IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

INFERNAL TECHNOLOGY, LLC, §
TERMINAL REALITY, INC., §
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Plaintiffs, §
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v. § CIVIL ACTION NO. 2:19-CV-00248-JRG
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SONY INTERACTIVE ENTERTAINMENT §
LLC, §
 §
Defendant. §

MEMORANDUM OPINION AND ORDER

The Court recently conducted a jury trial in the above-captioned case. During the trial, Defendant Sony Interactive Entertainment LLC ("SIE") argued that Claim 1 of U.S. Patent No. 6,362,822 (the "'822 Patent") and Claims 1, 27, and 50 of U.S. Patent No. 7,061,488 (the "'488 Patent") (collectively, the "Asserted Claims") asserted by Plaintiffs Infernal Technology, LLC and Terminal Reality, Inc. (collectively, "Plaintiffs") claim ineligible subject matter under 35 U.S.C. § 101. The question under *Alice* step two was submitted to the jury and the jury found that the Asserted Claims "involve only technologies and activities that were well-understood, routine, and conventional, from the perspective of a person of ordinary skill in the art, as of March 12, 1999." Dkt. No. 341 at Question No. 2. The question under *Alice* step one is therefore now before the Court. For the reasons set forth below, the Court finds that the Asserted Claims are not directed to an abstract idea and therefore do not claim patent ineligible subject matter.

I.   PROCEDURAL BACKGROUND

On September 13, 2021, the Court bifurcated this case on issues relating to damages and set all other issues for trial. (Dkt. No. 319). On October 4, 2021, the Court commenced a three-day jury trial in this case on issues relating to infringement and patent eligibility. (Dkt. Nos. 337–339).

The jury found that SIE did not infringe the Asserted Claims and that under *Alice* step two, the Asserted Claims "involve only technologies and activities that were well-understood, routine, and conventional, from the perspective of a person of ordinary skill in the art, as of March 12, 1999." (Dkt. No. 341). Prior to the trial, SIE had not asked the Court to resolve its patent ineligibility contention by way of a motion to dismiss, a motion for summary judgment, or otherwise. SIE acknowledged this during the trial. (Dkt. No. 354 at 258:15–260:3). Given that the Court had not had the opportunity to decide *Alice* step one prior to trial, and in light of the jury's verdict as to *Alice* step two, the Court ordered post-trial briefing on whether or not the Asserted Claims were directed to an abstract idea under *Alice* step one and § 101. (Dkt. No. 346; *see also* Dkt. No. 354 at 259:1–25). Said briefing is now complete and before the Court. (Dkt. Nos. 347–50).

II.   LEGAL STANDARD

The Court determines whether patent claims cover ineligible subject matter using a two-step analytical framework set out by the Supreme Court of the United States in *Alice*. 573 U.S. 208. At the first step, the Court evaluates whether the claims are directed to ineligible subject matter, such as an abstract idea. *Id*. at 217. To do so, the Court looks to the claims' "character as a whole." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). Although all claims embody abstract ideas and other ineligible subject matter at some level, the Court's task is to examine "whether the claims [] focus on a specific means or method that improves the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery." *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016). The Court is to "consider the claim as a whole . . . in light of the specification . . . [and] whether the focus of the claims is on a specific asserted improvement in computer capabilities or, instead, on a process that qualifies as an abstract idea for which computers are invoked merely as a tool." *Packet Intelligence LLC v. NetScout Sys., Inc.*, 965 F.3d

1299, 1309 (Fed. Cir. 2020) (quoting *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1304 (Fed. Cir. 2018)).

III. THE ASSERTED CLAIMS

The parties do not appear to dispute that Claim 1 of the '822 Patent is representative of the Asserted Claims for the purposes of the patent ineligibility analysis. (Dkt. No. 347 at 3–4; Dkt. No. 348 at 3). Claim 1 of the '822 Patent reads:

> A shadow rendering method for use in a computer system, the method comprising the steps of:
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> providing observer data of a simulated multi-dimensional scene;
>
> providing lighting data associated with a plurality of simulated light sources arranged to illuminate said scene, said lighting data including light image data;
>
> for each of said plurality of light sources, comparing at least a portion of said observer data with at least a portion of said lighting data to determine if a modeled point within said scene is illuminated by said light source and storing at least a portion of said light image data associated with said point and said light source in a light accumulation buffer; and then
>
> combining at least a portion of said light accumulation buffer with said observer data; and
>
> displaying resulting image data to a computer screen.

The following constructions, agreed to by the parties, are also relevant to the § 101 analysis:

- **"observer data of a simulated multi-dimensional scene"** means "data representing at least the color of objects in a simulated multi-dimensional scene as viewed from an observer's perspective"

- **"light image data"** means "for each of the plurality of light sources, 2D data representing the light emitted by the light source to illuminate the scene as viewed from the light source's perspective"

- **"light accumulation buffer"** means "memory for storing the light image data for cumulative light falling on a region in the observer image corresponding to the modeled point"

(Dkt. No. 105-1 at 3–4).

IV.   DISCUSSION

SIE argues that the Asserted Claims are directed "to the abstract idea of collecting and performing mathematical operations on data relating to light falling on a region in a scene and displaying the results." (Dkt. No. 347 at 4). SIE argues that "the steps in each of the Asserted Claims are nothing more than mathematical calculations that could be performed by a human mentally or with only pencil and paper." (*Id.*). As support for its position, SIE repeatedly cites to its expert, Dr. Lastra. (*Id.* at 4–7). SIE also relies on the Federal Circuit's non-precedential opinion *Coffelt v. NVIDA Corp.*, 680 F. App'x 1010 (Fed. Cir. 2017) to argue that the Asserted Claims are a "purely arithmetic exercise" and are therefore unpatentable. SIE contends that any argument by Plaintiffs that the Asserted Claims "allegedly improve the functionality of the computer itself" is misplaced. (Dkt. No. 347 at 9). SIE argues that the "Asserted Claims neither improve the functionality of the computer itself, nor 'improve an existing technological process' through implementing structure where none existed before." (*Id.*) (citing *Enfish*, 822 F.3d at 1336; *McRO*, 837 F.3d at 1314). Rather, SIE argues, at every step in the Asserted Claims, "the computer works to perform its conventional functions, such as collecting data, performing mathematical operations on the data, and displaying the data." (*Id.*) (citing Dr. Lastra's trial testimony).

Plaintiffs respond with a lengthy discussion on the specification of the '822 Patent.[1] (Dkt. No. 348 at 1–3). Plaintiffs argue that prior to the invention, millions of calculations were required in order to render graphics that provide a realistic virtual world to the user. (*Id.* at 1). Plaintiffs argue that the '822 Patent recognizes that these calculations are computationally expensive and "because there is a limit to the amount of processing that a computer can provide, there has always been a need for faster, more efficient and higher quality means for producing" realistic graphics

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[1] The specification of the '488 Patent is identical to the '822 Patent specification.

on devices with scarce computational resources. (*Id.* at 1–2). Plaintiffs also point out that the '822 Patent identified shortcomings in the prior art for scenes with multiple light sources. (*Id.*). Plaintiffs argue that when multiple light sources were present, the prior art would darken portions of the scene multiple times resulting in reduced realism of shadowing effects. (*Id.*). With this background, Plaintiffs contend that "SIE has improperly characterized what the asserted claims are 'directed to.'" (*Id.* at 10). Plaintiffs argue that SIE's "oversimplification" of the Asserted Claims ignores that the claims teach a specific process for rendering lighting and shadows in 2D rather than 3D—an advancement over the prior art that materially simplified calculations. (*Id.* at 10–12). Plaintiffs argue that this goes beyond an abstract idea of "collecting and performing mathematical operations on data," but instead is a specific process for improving rendering of graphics and making the same more efficient. (*Id.* at 11). Plaintiffs also argue that "SIE's oversimplification also ignores that the asserted claims require that the specified process uses a light accumulation buffer to accumulate light falling on a region, rather than considering only if the region is in shadow, as in the prior art." (*Id.*). Plaintiffs argue that this improvement results in a "more realistic shadow rendering because pixels are accumulatively lighted, rather than accumulatively darkened as in past interactive real time shadow rendering algorithms." (*Id.*). Plaintiffs also traverse precedent from the Supreme Court and the Federal Circuit to support its position that the Asserted Claims "are not directed to an abstract idea simply because they involve the use of mathematical algorithms" where the "use of mathematics in performing the claimed process is not merely to produce a new numerical output." (*Id.* at 13–15) (citing *Diamond v. Diehr*, 450 U.S. 175, 185 (1981); *McRO*, 837 F.3d at 1307; *Thales Visionix Inc. v. United States*, 850 F.3d 1343, 1344 (Fed. Cir. 2017)).[2]

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[2] Plaintiffs also submitted a Notice of Supplemental Authority identifying the Federal Circuit's recent non-precedential decision, *Mentone Sols., LLC v. Digi Int'l, Inc.*, No. 2021-1202, 2021 WL 5291802 (Fed. Cir. Nov. 15, 2021).

SIE responds by distinguishing Plaintiffs' cases and then raising, albeit briefly, three additional cases of its own: *Digitech Image Techs., LLC v. Elecs. For Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322 (Fed. Cir. 2017). (Dkt. No. 349 at 3, 5–6). SIE contends its cited cases demonstrate that the Asserted Claims are simply a mathematical calculation on data, which is an abstract idea. (*Id.* at 3).

The Court is not persuaded that the Asserted Claims are directed to an abstract idea. Rather, the Asserted Claims are directed to an improvement for rendering lighting and shadows in computer graphics. Indeed, the '822 Patent describes issues with the rendering of lighting and shadows in the prior art:

> Rendering such interactive 3D worlds, however, typically requires that millions of calculations be conducted between frames (i.e., in "real time"). Since there is a limit to the amount of processing that a computer can provide between frames, simplifications or other compromises often need to be made in modeling a 3D world. . . . One of the unfortunate compromises made in the past, has been in the area of lighting and, more particularly, in the area of rendering shadows cast by lighted 3D objects. Many shadow rendering processes have been considered to be too compute intensive for most lower-end computer applications, and as such shadow rendering is often ignored or otherwise greatly simplified.

('822 Patent at 1:45–63). With this background in mind, a reading of the Asserted Claims shows that they provide a multi-step process for solving the aforementioned issue with the prior art. In particular, the Asserted Claims do not purport to simply take a known mathematical formula that was previously done by pencil and paper and introduce a computer as a tool.[3] *Uniloc USA, Inc. v.*

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[3] SIE makes two mistakes with its argument on this score. First, SIE points to Dr. Lastra's opinion that each step "could be performed by a human without a computer and with simple pen and paper." (Dkt. No. 347 at 4). SIE greatly oversimplifies the invention. At some level, all mathematical operations can be performed using pen and paper. However, this "invention involves a several-step manipulation of data that, except perhaps in its most simplistic form, could not conceivably be performed in the human mind or with pencil and paper." *TQP Dev., LLC v. Intuit Inc.*, Case No. 2:12-cv-180, 2014 WL 651935, at *4 (E.D. Tex. Feb. 19, 2014) (Bryson, J.). Second, SIE argues that the "Asserted Claims, and the specification, reflect that the claims require only conventional, off-the-shelf computer components." (Dkt. No. 347 at 8). The fact that a conventional computer is used does not, by itself, render the claim

LG Elecs. USA, Inc., 957 F.3d 1303, 1308 (Fed. Cir. 2020). Contrarily, the Asserted Claims are a method for improving a problem with computers—the difficulty in rendering realistic graphics between frames in real time on computers given limited computational capabilities. The Supreme Court has held, and SIE acknowledges, that the mere fact a mathematical algorithm is involved does not doom the claim. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2012); Dkt. No. 349 at 4. Instead, the analysis comes down to whether or not the claim itself is directed to an abstract idea. *Uniloc*, 957 F.3d at 1306–07. In this case, the answer is no.

SIE's cases are not to the contrary.[4] In *Digitech*, the claims simply recited "a process of taking two data sets and combining them into a single data set," called a device profile. 758 F.3d at 1351. The Federal Circuit recognized in *Uniloc* that "[a]lthough the claimed device profile [in *Digitech*] could purportedly be used in reducing image distortion, merely generating the claimed device profile did not alone reduce image distortion or otherwise improve image processing." 957 F.3d at 1308. Thus, the "claims [in *Digitech*] were not directed to a patent-eligible technological improvement but rather recited 'the ineligible abstract idea of gathering and combining data that does not require input from a physical device.'" *Id.* The Asserted Claims in this case are distinguishable from *Digitech* for the same reasons. The Asserted Claims disclose a specific process of comparing light within a scene based on the light source and the observer to compute the appropriate level of shadowing. This process, unlike in *Digitech*, actually improves graphics rendering in computers and is not simply the gathering of data.

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directed to an abstract idea. Rather, the inquiry is whether the claims simply introduce a conventional computer as a tool. Claims that seek to **improve** the functionality and practical effect of conventional computers—rather than merely use them as a tool—suggest they are not abstract. *See* Uniloc, 957 F.3d at 1309 ("The claimed invention's compatibility with conventional communication systems does not render it abstract.").

[4] As noted above, in SIE's opening brief it relies on the Federal Circuit's non-precedential decision in *Coffelt*. The Court does not find this case persuasive.

Similarly in *Alstom*, the claims simply disclosed a method for analyzing and displaying the results of data for electrical power grids. 830 F.3d at 1351–52. There, the Federal Circuit recognized that the advancement offered by the claims was "a process of gathering and analyzing information of a specified content, then displaying the results, and not any particular assertedly inventive technology for performing those functions. They are therefore directed to an abstract idea." *Id.* at 1354. The Federal Circuit recognized that the claims in *Alstom* "were drawn to using computers as tools to solve a power grid problem, rather than improving the functionality of computers and computer networks themselves." *SRI Int'l, Inc. v. Cisco Sys., Inc.*, 930 F.3d 1295, 1304 (Fed. Cir. 2019). The Court finds that the Asserted Claims in the present case disclose an improvement to the functionality of computers in rendering realistic graphics rather than simply using the computer as a tool to implement an abstract idea.[5]

Finally, SIE relies on *RecogniCorp*. There, the Federal Circuit held that those claims were directed to "standard encoding and decoding image data, an abstract concept long utilized to transmit information." 855 F.3d at 1326 ("Morse code, ordering food at a fast food restaurant via a numbering system, and Paul Revere's 'one if by land, two if by sea' signaling system all exemplify encoding at one end and decoding at the other end."). In other words, the claims in *RecogniCorp* simply used a computer as a tool to implement an age-old abstract idea. *See TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1294 (Fed. Cir. 2020) ("The claims did nothing more than use computers to perform standard encoding and decoding practices."). However, such is not the case here. The Asserted Claims are not merely running calculations on data using known mathematical algorithms and displaying the numerical result. Rather, the Asserted Claims provide an innovative

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[5] To the extent SIE argues that the "displaying" limitation in the Asserted Claims regarding displaying rendered graphics is akin to simply displaying numerical data, the Court disagrees.

process for computing lighting and shadowing on computationally constrained computers and displaying the resulting graphics to the end-user.[6]

SIE also parses the individual claim elements of the Asserted Claims to argue that the claims simply require "providing," "comparing," "storing," "combining," and "displaying." (Dkt. No. 347 at 5–7). Although SIE does not explicitly cite to the case when discussing these limitations, it appears SIE is attempting to liken the Asserted Claims to those found abstract in *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1337 (Fed. Cir. 2017). There, the Federal Circuit noted that the claims required "the functional results of 'converting,' routing,' 'controlling,' 'monitoring,' and 'accumulating records,' but does not sufficiently describe how to achieve these results in a non-abstract way." *Id.* In this case, however, the Asserted Claims—in light of the agreed constructions—actually describe how to achieve the improved graphics. For example, in the "comparing" step, the Asserted Claims disclose the precise data to be compared and the evaluation to be performed. The agreed claim constructions for "observer data" and "light image data" provide further specificity as to the data to be analyzed. Given this specificity, the Court cannot conclude that the Asserted Claims "fail[] to concretely capture any improvement in computer functionality" as was the case in *Two-Way*. *Uniloc*, 957 F.3d at 1308.

V.   CONCLUSION

For the reasons set forth above, the Court finds that the Asserted Claims are not directed to an abstract idea and therefore do not claim patent ineligible subject matter. SIE's challenge to patent ineligibility in this case is **DENIED**.

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[6] At some level, all computers are computationally constrained. However, the limitations of the current state of the art call out for a different approach to established shadowing in scenes given the necessity of such computations between frames in real time. The Asserted Claims do not merely make the computer run faster. They establish a new and effective use for today's computers to achieve a result not previously available within the parameters of the art. Such is not abstract as envisioned in *Alice*.

So ORDERED and SIGNED this 6th day of December, 2021.

RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE