (c) because that software does not integrate into *each* mode display in the created user interface processes for representing, navigating, *and* managing table relationships. J.A. 2088–89. Microsoft cited Mr. Kaufman's expert, Dr. Shasha, who had admitted in his deposition that some Dynamic Data mode displays do not have all three of those processes—specifically, the mode display corresponding to the "retrieve" and "delete" modes does not include a "managing" process. J.A. 2144–45. Microsoft stated that, while "each" and "and" carry their plain and ordinary meanings in the claim language, "the parties dispute what that ordinary meaning is." J.A. 2088. Microsoft argued that the combination of "each" and "and" required all three processes to be present in any given mode display. J.A. 2089.

At the summary judgment motion hearing on January 16, 2020, which also served as the pretrial hearing, Microsoft stated that there was "a claim construction dispute between the parties"—"a legal issue that needs to be resolved before trial under *O2 Micro*." J.A. 2982. After some discussion, the parties appeared to agree that "automatic" means that "no separate developer input occurs." J.A. 2987. When Microsoft stated, "[T]he issue is that the parties have a fundamental disagreement as to the meaning of . . . automatic and how that applies to the scanning and each of these limitations here," the district court stated its belief that the parties did not disagree on the word automatic, but rather "on when an automatic operation comes into play and when it ends." J.A. 2997. It then stated, "I can't tell you who is right, whether there is contemplated a

human selection that itself will then cause an automatic generation of some other function or some other result or whether everything has to be automatic." J.A. 2998. After Microsoft's counsel asked, "Can we resolve the claim construction issue?" the district court said, "You agreed on a definition," and Mr. Kaufman's counsel said, "I think we have resolved it." J.A. 2998.

Microsoft's counsel then moved on to the next issue: the construction of "and" in limitation (c). J.A. 2998–99. Microsoft summarized the parties' positions as follows: "Mr. Kaufman's position is that it means and/or, meaning that each said mode does not need to have all three . . . processes. And Microsoft's position is that each [mode] must have each process: Representing, navigating, and managing. . . . There is no factual dispute on this issue." J.A. 2999. The district court stated, "I can't define this further. We have the terms as they are, and they are not susceptible to further definition." J.A. 3001. It then orally denied the motion for summary judgment with respect to the noninfringement argument based on "and." J.A. 3002.

On January 22, 2020, the district court issued an order denying Microsoft's summary-judgment motion with respect to both noninfringement arguments. *Kaufman v. Microsoft Corp.*, No. 1:16-cv-02880, 2020 WL 364136, at *3 (S.D.N.Y. Jan. 22, 2020). It reiterated its belief that "[t]he parties do not dispute the plain and ordinary meaning of automatic, but they do dispute what steps actually comprise the process of 'scan[ning] said database and apply[ing] a body of rules,' as well as whether those steps are 'automatic[]' in Dynamic Data and related tools." *Id.*

2

On January 27, 2020, trial began. Mr. Kaufman testified about the patent. Of relevance to the limitation (c) issue, he explained that Figure 2 of the patent depicted a "search screen" in his preferred embodiment, which was a part of the "retrieve" mode, and that the depicted screen

does not "incorporate functionality for managing the data" because there was no data to manage in that mode. J.A. 3292–95.

Mr. Kaufman also called his expert, Dr. Shasha, to testify about Dynamic Data. Dr. Shasha demonstrated the process of using Dynamic Data to generate a client application from a database. *See* J.A. 3414–20; J.A. 3437–42. Before scanning the database, he opened a "Dynamic Data template" inside a program called Visual Studio, clicked to "add[] an entity data model" to the project and identify the database for which he would be building an interface, accepted some default selections, including one to have the interface cover all the tables from the database, and then clicked "Finish." J.A. 3414–18. Upon clicking "Finish," the Dynamic Data software scanned the database and "created a whole bunch of files" and "code . . . that will eventually enable the application [the created user interface] to go fetch data from the database and allow the user to modify the data." J.A. 3418–19. When the scanning was completed, Dr. Shasha changed "five lines" in a "particular file called global.asax" to point the Dynamic Data software to the output generated by the "scanning" step, J.A. 3438–40, and to enable the "scaffolding" feature of Dynamic Data, J.A. 3439–41; *see* J.A. 5162 ("Scaffolding refers to the Dynamic Data elements that automatically generate Web pages for each table in a database."). Then, Dr. Shasha clicked one more button to "bring up the Web interface to this database," *i.e.*, to open the newly created user interface for the database on the screen in front of him. J.A. 3441. He testified that what he had done was "automatic," even though he had to identify the database, establish its name, and change five lines of the program, explaining that those steps were "setup" and "independent of the number of tables, the number of relationships," and "the part that's automatic is actually generating the interface." J.A. 3446.

Microsoft called Mr. Hunter, the Microsoft developer who had created Dynamic Data, to testify about the

product. Mr. Hunter walked through the steps required to use Dynamic Data to create a user interface, J.A. 3591–95, and testified that even though Microsoft marketing materials said that Dynamic Data was "a way to automatically generate web pages for each table in the database," the software did not do so "without any developer input," J.A. 3597.

Regarding damages, Mr. Kaufman sought only a reasonable royalty, and the parties stipulated that they would have "entered into a lump sum license agreement at the February 2011 hypothetical negotiation" of that royalty. J.A. 3845. Mr. Kaufman's expert, Mr. Dies, testified that the royalty calculation would start with a determination that Mr. Kaufman would be entitled to $16.8 million in payments from February 2011 to patent expiration in 2021 if the royalty were a running one, but that stream of payments would be discounted to a 2011 "present value," J.A. 3920, resulting in a 2011 lump sum payment of between $5.5 million and $10.5 million (assuming a discount rate of between 10% and 30%), J.A. 3927–28. Dr. Stec, for Microsoft, testified that the lump-sum royalty would have been just $230,000. J.A. 4025. Mr. Hunter, for Microsoft, also made a point relevant to damages, stating that, hypothetically, it would have cost less than $10,000 to disable the functionality within Dynamic Data that enabled automatic creation of a representation of the data model providing the structure of a database. J.A. 3750–53.

3

The jury found all asserted claims valid and infringed, J.A. 4267–68, and then returned a damages verdict of $7 million for Mr. Kaufman, J.A. 4299. Mr. Kaufman, as relevant here, moved for the inclusion of pre-judgment interest. J.A. 6607–21. Microsoft moved for judgment as a matter of law and for a new trial. In particular, Microsoft argued that the district court had failed to resolve claim-construction disputes before trial with regard to

"automatically" and "and," entitling it to a new trial under *O2 Micro International, Ltd. v. Beyond Innovation Technology Co.*, 521 F.3d 1351 (Fed. Cir. 2008), and that under the correct claim constructions, it was entitled to a judgment of noninfringement as a matter of law. J.A. 6665–79; J.A. 6683–85.

The district court denied both motions. Regarding prejudgment interest, the court concluded that the present case was an exception to the general rule that successful patent plaintiffs were entitled to prejudgment interest because the jury verdict "subsumed interest," based on the facts that the verdict form asked generally, "How much has Mr. Kaufman proved he is entitled to recover?" and that the jury was instructed to compute a lump sum payment "discounted to present value." *Prejudgment Interest Order*, 2021 WL 260485, at *1. Regarding Microsoft's motion, for the "automatic" limitation, the district court held that the jury could reasonably find that the manual steps identified by Microsoft at trial "were preparatory and follow-up steps, and not a replacement for the automatic steps claimed," and it reasoned that the application of the court's definition of "automatic" ("no separate developer input is required") to the operation of Dynamic Data was an issue of fact. *JMOL Order*, 2021 WL 242672, at *3. As to the "and" limitation, the district court held that "and" in the context of this patent means "and/or," so Microsoft's noninfringement challenge failed. *Id.* at *4.

Microsoft and Mr. Kaufman each appeal the denials of their respective post-trial motions. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

II

Microsoft argues that the district court erred in denying its motion for judgment as a matter of law and for a new trial. We follow the regional circuit on the non-patent-specific standards governing such motions and governing our review of the district court's denial. *Raytheon Co. v.*

Indigo Sys. Corp., 895 F.3d 1333, 1338 (Fed. Cir. 2018). Under Second Circuit law, the denial of a motion for judgment as a matter of law is reviewed de novo, and the denial is proper unless "there is such a complete absence of evidence supporting the verdict that the jury's findings could only have been the result of sheer surmise and conjecture, or the evidence in favor of the movant is so overwhelming that reasonable and fair minded persons could not arrive at a verdict against it," *Ashley v. City of New York*, 992 F.3d 128, 138–39 (2d Cir. 2021) (cleaned up), an assessment made "consider[ing] the evidence in the light most favorable to the non-movant and giv[ing] that party the benefit of all reasonable inferences that the jury might have drawn in their favor," *id.* at 139. A denial of a new trial is reviewed for abuse of discretion, which is present if the district court "has (1) based its ruling on an erroneous view of the law, (2) made a clearly erroneous assessment of the evidence, or (3) rendered a decision that cannot be located within the range of permissible decisions." *Manganiello v. City of New York*, 612 F.3d 149, 165 (2d Cir. 2010) (cleaned up).

A

Microsoft presents three arguments on appeal with respect to the phrase "automatically generating," which is found in the preambles of the asserted claims. First, Microsoft argues that the district court erred in failing to clarify the reach of the "automatically" requirement for the jury, warranting a new trial under *O2 Micro* because a clarification could reasonably have led the jury to a different verdict. Microsoft Opening Br. 43–44. Second, Microsoft argues that the "automatically" requirement extends to the entire function of "generating an end-user interface," including any unrecited steps included in the accused method, *id.* at 32–33, and that it is entitled to judgment of noninfringement as a matter of law because of the undisputed evidence that the developer must take certain actions in order for Dynamic Data to run successfully, *id.* at

38–44. Finally, Microsoft argues that "[e]ven under the district court's claim construction in which only claimed steps (a), (b), and (c) must be performed automatically," it does not infringe because its software does not perform the scanning step automatically. *Id.* at 44–46. We discuss these arguments in turn, though they are closely related.

1

We first hold that Microsoft failed to preserve its *O2 Micro* challenge. "The purpose of claim construction is to 'determin[e] the meaning and scope of the patent claims asserted to be infringed.'" *O2 Micro*, 521 F.3d at 1360 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd* 515 U.S. 370 (1996)). "When the parties raise an actual dispute regarding the proper scope of these claims, the court, not the jury, must resolve that dispute." *Id.* "There is not necessarily an *O2 Micro* issue, however, whenever further claim construction could resolve the parties' dispute"—rather, a party must "sufficiently request further construction of the relevant limitation" to "raise an actual dispute." *LifeNet Health v. LifeCell Corp.*, 837 F.3d 1316, 1322 (Fed. Cir. 2016); *see also Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016) ("[A] district court's duty at the claim construction stage is . . . to resolve a dispute about claim scope *that has been raised by the parties*." (emphasis added)). If "[t]here is no indication" that the court was "aware of the supposed dispute," a party is considered to have forfeited the *O2 Micro* issue and cannot "resurrect" its argument on appeal by "pointing to ambiguous statements in the record." *Lazare Kaplan Int'l, Inc. v. Photoscribe Technologies., Inc.*, 628 F.3d 1359, 1376 (Fed. Cir. 2010).

A proper claim construction provides a legal standard for the jury to apply, and so the requirement of clear, timely raising of an argument for a claim construction reflects the strong requirement of timely raising of distinct objections

to jury instructions. *See* Fed. R. Civ. P. 51(c); *see also*, *e.g.*, *Emamian v. Rockefeller Univ.*, 971 F.3d 380, 387 (2d Cir. 2020); *Ecolab, Inc. v. Paraclipse, Inc.*, 285 F.3d 1362, 1369–70 (Fed. Cir. 2002). Sometimes, it is recognized, there is an exception to that requirement: An issue sometimes need not be re-raised in the specific setting of making proposals for or airing objections to jury instructions if it was sufficiently raised and settled earlier. *See Emamian*, 971 F.3d at 387–88; *Ecolab*, 285 F.3d at 1370. We recognized the application of that principle to claim construction in *O2 Micro*, referring to circumstances in which the claim-construction position of the appellant was "made clear to the district court," a further objection would have been "not only futile but unnecessary," and the issue was "fully litigated and decided at the *Markman* stage of the litigation," 521 F.3d at 1359 (discussing the law of several circuits).

In this case, Microsoft did not include a definition of the scope of the "automatically" requirement in its proposed jury instructions. Nor does Microsoft point to anything it said in the charging conference that raised the issue. And this is not a case where the exception noted in *O2 Micro* applies.

In the original *Markman* proceeding, the parties did not request a construction of the word "automatically" or raise an issue of the scope of the "automatically generating" requirement. During the motion for summary judgment briefing, Microsoft, in its reply memorandum, described the "human labor" involved in use of Dynamic Data, and it asserted a need for a claim construction under *O2 Micro*, but it said only that there was "a fundamental legal dispute as to the meaning of 'automatic[]' in the claims." J.A. 2639–40. It never clearly said that, apart from what "automatic" means, a construction was needed specifying what functions had to be automatic, *i.e.*, the scope of the "automatically generating" requirement. And it never offered the district court a formulation of such a claim construction resolving that scope issue.

Nor did Microsoft do so at the pre-trial hearing. As described above, Microsoft said that "the issue is that the parties have a fundamental disagreement as to the meaning of . . . automatic and how that applies to the scanning and each of these limitations here." J.A. 2997. It never offered a proposed construction of the second half of that issue. And when the district court expressed uncertainty about defining "when an automatic operation comes into play and when it ends," J.A. 2997; *see also* J.A. 2998, Microsoft's counsel asked, "Can we resolve the claim construction issue?"; the district court said, "You agreed on a definition"; Mr. Kaufman's counsel said, "I think we have resolved it"; and the court stated the agreed construction, "No separate developer input is required," J.A. 2998. Microsoft's counsel then moved on to the next issue.

In Microsoft's current view, that resolution did not resolve a claim-construction dispute about what human actions were permitted; the absence of such a resolution is the very premise of Microsoft's *O2 Micro* argument. But the above colloquy suggests that the district court reasonably thought that the only adequately presented claim-construction issue had been resolved. And in any event, if there was a further claim-construction issue about what human actions were permitted, Microsoft never defined a claim construction that would accommodate certain human actions Microsoft itself has acknowledged are permissible, *see* Microsoft Reply Br. 9 ("Microsoft agrees that such pre-invocation steps may require developer input . . . ."), and that Mr. Kaufman and the district court could scrutinize and address. In these circumstances, the failure to pursue the matter at the jury-instruction stage constitutes a forfeiture.

2

We also reject Microsoft's second argument, presented for the first time on appeal, that "automatically generating" should be construed broadly to require some defined

set of steps beyond those recited by the claims in (a), (b), and (c) to be performed automatically. Microsoft never proposed such a construction to the district court. And the fact that the claims are "comprising" claims does not suggest that all other, non-listed actions must be performed automatically.

Microsoft itself concedes that it is permissible under the claim for at least some steps to be taken by the developer, such as steps that involve placing the desired database before the user-interface-generating software, so that the latter may run on the former to generate the desired user interface. Microsoft Reply Br. at 9–10 ("Microsoft agrees that such pre-invocation steps may require developer input—without the developer identifying the database-of-interest, the program has no starting point from which to automatically generate the end-user interface. The manual database-selection step that Mr. Kaufman points to thus does not alter the automatic nature of the claimed end-user-interface-generation process."). Microsoft's concession confirms that the claim language allows humans to take steps needed to produce the user interface. Notably, the preamble does not say that the entire "method" of creating a final user interface must be automatic. It requires a "method for operating a server" and says that the server being operated must have a "processor for automatically generating an end-user interface." '981 patent, col. 377, lines 2–5. Those words distinguish the method from a device the method uses, and they identify the device used (a processor in a server) by a capability, not by requiring a set of steps actually to be performed. Moreover, the words do not preclude human activities to configure the processor for the desired generation, which must then be automatic, and they do not define "generating" as leaving no room for minor final human adjustments, after the processor has done its work, to produce the final on-screen interface. Similarly, the scanning limitation (b), which has been the focus of the litigation, uses the phrase

"causing said server to scan . . . ," distinguishing two actions—the server's scanning and the developer's actions "causing" that to occur. *Id.*, col. 377, lines 20–24. That language permits at least some pre-scanning human actions.

3

Microsoft's final argument with respect to the "automatically generating" language is that, even if "automatically" extends only to the steps of the claimed method enumerated in limitations (a), (b), and (c), there was insufficient evidence to support the jury's finding that use of Dynamic Data infringed limitation (b) of the claim. The question is "whether substantial evidence supported the verdict under the agreed" claim construction. *Hewlett-Packard Co. v. Mustek Systems, Inc.*, 340 F.3d 1314, 1320 (Fed. Cir. 2003).

Microsoft identified certain manual steps that a developer must take to operate Dynamic Data and claimed that those steps fell within the enumerated limitations. But as the district court correctly explained, the jury reasonably could have found, based on Dr. Shasha's testimony, that each manual step identified by Microsoft was not part of the "scanning" functionality itself. *JMOL Order*, 2021 WL 242672, at *3; *see* J.A. 3446. Rather, those steps—checking various boxes, clicking certain buttons, and making basic alterations to a single file—could be considered "preparatory and follow-up steps" outside the scope of the "scanning" itself, and therefore, their manual nature would not defeat an infringement finding. *JMOL Order*, 2021 WL 242672, at *3.

Microsoft failed to establish that the district court erred in its claim construction or that the jury's verdict was not supported by substantial evidence. Thus, we affirm the jury's finding that the accused processes involving use of Dynamic Data come within the "automatically generating" limitation.

B

Microsoft argues that the district court erred by not providing a construction to the jury of the word "and" within the limitation requiring integration of "processes for representing, navigating, and managing said relationships across tables" into each claimed mode display. Microsoft also argues that the district court erred in the post-trial ruling when it concluded that "and" means "and/or," contending that the phrase should be given the conjunctive meaning, so that the client application (constituting the end-user interface) must integrate into each of the individual mode displays (for creating, retrieving, updating, and deleting) all three of the "processes for representing, navigating, and managing said relationships across tables." Under that construction, Microsoft adds, it is entitled to judgment of noninfringement because Dynamic Data undisputedly does not integrate all three types of processes into each mode display.

We decide only the correctness of the district court's and/or construction. Because we agree with that construction, we do not address Microsoft's other arguments. And because it is undisputed that Dynamic Data integrates at least one of the enumerated processes into each mode display, Microsoft's noninfringement argument depends on its claim-construction argument. *Cf. Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010) ("We may affirm the jury's findings on infringement if correction of the errors in a jury instruction on claim construction would not have changed the result, given the evidence presented." (cleaned up)).

"A claim construction that excludes a preferred embodiment is rarely, if ever correct and would require highly persuasive evidentiary support." *Epos Technologies Ltd. v. Pegasus Technologies Ltd.*, 766 F.3d 1338, 1347 (Fed. Cir. 2014) (cleaned up); *see also Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). A fortiori as to

excluding a sole embodiment. Microsoft does not dispute that the sole embodiment described in the '981 patent specification, the SCHEMALIVE™ program, does not include a process for "managing said relationships across tables." *See* '981 patent, Fig. 2; J.A. 3292–95 (explaining that Fig. 2, a "retrieve" display, lacks a "managing" process). Thus, we evaluate the claim language with a strong presumption that it encompasses the situation where a mode display integrates some, but not all, of the enumerated processes.

Microsoft cannot meet the high bar required to conclude that the patent excludes the only embodiment described in the specification. Microsoft's only meaningful point is that "and" must carry its usual conjunctive meaning. But, while we recognize that we may not "redraft claims . . . whether to make them operable or to sustain their validity," *Lucent Technologies, Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1215 (Fed. Cir. 2008)—or, as here, to cause them to encompass the sole described embodiment—this is not a case where there is "only one reasonable construction," *id.* Rather, we have recognized that, in certain contexts, the word "and" can reasonably be understood to denote alternatives, rather than conjunctive requirements. In *Ortho-McNeil Pharmaceutical v. Mylan Laboratories*, we held that, in a patent that described two mutually exclusive possibilities for the composition of a compound connected by the word "and," the claim language did not "require their simultaneous existence." 520 F.3d 1358, 1361 (Fed. Cir. 2008). We observed that the context of the patent "[w]ithout question . . . shows use of the word *and* to join alternatives." *Id.* at 1362. We held that we were not required to "interpret *and* according to its most common usage in the dictionary"; rather, we "must interpret the term to give proper meaning to the claim in light of the language and intrinsic evidence." *Id.* at 1362–63.

With the claim term not foreclosing the and/or meaning, that meaning is the correct one in context here. The specification undisputedly illustrates in its sole

embodiment a mode display that does not integrate all the enumerated processes. The specification repeatedly uses the word "and" when describing the processes for "representing," "navigating," and "managing" relationships across tables when describing the invention. '931 patent, col. 3, lines 43–47; *id.*, col. 6, lines 46–57; *id.*, col. 12, lines 24–29. And while Microsoft has noted that software *could* be written to include all three processes in each display mode, even a process that has no sensible place in a particular mode, Microsoft did not suggest, at least in its opening brief in this court, any reason a skilled artisan would find such inclusion even arguably sensible or, therefore, a plausible reading of the claim language, especially when, so interpreted, the language would read out the only embodiment.

For those reasons, we agree with the district court's holding that the "proper meaning" of the claim in light of the entire patent cannot require all three processes to be integrated into all the mode displays. We therefore affirm the jury's finding of infringement with respect to this term.

III

On cross-appeal, Mr. Kaufman argues that the district court erred in denying his motion to amend the judgment to include prejudgment interest. We agree.

We review a district court's denial of prejudgment interest in patent cases for an abuse of discretion. *Sanofi-Aventis v. Apotex Inc.*, 659 F.3d 1171, 1177 (Fed. Cir. 2011). "A district court abuses its discretion when its decision is based on clearly erroneous findings of fact, is based on erroneous interpretations of the law, or is clearly unreasonable, arbitrary or fanciful." *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1460 (Fed. Cir. 1998) (en banc).

Damages awarded in patent-infringement cases must be "adequate to compensate for the infringement, but in no

event less than a reasonable royalty for the use made of the invention by the infringer, *together with interest* and costs *as fixed by the court*." 35 U.S.C. § 284 (emphases added). The Supreme Court has explained that Congress intended that "prejudgment interest should ordinarily be awarded where necessary to afford the plaintiff full compensation for the infringement." *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 654 (1983). "In the typical case an award of prejudgment interest is necessary to ensure that the patent owner is placed in as good a position as he would have been had the infringer entered into a reasonable royalty agreement." *Id.* at 655. The Court added, however, that because interest is "fixed by the court," a district court has some discretion to decide whether to award prejudgment interest, and "it may be appropriate to limit prejudgment interest, or perhaps even to deny it altogether, where the patent owner has been responsible for undue delay in prosecuting the lawsuit," among other potential, unnamed circumstances. *Id.* at 656–57. In any case, "some justification" is required to withhold prejudgment interest. *Id.* at 657.

The district court provided two rationales for denying prejudgment interest to Mr. Kaufman: first, that the jury verdict "subsumed interest," and second, that Mr. Kaufman was responsible for "undue delay" in bringing the lawsuit, causing prejudice to Microsoft. *Prejudgment Interest Order*, 2021 WL 260485, at *1. Neither rationale is supportable on the record here.

The jury verdict cannot reasonably be understood to include interest. Consistent with the parties' stipulation before the jury that "[t]he parties would have entered into a lump sum license agreement at the February 2011 hypothetical negotiation," J.A. 3845, all the expert testimony at trial discussed what amount Microsoft would have paid Mr. Kaufman for a license in 2011, *see* J.A. 3918–28; J.A. 4025. No testimony to which we have been pointed would have given the jury any basis for calculating how to include interest on the 2011 amount to the present.

The jury instructions reiterated that the jury should "focus on what the expectations of the [parties] would have been . . . had they entered into an agreement [in 2011]." J.A. 4294. They also stated that "the parties have agreed that a reasonable royalty in this case should take the form of a single lump-sum payment for the life of the patent, discounted to present value." *Id.* That mention of "present value" did not suggest to the jury that its calculation should *add* interest accruing from the 2011 hypothetical negotiation date to the present; rather, it was a reminder that—consistent with the expert testimony, J.A. 3920–22—the lump-sum royalty payment should incorporate the hypothetical future royalty payments by using a discount rate to calculate the 2011 value of the stream of such payments, hence *decreasing* their numeral amounts. Finally, the question asked on the verdict form, "What has Mr. Kaufman proved he is entitled to recover as a one-time royalty payment for the life of the patent?", J.A. 7250; *see also* J.A. 19 (district court referring to question, "How much has Mr. Kaufman proved he is entitled to recover?"), even if it could be interpreted as asking for an inclusion of interest, does not direct the jury to include interest.

Given that all the testimony and the oral jury instructions assumed a 2011 hypothetical negotiation and provided no basis for calculating prejudgment interest, it was unreasonable for the district court to conclude that the damages figure provided by the jury subsumed interest.

The district court also erred in concluding that Mr. Kaufman was responsible for undue delay justifying denial of prejudgment interest. For one, the fact that Mr. Kaufman did not sue for five years after he became aware of Microsoft's potential infringement does not alone justify a finding of undue delay. The district court relied on *Crystal Semiconductor Corp. v. Tritech Microelectronics International, Inc.*, 246 F.3d 1336 (Fed. Cir. 2001), but there the court credited the defendant's evidence that a two-year delay was a "litigation tactic" that was "self-serving": the

plaintiff had two years earlier sent letters to dozens of other companies informing them of its patent rights but excluded the defendant. *Id.* at 1362. Here, Microsoft presented no such evidence as to why Mr. Kaufman's delay was undue.

In particular, to show that delay was undue, a defendant must, at least generally, show that it was prejudiced. *See id.* ("[A]bsent prejudice to the defendants, any delay by Lummus does not support the denial of prejudgment interest."). Microsoft presented evidence that it *could* have altered Dynamic Data in 2011 to not infringe the patent, J.A. 3750–53, but not evidence that it *would* have. And the district court did not find otherwise, stating only that Microsoft "might" have altered Dynamic Data. *Prejudgment Interest Order*, 2021 WL 260485, at *1. Additionally, Microsoft's assertion—presented as evidence of a non-infringing alternative design—was clearly not credited by the jury, which found that Microsoft would have paid $7 million to license the patent from Mr. Kaufman. The district court lacked reasonable support for its determination that Microsoft had demonstrated prejudice from the five-year delay in bringing the lawsuit.

We conclude that the district court abused its discretion in denying Mr. Kaufman's motion to amend the judgment to include prejudgment interest. We reverse the district court's denial of the motion.

IV

For the foregoing reasons, we affirm the district court's denial of Microsoft's motion for judgment as a matter of law or for a new trial, and we reverse the district court's denial of prejudgment interest to Mr. Kaufman.

Costs to Mr. Kaufman.

AFFIRMED IN PART AND REVERSED IN PART