United States Court of Appeals for the Federal Circuit

4DD HOLDINGS, LLC, T4 DATA GROUP, LLC,
Plaintiffs-Appellants

v.

UNITED STATES,
Defendant-Appellee

IMMIX TECHNOLOGY, INC.,
Third-Party Defendant

2024-1996

Appeal from the United States Court of Federal Claims in No. 1:15-cv-00945-EGB, Senior Judge Eric G. Bruggink.

Decided: July 16, 2026

DANIEL LUKE GEYSER, Haynes and Boone, LLP, Dallas, TX, argued for plaintiffs-appellants. Also represented by ANGELA M. OLIVER, Washington, DC.

SCOTT DAVID BOLDEN, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, DC, argued for defendant-appellee. Also represented by RACHEL HICKS, ELIZABETH MARIE HOSFORD, YAAKOV ROTH.

Before PROST, HUGHES, and STARK, *Circuit Judges*.

HUGHES, *Circuit Judge*.

4DD Holdings, LLC, and T4 Data Group, LLC, appeal from the judgment of the Court of Federal Claims awarding them $12,683,065.86 for the government's infringement of their copyrighted software TETRA®. Because the law does not compel deferring to the terms set out in a license agreement to assess copyright infringement damages, we affirm the trial court's decision to assess damages via a hypothetical negotiation. However, because the trial court adopted a legally impermissible view of the book of wisdom and erred by assessing non-compensatory damages against the government, we vacate-in-part and remand for further proceedings.

I

A

The Department of Defense (DOD) and the Department of Veterans Affairs (DVA) have historically stored military healthcare records in different formats and in distinct, poorly connected databases. As a result, the government has struggled to maintain comprehensive medical records for veterans, service members, and their families. In 2013, the Secretary of Defense directed DOD to coordinate with DVA to develop a data federation, presentation, and interoperability solution to this data sharing problem. This effort was coined the Defense Medical Information Exchange (DMIX) program, and it was intended to alleviate the agencies' data sharing problem by implementing software that would enhance interoperability between the already existing disparate databases. The government decided to purchase commercially available software for this purpose rather than develop its own, and it tasked its lead contractor, Systems Made Simple (SMS), with doing

so. After a competitive evaluation, SMS selected TETRA®, software developed by 4DD Holdings, LLC (4DD).[1]

TETRA comprises two main components. TETRA Healthcare Federator (Federator) is the data processing component and is licensed on a per-computer core basis.[2] TETRA Enterprise Studio (Studio) is the graphical interface and programming component that allows engineers to interact with Federator. Studio is licensed on a per-user, or per-seat, basis. 4DD had not previously sold or licensed TETRA, so there was no established pricing scheme. However, TETRA was listed on the Solutions for Enterprise-Wide Procurement (SEWP) contract of authorized software reseller Immix Technology, Inc. (Immix).[3] That contract listed Federator at $24,000 per core and Studio at $6,000 per seat (the SEWP rates), and it advertised volume discounts for agencies making bulk purchases.

While competing for the DMIX contract, 4DD submitted custom pricing quotes for various configurations of TETRA. These quotes also included volume discounts for bulk TETRA purchases and advertised heavily discounted rates for development licenses as compared to production

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[1] Although there are two named appellants, like the trial court, we refer to them as one. T4 Data Group, LLC, is a subsidiary of 4DD Holdings, LLC.

[2] A computer core is an individual processing unit in a computer. The number of cores in a computer, whether virtual or physical, correlates to its processing power. If a computer has four cores, it would need four Federator licenses—one for each core.

[3] SEWP is a government-wide procurement vehicle managed by NASA that allows federal agencies to purchase information technology products and related services from pre-vetted vendors.

licenses. Development licenses, which would allow the government to test and develop TETRA in a non-user-facing environment, were offered at a 90% discount from the price for production licenses, which allow full use of the software for end users in live environments.

In September 2013, 4DD licensed TETRA to the government via its authorized reseller, Immix. The government licensed 64 Federator cores at $10,447 per core and 50 Studio seats at $3,337 per seat (the License rates). The licensing agreement prohibited the government from copying TETRA with exception of a single backup copy for use if the original was damaged or destroyed. The government was responsible for monitoring its own compliance with this condition given that enabling TETRA's built-in methods for monitoring copying and unauthorized use posed security risks to the government's secure networks.

After licensing, SMS began developing code packages that would adapt TETRA for use with the government's databases. First, SMS developed and tested each code package in its own laboratory. As code packages were approved, they were transferred to the government's Development and Test Center (DTC), a secure facility for testing the code packages with the government's networks. There the code packages were secured and finalized for use within the government's .mil network. In this development process, SMS regularly exceeded the scope of the government's license by making "thousands" of unauthorized copies of TETRA. *4DD Holdings, LLC v. United States*, 169 Fed. Cl. 164, 174 (2023); *cf. 4DD Holdings, LLC v. United States*, 143 Fed. Cl. 118, 127–30 (2019) (denying government's motion to dismiss in part because it "authorized or consented to" SMS's use of the TETRA software). SMS regularly created backup copies of TETRA, cloned virtual computers containing TETRA, and created new copies of TETRA each time it released packages to the DTC.

In February 2014, 4DD became aware the government had exceeded the terms of its license and notified SMS. In August 2014, 4DD directly contacted the government to discuss the excess copies and requested payment for what it estimated to be 68 additional Federator cores. The government began "true-up" negotiations to reconcile 4DD's request with the number of excess copies. After limited investigation and negotiation, the parties agreed that the government exceeded its license by 168 cores. 4DD requested the government buy the excess cores at the SEWP rate of $24,000 per core, but the government rejected that suggestion, and the parties settled at the License rate of $10,447 per core. This agreement was finalized in March 2015 by way of a contract modification totaling around $1.7 million. While these true-up negotiations were ongoing, a government official ordered the deletion of all TETRA copies within the DTC; those copies were not acknowledged during the true-up process.

After a change in government leadership, DOD ended its work with TETRA before it could be successfully implemented. In September 2014, the government notified SMS that it would buy TETRA licenses for only one more year after which it was ending its work with TETRA.

B

In August 2015, 4DD filed suit for copyright infringement, seeking more than $5 billion in compensation. During discovery, 4DD learned of the government's destruction of TETRA copies in the DTC and moved for sanctions. The trial court found the government had intentionally or negligently destroyed several categories of evidence. As a result, the trial court applied adverse inferences against the government and ordered roughly $1.1 million in sanctions.

After a two-week bench trial, the trial court found that the government had exceeded its Federator license by 290,334 cores and its Studio license by 171,421 seats. *See 4DD Holdings*, 169 Fed. Cl. at 182–84. It then set out to

determine the "reasonable and entire compensation" owed to 4DD for the government's infringement. *Id.* at 184 (quoting 28 U.S.C. § 1498(b)). 4DD suggested that damages should be calculated by directly applying the established per-core and per-seat SEWP rates. But the government disagreed, suggesting that damages should be assessed by constructing a hypothetical negotiation between the parties and that 4DD's recovery should be limited based on the availability of a cheaper alternative software, Rhapsody.

The trial court rejected 4DD's argument that the evidence proved an established royalty rate and instead used a hypothetical negotiation to fix a reasonable royalty. After establishing the hypothetical negotiation date as August 27, 2013, the trial court considered the relevant *Georgia-Pacific* factors and found that the government would have possessed the superior bargaining position in this hypothetical negotiation. *Id.* at 186–87; *see Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970). It determined that 4DD's bargaining position was weakened given that (1) TETRA provided the government with little value, (2) TETRA had no established profitability, and (3) there existed a similar and cheaper software, Rhapsody. *See 4DD Holdings*, 169 Fed. Cl. at 187.

The trial court then assessed royalty rates across four general categories of infringing TETRA copies. It determined the parties' hypothetical negotiation would have produced the following licensing agreement: (1) $9.3 million for non-backup copies of Federator, (2) a convenience fee of 20% of the amount owed for category 1, or $1.8 million, for backup copies of Federator, (3) $0 for RAM copies, and (4) $150,000 for Studio copies, i.e., the amount equivalent to statutory damages under the Copyright Act for willful infringement. *See id.* at 187–90; J.A. 53 (identifying and correcting clerical error in calculations). This resulted in a total award of $12,683,065.86.

4DD timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(3).

II

We review different aspects of the trial court's order using different standards of review. *Home Sav. of Am. v. United States*, 399 F.3d 1341, 1347 (Fed. Cir. 2005). While "the clear error standard governs a trial court's findings about the general type of damages to be awarded (e.g., lost profits), their appropriateness (e.g., foreseeability), and rates used to calculate them (e.g., discount rate, reasonable royalty)," we apply the abuse of discretion standard "to decisions about methodology for calculating rates and amounts." *Id.* A court abuses its discretion where it "commits a clear error of judgment in weighing the relevant facts or exercises its discretion based upon an error of law or clearly erroneous factual findings." *AntiCancer, Inc. v. Pfizer, Inc.*, 769 F.3d 1323, 1328 (Fed. Cir. 2014). "A finding is clearly erroneous when although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." *United States v. U.S. Gypsum Co.*, 333 U.S. 364, 395 (1948) (cleaned up).

4DD suggests various errors in the trial court's assessment of the compensation owed for the government's infringement. These errors can be grouped into two principal categories. First, 4DD argues the trial court erred as a matter of law by assessing damages via a hypothetical negotiation rather than defaulting to the pricing outlined in the parties' licensing agreement. Second, assuming a hypothetical negotiation was legally permissible, 4DD challenges the method by which the trial court constructed the negotiation and relied on certain facts to assess the parties' relative negotiating leverage. We take each in turn.

A

The trial court calculated damages by constructing a hypothetical negotiation to value the government's unauthorized use of 4DD's software. 4DD contends this was legal error and argues the trial court should have instead applied the SEWP or License rates, which would have entitled 4DD to "anywhere from $3 to $5 billion" in compensation. *4DD Holdings*, 169 Fed. Cl. at 184. We disagree.[4]

In 28 U.S.C. § 1498(b), Congress waived sovereign immunity to allow copyright owners to recover their "reasonable and entire compensation" as damages for the government's infringement. The statute does not require use of a specific method for calculating "reasonable and entire compensation," but this court has held that the same methods used to determine actual damages under section 504 of the Copyright Act are also appropriate for assessing damages under § 1498(b). *See Gaylord v. United States* (*Gaylord II*), 678 F.3d 1339, 1343 (Fed. Cir. 2012). Thus, damages "may be based on a reasonable royalty representing 'the fair market value of a license covering the defendant's use.'" *Gaylord v. United States* (*Gaylord III*), 777 F.3d 1363, 1367 (Fed. Cir. 2015) (citation omitted).

A reasonable royalty can be calculated by reference to an established royalty, if one exists, or via a hypothetical negotiation between the parties. *See id.* at 1367–68; *cf. Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554 (Fed. Cir. 1995) ("The royalty may be based upon an established royalty, if there is one, or if not, upon the supposed result of

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[4] We note that the government argues that 4DD has forfeited this argument. But we need not reach that question because we conclude that 4DD's argument fails on the merits. *See Traxcell Techs., LLC v. Sprint Comm'ns Co.*, 15 F.4th 1121, 1135 (Fed. Cir. 2021).

hypothetical negotiations between the plaintiff and defendant."). A hypothetical negotiation "attempts to ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began"; this inquiry "necessarily involves an element of approximation and uncertainty." *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324–25 (Fed. Cir. 2009) (citation omitted).

4DD argues that where the parties to an infringement lawsuit have previously agreed on rates for licensing the exact copyrighted material at issue, those rates control as a matter of law when calculating damages for infringement under 28 U.S.C. § 1498(b). Thus, 4DD contends, the trial court committed legal error when it estimated royalty rates for the TETRA software using a hypothetical negotiation framework rather than simply adopting the established and previously agreed upon License or SEWP rates. According to 4DD, the trial court's hypothetical rates cannot, as a matter of law, override the actual rates established by the parties' previous negotiations. We are not convinced.

Neither statute nor case law requires automatic adoption of royalty rates set out in licensing agreements when calculating infringement damages. Rather, this court has made clear that "the use of past licenses as evidence must always take account of economically relevant differences between the circumstances of those licenses and the circumstances of the matter in litigation." *Gaylord III*, 777 F.3d at 1368. Thus, the relevance of licensing agreements varies with the degree to which those agreements parallel the infringing activity. *See id.* Where, as here, the trial court determines that the usage contemplated by the parties' license is not analogous to the infringing use, the proper measure of damages is appropriately determined by the construction of a hypothetical negotiation. *See 4DD Holdings, LLC v. United States*, No. 15-945C, 2024 WL 2240359, at *1–3 (Fed. Cl. Apr. 26, 2024) (denying reconsideration); *cf. Bitmanagement Software GmBH v. United*

States, 989 F.3d 938, 951 n.5 (Fed. Cir. 2021) ("[T]he proper measure of damages shall be determined by [the government's] actual usage of [the software] in excess of the limited usage contemplated by the parties' implied license. That analysis should take the form of a hypothetical negotiation.").

4DD's cited cases do not compel a different result, nor does today's holding invite the circuit split 4DD suggests. *See* Appellant Br. 17; Appellant Reply Br. 13. 4DD identifies no case in this or any other circuit that requires, as a general rule, that an award of copyright damages necessarily mirrors the terms in licensing agreements. For example, in *Polar Bear Productions, Inc. v. Timex Corp.*, the Ninth Circuit affirmed the trial court's denial of judgment as a matter of law regarding a damages award calculated by reference to the copyright owner's earlier quoted price for the defendant's use of the copyrighted work. 384 F.3d 700, 709 (9th Cir. 2004). But there, the copyright owner's quoted price captured activity nearly identical in scope to the later infringement and was thus highly relevant to the damages analysis as a result. *See id.* at 709 & n.6; *see also Szekely v. Eagle Lion Films, Inc.*, 242 F.2d 266, 268–69 (2d Cir. 1957) (awarding as infringement damages money owed under partially paid contract where scope of contract paralleled scope of infringement). And while 4DD is correct that the Sixth Circuit has affirmed a damages award based on a licensing fee calculated according to the terms of the parties' existing licensing agreement, it announced no per se legal rule compelling use of that method. *See Thoroughbred Software Int'l, Inc. v. Dice Corp.*, 488 F.3d 352, 359–60 (6th Cir. 2007); *see also Bitmanagement Software GmBH v. United States* ("*Bitmanagement II*"), 124 F.4th 1368, 1377 (Fed. Cir. 2025) ("[N]othing in *Thoroughbred Software*, nor any other case we have identified, supports the proposition that a copyright owner is entitled to compensation based on each copy made by an infringer when the hypothetical negotiation would proceed on a different basis.").

Rather, 4DD's cited cases reinforce the conclusion we reach today: while a license may inform the reasonable royalty inquiry, no rule of law compels courts to defer to such an agreement in lieu of conducting a hypothetical negotiation, particularly where material differences exist between the terms of the license and the defendant's infringement. The trial court did not abuse its discretion by choosing to construct a hypothetical negotiation to assess damages for the government's infringement.[5]

B

Having concluded that the trial court did not err in selecting the hypothetical negotiation framework for fixing damages, we next consider 4DD's challenges to the method by which the trial court constructed the hypothetical negotiation.

1

4DD argues that two global errors "distorted every aspect" of the trial court's damages analysis, requiring vacatur and remand. Appellant Br. 33. First, 4DD suggests the trial court legally erred in its application of the so-called book of wisdom doctrine. Second, 4DD contends that the trial court erred in its determination that the availability

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[5] As the case comes to us, there is no dispute as to the date of the government's first infringement, and, therefore, the date of the hypothetical negotiation; both are August 27, 2013. *See 4DD Holdings*, 169 Fed. Cl. at 186. Nor does either party suggest that the issue on appeal is impacted by the undisputed fact that the August 2013 hypothetical negotiation predates the September 26, 2013, execution of the license agreement, rendering the license as a formal matter *not* a "prior" license.

of an allegedly similar software would have weakened 4DD's bargaining position.[6]

a

4DD contends that the trial court adopted an overexpansive view of the book of wisdom. That is, the trial court constructed the hypothetical negotiation with the knowledge that the government would later cancel its work with TETRA before it could be successfully implemented. 4DD suggests this amounts to legal error.

The Supreme Court has made clear that factual developments that occur after the date of the hypothetical negotiation may nonetheless still inform a court's damages analysis. *Sinclair Refin. Co. v. Jenkins Petroleum Process Co.*, 289 U.S. 689, 698 (1933) ("Here is a book of wisdom that courts may not neglect. We find no rule of law that sets a clasp upon its pages, and forbids us to look within.").

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[6] 4DD purports to allege a third global error—that the trial court's analysis was impermissibly premised on counterfactual presumptions. However, its argument on this point largely consists of rhetorical questions that do not amount to legal argument, *see* Appellant Br. 38 ("If the government had substantial leverage, for example, why did it not invoke that leverage during actual negotiations? Why did it not demand a development license . . . ? Why did it not use Rhapsody to further discount TETRA's price? And so on."), or reformulations of arguments made elsewhere in its brief, *see id.* (suggesting hypothetical framework was improper where the parties' actual negotiations reached a different result). To the extent that any unique legal argument can be discerned, it lacks meaningful development, and we do not address it any further. *Cf. SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1320 (Fed. Cir. 2006).

Thus, this so-called book of wisdom allows courts to consider later-occurring events when appraising the value of a patent or copyright at an earlier point in time. *Id.* at 697 ("The use that has been made of the patented device is a legitimate aid to the appraisal of the value of the patent at the time of the breach.").

Further, this court has specifically incorporated the book of wisdom into the hypothetical negotiation framework. *See Lucent*, 580 F.3d at 1333 (observing that "the hypothetical negotiation analysis 'permits and often requires a court to look to events and facts that occurred thereafter'" (citation omitted)). As already explained, the hypothetical negotiation seeks to ascertain "what a willing licensor and licensee would bargain for at hypothetical negotiations *on the date infringement started*," which is then used to assess damages owed for infringement. *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1580 (Fed. Cir. 1989) (emphasis added). And while the date of the hypothetical negotiation is the date that the infringement began, *LaserDynamics, Inc. v. Quanta Comput., Inc.*, 694 F.3d 51, 75 (Fed. Cir. 2012), some later-arising information, including "evidence of usage after infringement started," can be helpful in assessing the royalty's reasonableness, because "[u]sage (or similar) data may provide information that the parties would frequently have estimated during the negotiation," *Lucent*, 580 F.3d at 1333–34. Therefore, as the government suggests, the trial court's decision to conduct the hypothetical negotiation with knowledge of the details of SMS's process for adapting TETRA to the government's networks, which resulted in the infringing copies, was not legal error. Nor was its consideration of the number and type of copies created in that process. *See Lucent*, 580 F.3d at 1334.

But the book of wisdom is not without limits. Its use in correcting uncertainties in the hypothetical negotiation "is not to charge the offender with elements of value nonexistent at the time of his offense." *Sinclair*, 289 U.S. at 698.

Rather, it is meant "to bring out and expose of light the elements of value that *were there from the beginning*." *Id.* (emphasis added). This accords with the key element in setting a reasonable royalty via hypothetical negotiation: the need to conduct the negotiation from the date the infringement began to avoid an after-the-fact assessment of the hypothetical license's value. *See Unisplay, S.A. v. Am. Elec. Sign Co.*, 69 F.3d 512, 518 (Fed. Cir. 1995).

The purpose of the book of wisdom is to provide insight and reduce uncertainty as to the elements of a license the parties are hypothetically negotiating. *See Lucent*, 580 F.3d at 1333–34. It may not, therefore, be used to impute knowledge of later-occurring events affecting the value of the license that were unforeseeable at the time of negotiating, such as the government's change in leadership and resulting decision to end its work with TETRA before implementation. *Cf. Sinclair*, 289 U.S. at 698. Such facts are wholly inconsistent with determining the "reasonable needs and expectations" of the parties at the time of licensing and are improper for consideration in a hypothetical negotiation. *Cf. Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1080 (Fed. Cir. 1983) ("Equally or more important, a royalty based upon actual use would have been inconsistent with the function snowmaking equipment serves at a ski resort and the reasonable needs and expectations of both the licensor and the licensee."). Thus, the trial court's construction of the hypothetical negotiation with knowledge of TETRA's future cancellation amounts to legal error in its application of the book of wisdom. *See, e.g.*, *4DD Holdings*, 169 Fed. Cl. at 187.

Because we cannot say with confidence that this error is harmless, we must vacate the trial court's judgment. When assessing the relative strength of the parties' bargaining positions in the hypothetical negotiation, the trial court relied on its knowledge of TETRA's future cancellation (which was neither known nor knowable by the parties at the time) to emphasize that the project "never made it

beyond the development stage and, as a result, never solved the government's interoperability problem." *Id.* The trial court considered this fact "*most* damaging to 4DD's bargaining position." *Id.* (emphasis added). The trial court then found that this fact, alongside two others, resulted in the conclusion that the government possessed a "substantially superior bargaining position." *Id.* Because we cannot separate the court's error in applying the book of wisdom from its assessment of the parties' respective bargaining positions, which has implications for the outcome of the hypothetical negotiation, we must vacate and remand for further proceedings.

b

Next, 4DD asserts that the trial court erred when it concluded that the availability of Rhapsody, a similar and less expensive software, would have weakened 4DD's position in the hypothetical negotiation. 4DD contends that for Rhapsody to be relevant, the trial court was first required "to make a formal finding that Rhapsody was indeed a full and complete substitute for TETRA." Appellant Br. 37. Tellingly, 4DD cites no law in support of its position. *See* Appellant Br. 37–38; Appellant Reply Br. 19–20. Instead, 4DD suggests there are no factual findings comparing Rhapsody and TETRA's capabilities that this court can review. Appellant Reply Br. 19–20; *see* Appellant Br. 37–38. We conclude otherwise.

When assessing the relative strength of the parties' negotiating positions, the trial court is within its discretion to consider the availability of similar, even if not coextensive, software products. Thus, the trial court's conclusion that the availability of Rhapsody would have "constrained to some extent" 4DD's bargaining power is supported by its finding that Rhapsody was capable of accomplishing "at least some" of the same functions as TETRA. *4DD Holdings*, 169 Fed. Cl. at 187. We ascertain no error in the trial court's reference to Rhapsody in assessing the strength of

the parties' bargaining positions in the hypothetical negotiation.

* * *

In sum, we reject 4DD's allegation of error in the trial court's consideration of Rhapsody, but we conclude that there was legal error in its application of the book of wisdom. And because this error is intertwined with the trial court's assessment of the strength of the parties' negotiation positions, which is in turn tied to the outcome of the hypothetical negotiation, its impact is unclear. While it may be harmless, and the trial court may ultimately reach the same conclusion on remand—given, for instance, that the book of wisdom permits consideration of the quantity of copies made and the purpose for which they were made within the context of the development lifecycle—we must nonetheless remand for further proceedings in accordance with this opinion.

2

In an effort to provide some guidance to the trial court on remand, we also address 4DD's last category of challenges. 4DD argues that several specific errors tainted the court's analysis of the compensation owed for particular categories of infringing copies.

a

First, 4DD challenges the trial court's assessment of the compensation owed for the government's non-backup copies of TETRA. 4DD revisits its global book of wisdom argument, suggesting that it was improper for the court to use the government's cancellation of TETRA to conclude that the parties would have negotiated only development licenses. As already explained, the trial court's reliance on the book of wisdom to conduct the hypothetical negotiation with knowledge of TETRA's cancellation was error. And it is clear this error infected the trial court's determination that the parties would have negotiated only development

licenses for the non-backup copies of TETRA. *See 4DD Holdings*, 169 Fed. Cl. at 188 ("The project never made it to production, and, given that reality, it would make no economic sense for the government to buy a production license when a significantly discounted development license would suffice."). This legal error necessitates remand because, as already explained, the extent of its impact is unclear on appeal.[7]

However, contrary to 4DD's suggestion, we see no error in the other aspects of the trial court's reasoning for concluding the parties would have selected development licenses rather than production licenses. For example, 4DD emphasizes that no development version of the software actually existed for TETRA prior to the deal, suggesting the parties could not have negotiated development licenses. But the trial court considered that fact and found it unpersuasive in light of 4DD's representations to the government that it would consider creating a development license and its submission of numerous quotes that included development licenses. *Id.* As there is ample evidence in the record to support this finding, we see no clear error in the trial court's determination.

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[7] As the parties note, any change in the amount awarded in damages for the non-backup copies will necessarily result in a corresponding change to the compensation for the backup copies. *See* Appellant Br. 44; Appellee Br. 40–41. This is because the trial court assessed compensation for the latter as a percentage of the former. *See 4DD Holdings*, 169 Fed. Cl. at 189 & n.24 (concluding that a "convenience fee of 20%" of the price for the non-backup copies "establishes a fair licensing agreement"). Thus, to the extent the identified errors result in any change to the trial court's award of compensation for the non-backup copies, it will also be compelled to reconsider damages for the infringing backup copies.

The same is true of the trial court's finding that the parties would have negotiated a volume discount on top of the already discounted rate for development licenses. *See id.* 4DD contends that no volume discount was offered or available for development licenses, and the trial court's imposition of one contradicts the "uniform record evidence." Appellant Br. 42. But the trial court identified evidence suggesting a volume discount was allowable for development licenses, *see 4DD Holdings*, 169 Fed. Cl. at 188 n.21, and we see no clear error in its application of such a discount. Given that the record evidence supports the trial court's findings, we are not left with the "definite and firm conviction that a mistake has been committed." *U.S. Gypsum Co.*, 333 U.S. at 395.

In sum, although the trial court's erroneous use of the book of wisdom clearly infected its analysis of the compensation owed for the non-backup copies, other aspects of its rationale were legally sound. In light of other evidence, even this error may turn out to be harmless. We leave for the trial court to determine on remand whether evidence other than the government's eventual cancellation of its work with TETRA supports selection of a development license.

b

Finally, 4DD challenges the trial court's assessment of the compensation owed for the government's unauthorized copies of Studio. The trial court noted that the 171,421 unauthorized Studio seats were far in excess of the 60-employee team at SMS responsible for developing TETRA. And it considered that a per-seat license for each infringing seat of TETRA would result in the government purchasing "over 171,000 seat licenses for nonexistent people." *4DD Holdings*, 169 Fed. Cl. at 189. Conscious of the economic realities of this transaction, the trial court concluded the government "would have paid no more than $150,000 to

compensate 4DD for what would have been willful infringement—an amount equivalent to statutory damages under the Copyright Act." *Id.* at 189–90 ("These negotiations may be artificial, but they are not irrational, and we do not believe that the law compels the government to pay $184 million for seat licenses with no value.").

As a threshold matter, the trial court's grant of increased statutory damages for willful infringement is legal error. Section 1498(b) makes clear that recovery is available in the amount of the copyright owner's "reasonable and entire compensation," which includes "the *minimum* statutory damages as set forth in section 504(c) of title 17." 28 U.S.C. § 1498(b) (emphasis added). And given section 1498's roots in eminent domain, punitive damages available in a private suit under title 17, including the increased statutory damages for willful infringement, are not available in a suit against the government under section 1498. *See Gaylord II*, 678 F.3d at 1343 (noting copyright owner is entitled to "compensatory damages, including the minimum statutory damages, but not to non-compensatory damages").

The government contends the trial court's legal error is harmless because the $150,000 award "is independently justifiable by the record." Appellee Br. 43–44. But the government's argument rests on factual findings the trial court did not make. *See* Appellee Br. 43 & n.20. We leave for the trial court to determine in the first instance whether the parties would have agreed to a per-seat Studio license over other arrangements (e.g., a convenience fee), and, if so, what per-seat rate would apply.

Aside from the trial court's willfulness justification, 4DD's additional allegations of error are unpersuasive. 4DD suggests the trial court erred by assigning unused copies of Studio "no value" in the hypothetical negotiation, effectively excluding them altogether. Appellant Br. 46.

But "[t]he law does not require that every award of copyright damages be on a per-copy basis." *Bitmanagement II*, 124 F.4th at 1374. And even where, like here, the parties' licensing history suggests a per-copy or per-seat license may be considered, this suggestion does not bar the trial court from concluding that the hypothetical negotiation would proceed differently. *See id.* at 1375.

III

We have considered the parties' remaining arguments and find them unpersuasive. For the reasons outlined above, we *affirm-in-part*, *vacate-in-part*, and *remand* for further proceedings in accordance with this opinion.

AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED

COSTS

No costs.