

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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XEROX CORP., ACS TRANSPORT SOLUTIONS, INC., XEROX  
TRANSPORT SOLUTIONS, INC., CONDUENT INC., AND NEW  
JERSEY TRANSIT CORP.,  
Petitioner,

v.

BYTEMARK, INC.,  
Patent Owner.

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IPR2022-00621  
Patent No. 10,346,764 B2

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Before BENJAMIN D. M. WOOD, BARRY L. GROSSMAN, and  
JAMES A. TARTAL, *Administrative Patent Judges*.

GROSSMAN, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining Some Claims Unpatentable  
*35 U.S.C. § 314*

## I. INTRODUCTION

### A. Background and Summary

Xerox Corp., ACS Transport Solutions, Inc., Xerox Transport Solutions, Inc., Conduent Inc., and New Jersey Transit Corp. (collectively, “Petitioner”)<sup>1</sup> filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–28 (the “challenged claims”) of U.S. Patent No. 10,346,764 B2 (Ex. 1001, “the ’764 patent”). Bytemark, Inc. (“Patent Owner”) filed a Response (Paper 13, “Resp.”). Petitioner filed a Reply (Paper 22, “Reply”). Patent Owner filed a Sur-reply (Paper 25, “Sur-reply”).

Petitioner submitted 20 exhibits (Exs. 1001–1020).<sup>2</sup> Petitioner relies on the Declaration testimony of Dr. Mark Jones. Ex. 1003.<sup>3</sup>

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<sup>1</sup> See *Cradlepoint, Inc. et al v. 3G Licensing S.A.*, IPR2021-00639, Paper 12, 2 (PTAB May 13, 2021) (“[F]or each ‘petition’ there is but a single party filing the petition, no matter how many companies are listed as petitioner or petitioners and how many companies are identified as real parties-in-interest. . . . Even though the separate sub-entities regard and identify themselves as ‘Petitioners,’ before the Board they constitute and stand in the shoes of a single ‘Petitioner. . . . they must speak with a single voice, in both written and oral representation.”).

<sup>2</sup> Exhibit 1020 is a demonstrative exhibit used at the oral argument. It is not an evidentiary exhibit. See PTAB Consolidated Trial Practice Guide, 84 (Nov. 2019 (“TPG”) (“Demonstrative exhibits used at the final hearing are aids to oral argument and not evidence”).

<sup>3</sup> Dr. Jones earned a B.S. degree in Computer Science and Computer Engineering and a Ph.D. degree in Computer Science. EX. 1003 ¶ 4. He currently is a Professor Emeritus of Electrical and Computer Engineering at Virginia Tech in Blacksburg, Virginia. *Id.* His experience in academia and research in the field of computer science and engineering is summarized in his testimony. See *id.* ¶¶ 4–12; see also Ex. 1004 (Dr. Jones’ CV).

Patent Owner submitted 7 exhibits (Exs. 2001–2007).<sup>4</sup> Patent Owner relies on the Declaration testimony of Dr. Jose L. Melendez. Ex. 2001.<sup>5</sup>

A hearing was held May 17, 2023. Paper 31 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. We enter this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Petitioner has the burden of proving unpatentability of a claim by a preponderance of the evidence. 35 U.S.C. § 316(e).

Based on the findings and conclusions below, we determine that Petitioner has proven by a preponderance of the evidence that claims 1, 2, 9, 10, 15–21, 23, and 26–28 are unpatentable. Petitioner has not established that claims 3–8, 11–14, 22, 24, and 25 are unpatentable.

#### *B. Real Parties-in-Interest*

Petitioner states “Xerox Corp., ACS Transport Solutions, Inc., Xerox Transport Solutions, Inc., Conduent Inc., and New Jersey Transit Corp.” are real parties-in-interest. Pet. 60.

Patent Owner identifies itself as the sole real party-in-interest. Paper 4, 2.

The parties have not raised any dispute about the real parties-in-interest.

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<sup>4</sup> Exhibit 2007 is a demonstrative exhibit used at the oral argument. It is not an evidentiary exhibit. TPG, 84.

<sup>5</sup> Dr. Melendez is a Professor of Computer Science and Engineering at the University of Puerto Rico. Ex. 2001 ¶ 8. He earned a B.S. degree in Electrical Engineering, an M.S. degree in in Electrical Engineering and Computer Science, and a Ph.D. degree in Electrical Engineering. *Id.* at ¶ 9. His experience in academia and research in the field of electrical engineering and computer science is summarized in his testimony. See *id.* ¶¶ 8–15; see also Ex. 2002 (Dr. Melendez’s CV).

*C. Related Matters*

Patent Owner states “[t]he ’764 Patent is presently the subject of the following patent infringement actions brought by Patent Owner: *Bytemark, Inc. v. Xerox Corp. et al.*, Case No. 1:17-cv-01803 (S.D.NY.); and *Bytemark, Inc. v. Masabi Ltd.*, Case No. 6:22-cv-00304 (W.D. Tex.).” Paper 4, 2.

Petitioner identifies the New York litigation identified by Patent Owner as the sole related matter.

We note that a related patent to which the ’764 patent claims priority, U.S. Patent No. 8,494,967 B2 (the “’967 patent”) (*see* Ex. 1001, code (63)), was the subject of IPR2017-01449 and CBM2018-00011. Petitioner in the IPR proceeding now before us also was the Petitioner in CBM2018-00011.

In IPR2017-01449, the Board found some claims of the ’967 patent unpatentable. *See* IPR2017-01449, Paper 38, 64 (PTAB Dec. 3, 2017) (the “1449 IPR”) (“claims 1, 3–6, 17, 18, 20–23, and 34 are unpatentable as anticipated by Terrell”). The Terrell reference in IPR2017-01449 is the same Terrell reference asserted in the proceeding before us. *Compare Id.* at 5, n. 2 *with* Pet. vi (Exhibit List identifying “Terrell,” Ex. 1005). Patent Owner appealed. The Board also determined that that Petitioner did *not* establish by a preponderance of the evidence that claims 2 and 19 of the ’967 patent are unpatentable as anticipated by Terrell; or that claims 1–6, 17–23, and 34 of the ’967 patent are unpatentable as anticipated by either the Cruz or Dutta references asserted in that proceeding. The Cruz and Dutta references are not asserted in the proceeding before us. The Board’s decision in IPR2017-01449 was affirmed by the Federal Circuit. *See* Ex. 3001.

In CBM2018-00011, the Board declined to institute a proceeding because the '967 patent is not a “covered business method patent” eligible for a CBM proceeding. *See* CBM2018-00011, Paper 12, 21–22 (PTAB July 12, 2018) (“Petitioner has not established that the '967 patent is a ‘covered business method patent’ pursuant to the statutory definition in § 18(d)(1) of the AIA.” Accordingly, the Board denied the Petition and did not institute CBM review of the challenged claims.).

We also note that Petitioner challenged in IPR2022-00624 another patent, Patent No. 10,360,567 (the '567 patent”) assigned to Patent Owner. The '567 patent, titled “Method and System for Distributing Electronic Tickets *with Data Integrity Checking*,” and the '764 patent in the proceeding before us, titled “Method and System for Distributing Electronic Tickets *with Visual Display for Verification*,” each claim priority to the patent application that matured into U.S. Patent 9,239,993 (emphasis added to highlight the differences in titles). The Board denied institution. IPR2022-00624, Paper 9, (PTAB Aug. 24, 2022). That decision was affirmed by a *sua sponte* Director review. *Id.* at Paper 12.

#### *D. The '764 patent*

We make the following findings concerning the disclosure of the '764 patent.

As stated above, the '764 patent is based on a continuation application claiming priority to the application that matured into the '967 patent, which was the subject of IPR2017-01449. The figures and written description in both the '764 patent and the '967 patent are essentially identical. We have not been directed by the parties to any persuasive evidence of a substantive difference between the figures and written description in these two patents.

The '764 patent discloses a system and method for verifying electronic tickets. The system and method use a “visual object” that is readable by a person to verify the authenticity of the ticket. Ex. 1001, code (57). According to the disclosure, using such a visual object removes the need to use a bar-code scanner on an LCD display of a cell phone or other device and speeds up the rate at which ticket takers can verify ticket holders. *Id.*

As disclosed in the '764 patent,

Conventional electronic tickets display a barcode or QR code on a user's telephone, typically a cellphone or other portable wireless device with a display screen. The problem with this approach is that a barcode scanner has to be used by the ticket taker. Barcode scanners are not highly compatible with LCD screen displays of barcodes. The amount of time that it takes to process an electronic ticket is greater than that of a paper ticket.

*Id.* at 2:19–26.

To solve this problem, a randomly selected validation symbol that a human can readily recognize is sent to the ticket holder's cell phone or other electronic device. Examples of such symbols include a color display (Ex. 1001, 3:48), a sailboat (*id.*, Fig. 5), or any other human recognizable image (*id.*, 3:48–61). The ticket holder shows the device with the displayed symbol to a human ticket taker who can confirm quickly, without using a bar-code scanner or similar device, that the proper validating symbol for the ticketed event is displayed. The ticket holder is then admitted to enter the event.

Recited in all the challenged claims, and part of the process of verifying or validating that the request is from the purchaser, or authorized user, of the ticket, is the use of a “token.” When the user purchases a ticket,

typically from an on-line website, the website sends to the user's mobile phone, computer, or other device a unique number or other electronic identifier, referred to as a "token." Ex. 1001, 2:53–63. In addition to being stored on the user's device, the token also is stored in the ticketing database. *Id.* at 2:66–67. Alternatively, the token is generated randomly by the ticket buyer's mobile computing device and then transmitted to, and stored on, the ticket seller's system server. In either embodiment, a copy of the token is stored on both the buyer's and seller's systems.

At this point in the process, the ticket buyer has purchased a ticket, but does *not* have a ticket usable for entry to the event.

When the time comes to present the ticket, the venue selects what visual indicator will be used as the designated validation visual object. *Id.* at 2:67–3:3. Thus, counterfeit tickets cannot be prepared in advance of the event because counterfeiters will not know the visual indicator that will be used. *Id.* at 3:19–31.

In use:

At the entrance [to the ticketed event], customers are requested to operate an application on their devices. This application fetches the stored ticket token [on the ticket buyer's device] and transmits that token to the [ticket seller's on-line] system, preferably over a secure data channel. The [ticket seller's] database looks up the token to check that the token is valid for the upcoming show. If the token is valid, then the system transmits back to the device a ticket payload. The ticket payload contains computer code that, when operated, displays the selected validating visual object.

*Id.* at 4:20–29.

The ticket taker knows what the validating visual object is for the specific event, and simply looks to see that the user's device is displaying

the correct visual object. *Id.* at 3:16–18. No scanning or bar code reading is required. *Id.* at 2:31–34 (“the verification is determined by a larger visual object that a human can perceive without a machine scanning it.”).

Barcodes and similar codes, like QR code, are not validating “visual objects” because a person looking at them cannot tell one apart from another.

*Id.* at 3:40–44.

As a further aid against piracy, the ticket payload can “contain code that destroys the validating visual object in a pre-determined period of time after initial display or upon some pre-determined input event.” Ex. 1001, 3:25–28.

#### *E. Illustrative Claims*

Petitioner challenges claims 1–28. Claims 1 and 10 are independent claims.

Independent claim 1 is illustrative and is reproduced below with bracketed labels employed by Petitioner to facilitate analysis and discussion.

1. [1pre] A method performed by a computer system for displaying visual validation of the possession of a previously purchased electronic ticket for utilization of a service monitored by a ticket taker comprising:

[1a] transmitting a token associated with a previously purchased electronic ticket to a remote display device, wherein the token is a unique identifier and a copy of the unique identifier is stored on a central computer system;

[1b] validating the token by matching the token transmitted to the remote display device to the copy of the unique identifier stored on the central computing system to provide a ticket payload to the remote display device;

[1c] transmitting to the remote display device a validation display object associated with the ticket payload, the validation display object being configured to be readily recognizable visually by the ticket taker, in order to enable the

remote display device to display the validation display object so that upon visual recognition by the ticket taker, the user of the remote display device is permitted to utilize the service monitored by the ticket taker; and

[1d] wherein the ticket payload contains code that destroys the validating visual object in a predetermined period of time after initial display or upon some pre-determined input event.

Ex. 1001, 14:39–64.

Independent claim 10 is substantially similar to claim 1 but is directed to a “system for validating previously purchased electronic tickets,” rather than the method in claim 1. Patent Owner states “[i]ndependent claim 10 is the system claim analogue to method claim 1.” Resp. 32. Patent Owner also states its arguments for patentability of claim 1 are “equally applicable to claim 10.” *Id.* at 32–33.

*F. Prior Art and Asserted Grounds*

Petitioner asserts that one or more of the challenged claims would have been obvious on the following two grounds:

| <b>Claim(s) Challenged</b> | <b>35 U.S.C. §<sup>6</sup></b> | <b>Reference(s)/Basis</b>                      |
|----------------------------|--------------------------------|------------------------------------------------|
| 1–19, 22, and 24–28        | 103(a)                         | Terrell <sup>7</sup> and Saarinen <sup>8</sup> |
| 20, 21, and 23             | 103(a)                         | Terrell, Saarinen, and Arimori <sup>9</sup>    |

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<sup>6</sup> The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 296–07 (2011), took effect on September 16, 2011. The changes to 35 U.S.C. §§ 102 and 103 in the AIA do not apply to any patent application filed before March 16, 2013. Because the application for the patent at issue in this proceeding claims priority to applications filed before March 16, 2013, we refer to the pre-AIA version of the statute.

<sup>7</sup> PCT Appl. Publication No. 2009/141614 A1, Nov. 26, 2009, Ex. 1005 (“Terrell”).

<sup>8</sup> U.S. Appl. Publication No. 2008/0071637 A1, Mar. 20, 2008, Ex. 1006 (“Saarinen”).

<sup>9</sup> Japanese Application No. JP2001266178A, Sept. 28, 2001, Ex. 1007 (“Arimori”).

## II. ANALYSIS

### A. Legal Standards

Section 103 forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, evidence such as commercial success, long felt but unsolved needs, and failure of others.<sup>10</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *see KSR*, 550 U.S. at 407 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”). The Court in *Graham* explained that these factual inquiries promote “uniformity and definiteness,” for “[w]hat is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context.” 383 U.S. at 18.

The Supreme Court made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions.

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<sup>10</sup> Patent Owner does not direct us to any objective evidence of non-obviousness in its Patent Owner Response.

*Id.* at 417. To support this conclusion, however, it is not enough to show merely that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness additionally requires that a person of ordinary skill at the time of the invention “would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.*

In determining whether there would have been a motivation to combine prior art references to arrive at the claimed invention, it is insufficient to simply conclude the combination would have been obvious without identifying any reason *why* a person of skill in the art would have made the combination. *Metalcraft of Mayville, Inc. v. Toro Co.*, 848 F.3d 1358, 1366 (Fed. Cir. 2017).

Moreover, in determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 164 (Fed. Cir. 1985) (“It is elementary that the claimed invention must be considered as a whole in deciding the question of obviousness.”); *see also Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983) (“[T]he question under 35 U.S.C. § 103 is not whether the differences *themselves* would have been obvious. Consideration of differences, like each of the findings set forth in *Graham*, is but an aid in reaching the ultimate determination of whether the claimed invention *as a whole* would have been obvious.”).

As a factfinder, we also must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR*, 550 U.S. at 421.

Applying these general principles, we consider the evidence and arguments of the parties.

*B. Level of Ordinary Skill in the Art*

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). “This reference point prevents . . . factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness.” *Id.*

Factors pertinent to a determination of the level of ordinary skill in the art include: (1) educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of workers active in the field. *Env’t Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case. *Id.* Moreover, these factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). In determining a level of ordinary skill, we also may look to the prior art, which may reflect an appropriate skill level. *Okajima*, 261 F.3d at 1355.

Petitioner asserts that a person of ordinary skill in the art would have had “at least a Bachelor of Science Degree in Computer Science, Computer Engineering, or similar educational background, or equivalent on-the-job training, including approximately three years of experience in developing mobile applications.” Pet. 5. Petitioner notes, however, that the proposed “level of skill is approximate and more experience would compensate for less formal education, and vice versa.” *Id.* As examples, Petitioner states “an individual having no degree in engineering, but several years of experience developing mobile applications would qualify as a person of ordinary skill in the art. A person having no experience developing mobile application but a masters or doctorate degree in the aforementioned fields may also qualify as a person of ordinary skill in the art.” *Id.* (citing only Ex. 1003, ¶ 14). Dr. Jones’ Declaration testimony repeats Petitioner’s conclusory argument, but prefaces it with the phrase “In my opinion.” Ex. 1003 ¶ 14. We give his conclusory testimony minimal probative weight. 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). Neither Petitioner nor Dr. Jones address the various factors, discussed above, that typically are considered in determining an appropriate level of skill.

Patent Owner states in its Response that “[f]or the purposes of the instant *inter partes* review, Patent Owner” agrees with the “definition of a person of ordinary skill” adopted in our Decision to Institute this proceeding. Resp. 4.

Because the parties did not address the factors typically considered in determining a level of ordinary skill, in our Decision to Institute this

proceeding, based primarily on the prior art and the sophistication of the disclosed technology in the '764 patent, we determined that the level of ordinary skill is a bachelor's degree in computer science or computer engineering or in a similar relevant engineering or science discipline and two years of relevant experience, or an equivalent balance of education and work experience. Dec. Inst. 12–13.

Dr. Melendez, Patent Owner's declarant, provides his opinion testimony on the appropriate level of skill (*see* Ex. 2001 ¶¶ 33–36). Patent Owner, however, does not cite or rely on this testimony. Thus, we give Dr. Melendez's opinion testimony on the level of skill no consideration or probative weight. *E.g., see Fidelity National Information Services, Inc. v. DataTreasury Corp.*, IPR2014-00489, Paper 9 at 9–10 (PTAB Aug. 13, 2014) (“We, therefore, decline to consider information presented in a supporting declaration, but not discussed sufficiently in a petition; among other reasons, doing so would permit the use of declarations to circumvent the page [or word] limits that apply to petitions.”).

“The *Graham* analysis includes a factual determination of the level of ordinary skill in the art. Without that information, a . . . court cannot properly assess obviousness because the critical question is whether a claimed invention would have been obvious at the time it was made to one with ordinary skill in the art.” *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *see also Ruiz v. A.B. Chance*, 234 F.3d 654, 666 (Fed. Cir. 2000) (“The determination of the level of skill in the art is an integral part of the *Graham* analysis.”).

In the related IPR2017-01449, we determined, based on the evidence and arguments in that proceeding<sup>11</sup>, that a person of ordinary skill in the relevant technology would have had “at least Bachelor’s degree in computer science, electrical engineering, software development, or a similar discipline, and work experience in these areas sufficient to understand electronic ticketing and verification or validation technologies.” IPR2017-01449, Paper 38 at 13.

Based on the evidence before us and the arguments of the parties, we maintain the level of ordinary skill adopted in our Decision to Institute. Based primarily on the prior art and the sophistication of the disclosed technology in the ’764 patent, we determine that the level of ordinary skill is a bachelor’s degree in computer science or computer engineering or in a similar relevant engineering or science discipline and two years of relevant experience, or an equivalent balance of education and work experience. We also regard this determination as substantively the same as, and fully consistent with, the level of ordinary skill adopted in the 1449 IPR.

### *C. Claim Construction*

We construe each claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b) (2021). Under this standard, claim terms are generally given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc) (“We have

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<sup>11</sup> We note that in the 1449 IPR, each party relied on expert testimony from experts different than the experts in the proceeding now before us.

frequently stated that the words of a claim ‘are generally given their ordinary and customary meaning.’” (citations omitted)).

Petitioner does “not propose any terms for an express construction and analyze[s] each claim term according to its plain and ordinary meaning.”  
Pet. 7.

Patent Owner proposes a specific construction for the terms “validation display object,” in claim 1, and “validating display object” in claim 10.<sup>12</sup> Resp. 5. Patent Owner also asserts that these terms “should be construed consistent with the term ‘visual validation display object’ in IPR2017-01449.” *Id.* at 5–6. It is Patent Owner’s position that “all three terms should be construed as ‘an object that is readily recognizable from human observation that can verify a ticket.’” *Id.* (citing IPR2017-01449, Paper 38 at 24). Patent Owner asserts that a specific construction of the proposed terms is particularly important in the analysis of dependent claim 24, which requires “the validating display object” to be configured to “display in different versions of appearance . . . dependent on a pre-determined schedule.” *Id.* at 42–45.

Patent Owner does not acknowledge, however, that claim construction in the 1449 IPR was done under a different standard than the standard that applies in the proceeding before us. The claim construction standard to be employed in an *inter partes* review has changed since the 1449 IPR was decided. *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Nov. 13, 2018). The 1449 IPR applied the “broadest

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<sup>12</sup> We note that claim 10 uses both the term “validating display object” (Ex. 1001, 15:59) and the term “validation display object” (*id.* at 15:60–61).

reasonable interpretation” standard that was in effect at the time the 1449 IPR was decided. *See* 1449 IPR, Paper 38 at 9 (citing 37 C.F.R. § 42.100(b) (2016)). As stated above, in the proceeding before us, claim construction follows the *Phillips* standard, and claim terms are generally given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 808–09 (Fed. Cir. 2021) (noting the change in Board claim construction regulations beginning November 13, 2018) (citations omitted).

Petitioner maintains that the terms “validation display object,” in claim 1, and “validating display object” in claim 10, “need no construction.” Reply 2–3. According to Petitioner, “Bytemark [Patent Owner] does not base any prior art distinctions on its construction, nor does it provide any articulated rationale for why this construction is necessary.” *Id.* at 3. Petitioner argues that Patent Owner “simply insists that the construction of similar terms from a parent to the ’764 Patent should be adopted.” *Id.* Petitioner concludes that “[t]he Board should decline this unnecessary request.” *Id.* Petitioner does not, however, dispute Patent Owner’s proposed construction.

As discussed above in the specific context of dependent claim 24, Petitioner is incorrect that Patent Owner does not distinguish over the prior art on the basis of its construction. Patent Owner provides an articulated rationale for why claim construction is necessary for the term “validating display object” in claim 10. Reply 3. Patent Owner asserts its proposed claim constructions “are necessary because Petitioner[ ] allege[s] that a light sequence recognized by a machine constitutes a ‘validating display object’

in claim 24 [which depends directly from claim 10].” Sur-reply 2 (citing Resp. 43-44). Thus, we determine that there is a genuine dispute between the parties that requires a specific claim construction. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Moreover, we also determine that a specific construction of the term “validation display object,” in independent claim 1, similar to the phrase used in independent claim 10, and similar to the construed phrase in the 1449 IPR (“visual validation display object”), is preferable to the amorphous, unstated “plain and ordinary meaning” proposed by Petitioner. *See SightSound Techs., LLC v. Apple Inc.*, 809 F.3d 1307, 1316 (Fed. Cir. 2015) (citing *NTP Inc., v. Research in Motion, Ltd.*, 418 F.3d 1282, 1293 (Fed. Cir. 2005) (Where multiple patents “derive from the same parent application and share many common terms, we must interpret the claims consistently across all asserted patents.”)). Thus, we determine the proposed terms for construction are “in controversy” and require specific construction.

### *I. General Claim Construction Principles*

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips*, 415 F.3d at 1312 (citations omitted). “[T]here is no magic formula or catechism for conducting claim construction.” *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 809 (Fed. Cir. 2021) (quoting *Phillips*, 415 F.3d at 1324). Fortunately, however, there is substantial judicial guidance.

Claim construction requires determining how a skilled artisan would understand a claim term “in the context of the entire patent, including the specification.” *Grace Instrument Indus., LLC v. Chandler Instruments Co., LLC*, 57 F.4th 1001, 1008 (Fed. Cir. 2023) (quoting *Phillips*, 415 F.3d at 1313. *Id.* (citation omitted). “[C]laims must be read in view of the specification, of which they are a part.” *Id.* ((citation omitted; quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 978 (Fed. Cir. 1995) (en banc)). The Specification, or more precisely, the written description, is the “single best guide to the meaning of a disputed term.” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996), and “is, thus, the primary basis for construing the claims.” *Id.* (citation omitted). Although claim terms are interpreted in the context of the entire patent, it is improper to import limitations from the Specification into the claims. *Phillips*, 415 F.3d at 1323. Thus, we are careful not to cross that “fine line” that exists between properly construing a claim in light of the specification and improperly importing into the claim a limitation from the specification.” *Comark Commc’ns., Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998) (“We recognize that there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification.”).

While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms. *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003).

We also consider the patent's prosecution history. *Phillips*, 415 F.3d at 1317.

In construing the claims, we may also look to available “extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Phillips*, 415 F.3d at 1314 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)).

2. “*Validation Display Object*,” and  
“*Validating Display Object*”

We construe these two similar terms together. Patent Owner asserts they have the same meaning. Reply 6 (“all three terms [including the similar term construed in the 1449 IPR] should be construed as ‘an object that is readily recognizable from human observation that can verify a ticket’”).

As we discuss below, in addition to these two very similar terms, and adding to the challenge of claim construction, the claims also use another slightly different, but similar, term “*validating visual object*.” See Ex. 1001, 14:61–64 (emphasis added). After analyzing the words of the claims, the remainder of the Specification, the prosecution history, and probative extrinsic evidence to construe these claim terms, we conclude that all three of these terms – “*validation display object*,” “*validating display object*,” and “*validating visual object*” – all mean the same thing, which is “an object that is readily recognizable from human observation that can verify a ticket.” Based on the weight of the evidence and our analysis below, we determine that this construction stays true to the claim language and most naturally aligns with the patent’s description of the invention.

*a) Claims*

The term “validation display object” appears extensively throughout the claims, including claim 1 (Ex. 1001, 14:52–53; 54; 56–57); claim 2 (*id.* at 15:4–5); claim 3 (*id.* at 15:7); claim 4 (*id.* at 15:11, 12); claim 5 (*id.* at 15:19); claim 6 (*id.* at 15:21); claim 7 (*id.* at 15:24); claim 8 (*id.* at 15:31); claim 9 (*id.* at 15:35); claim 10 (*id.* at 15:60–61); 13 (*id.* at 15:13–14); and 26 (*id.* at 15:55–56).

The term “validating display object” also appears extensively throughout the claims, including claim 10, (Ex. 1001, 15:59, 64)<sup>13</sup>; claim 11 (*id.* at 16:6); claim 12 (*id.* at 16:10); claim 14 (*id.* at 16:16–17); claim 15 (*id.* at 16:20–21); claim 16 (*id.* at 16:24); claim 17 (*id.* at 16:27–28); claim 24 (*id.* at 16:49–50); claim 25 (*id.* at 16:54).

The parties have not directed us to any claim language that guides us to a specific construction of the terms “validation display object” or “validating display object.” The language of claim 1 is representative and will be discussed below.

Claim 1 refers to a “validation display object” three times in the following contexts, with all emphasis added:

(1) “transmitting to the remote display device [e.g. the ticket buyer’s mobile phone] a *validation display object* associated with the ticket payload” (Ex. 1001, 14:52–53);

(2) “the validation display object being configured to be readily recognizable visually by the ticket taker” (*id.* at 14:53–55); and

(3) “in order to enable the remote display device to display the *validation display object* so that upon visual recognition by the ticket taker,

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<sup>13</sup> Claim 10 also includes the phrase “validating *visual* object” (*id.* at 16:2 (emphasis added)), which we will discuss below).

the user of the remote display device is permitted to utilize the service monitored by the ticket taker” (*id.* at 55–60).

Thus, the validation display object” is associated with a purchased ticket for a specific event; and is readily recognizable by a human ticket taker so that it is usable to enter an event or use a service.

We also note that claim 1 also uses a different but similar term, “validating visual object” to state that the “ticket payload contains code that destroys the *validating visual object* in a predetermined period of time after initial display or upon some pre-determined input event.” Ex. 1001, 14:61–64 (emphasis added). There is no antecedent basis in claim 1 for the term “validating visual object.” The only “visual object” in claim 1 that can be “destroyed” is the “validation display object.”

The use of the two different phrases in a single claim suggests that the phrases have different meanings. *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1119 (Fed. Cir. 2004) (“when an applicant uses different terms in a claim it is permissible to infer that he intended his choice of different terms to reflect a differentiation in the meaning of those terms.”); *see also, e.g., Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 93 F.3d 1572, 1579 (Fed. Cir. 1996) (reversing lower court’s ruling that a “pusher assembly” and a “pusher bar” have the same meaning). This inference, however, may be rebutted. *Innova/Pure Water*, 381 F.3d at 1120.

Based on the claims, the use of the two different phrases “validating visual object” and “validation display object” does not show that these different phrases have different meanings. As in *Innova/Pure Water*, “this is simply a case where the patentee used different words to express similar

concepts even though it may be confusing drafting practice.”

381 F.3d at 1120 (determining that “the context does not show that ‘connected’ and ‘associated’ should be differentiated”).

Thus, in the context of claim 1, based on the claim language, a “validating visual object” appears to be the same as a “validation display object.”

We note that claim 10 also uses three different, but similar terms: “validating display object” (Ex. 1001, 15:59); “visual validation display object” (*id.* at 15:60–61); and “validating visual object” (*id.* at 16:1–4).

Claim 10, similar to claim 1, states “the central computer system is configured to transmit to the display device [e.g. the ticket buyer’s mobile phone] over the data communication network a *validating display object* associated with the ticket payload, the *visual validation display object* being configured to be readily recognizable visually by the ticket taker.” Ex. 1001, 15:56–61 (emphasis added).

We also note that claim 10, like claim 1, also uses the term “validating visual object” to state that the “ticket payload contains code that destroys the *validating visual object* in a predetermined period of time after initial display or upon some pre-determined input event.” Ex. 1001, 16:1–4 (emphasis added). There is no antecedent basis in claim 10 for the term “validating visual object.” The only “object” in claim 10 that can be “destroyed,” again, liked in claim 1, is the “validating display object.” Thus, in the context of claim 10, based on the claim language, “validating visual object” appears to be the same as a “validating display object.”

Most of the dependent claims use one of the terms “validation display object” or “validating display object.” *See, e.g.*, Ex. 1001, 15:3–5

(dependent claim 2, reciting the step of “confirming the verification of the electronic ticket in order to cause the display of the *validation display object* on the remote display device”) (emphasis added). The parties do not direct us to anything in the dependent claims that guides our construction of the terms “validation display object” or “validating display object,” and we do not discern any such guidance on our own review of the dependent claims.

Based on the claims, “validation display object” or “validating display object” is associated with a purchased ticket for a specific event; and is readily recognizable by a human ticket taker so that it is usable to enter an event or use a service. As we stated in the related 1449 IPR, the terms mean “an object that is readily recognizable from human observation that can verify a ticket.” 1449 IPR, Paper 38 at 24.

*b) Specification*

As we stated above, the Specification, or more precisely, the written description, is the “single best guide to the meaning of a disputed term.” *Phillips*, 415 F.3d at 1315 (citation omitted), and “is, thus, the primary basis for construing the claims.” *Id.* (citation omitted). “[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Id.* (citation omitted).

Unfortunately, the written description of the ’764 patent does not use the terms “validation display object” or “validating display object.” The written description, however, uses extensively the term “validating visual object,” which, as stated above, is also used in independent claims 1 and 10. *See, e.g.*, Ex. 1001, 14:61–64 (for claim 1, stating “the ticket payload contains code that destroys the *validating visual object* in a predetermined

period of time after initial display or upon some pre-determined input event”)(emphasis added).

The Specification describes a “validating visual object” in several different ways. The Specification discloses that a “validating visual object” is a “visual object that a human can perceive without a machine scanning it.” Ex. 1001 2:31–34. The Specification also discloses, however, that:

The criterion for what constitutes a validating visual object is one that is readily recognizable from human observation, is encapsulated in such a way as to be transmitted to the customer’s device with a minimum of network latency or download time, and that can be reasonably secured so as to avoid piracy.

*Id.* at 3:34–39.

The phrase used in the Specification, “validating visual object,” also is used in claims 1 and 10, as noted above, in the context of stating “the ticket payload contains code that destroys the *validating visual object* in a predetermined period of time after initial display or upon some pre-determined input event.” Ex. 1001, 14:61–64 (for claim 1).

The Specification also provides several examples of a “validating visual object,” such as “a color display,” an “animation,” and a “block letter.” *Id.* at 3:45–61.

Based on the Specification, we determine the terms mean “an object that is readily recognizable from human observation that can verify a ticket.” 1449 IPR, Paper 38 at 24.

### *c) Prosecution History*

Neither party directs us to persuasive evidence regarding claim construction from the prosecution history.

*d) Extrinsic Evidence*

Neither party directs us to persuasive evidence regarding claim construction from any extrinsic evidence.

*e) Order of Steps*

Related to claim construction is Patent Owner's assertion that the claims require a specific order for the recited elements and limitations. Resp. 7–10.

Petitioner disagrees and argues that we should reject Patent Owner's proposed order of the elements and limitations in the claims.

As a general rule, “[u]nless the steps of a method [claim] actually recite an order, the steps are not ordinarily construed to require one.” *Mformation Techs., Inc. v. Rsch. in Motion Ltd.*, 764 F.3d 1392, 1398 (Fed. Cir. 2014) (citing *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1342 (Fed. Cir. 2001)). However, a claim “requires an ordering of steps when the claim language, as a matter of logic or grammar, requires that the steps be performed in the order written, or the specification directly or implicitly requires” an order of steps. *Id.* at 1398-99 (quoting *TALtech Ltd. v. Esquel Apparel, Inc.*, 279 Fed. Appx. 974, 978 (Fed. Cir. 2008); see also *Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1320 (Fed. Cir. 2013) (concluding that a claim that recites “processing” an “electronic advertisement” necessarily indicates that “the creation of the ad must happen before the processing begins”). Thus, as disclosed, there is a logical order to the steps performed.

For purposes of this Decision, as in *Mformation*, we agree that the claim language logically requires that the process steps be performed in sequence. See *Amgen Inc. v. Sandoz Inc.*, 923 F.3d 1023, 1028 (Fed.

Cir.), *reh'g granted, opinion modified*, 776 F. App'x 707 (Fed. Cir. 2019). This also is consistent with the written description in the '764 patent. A person must first buy a ticket before the ticket can be sent to the buyer. But, by the very nature of modern electronic communications, the ordered steps may occur almost instantaneously.<sup>14</sup>

For an example of the ordered steps, as disclosed in the '764 patent, the written description states that *after* the ticket purchaser buys a ticket, the ticket seller's "website" sends to the purchaser's device "a unique number, referred to as a token," which is stored on the buyer's device. Ex. 1001, 2:53–66. This same unique number, or token, also is stored in the seller's database. *Id.* at 2:66–67. Thus, according to the Specification, this single token is stored in two different places.

Ticket holders that have purchased tickets have a data record in the seller's database that contains the unique token associated with the ticket. *Id.* at 4:16–20. At the entrance to the event or service, customers are

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<sup>14</sup> We agree, for example, with Petitioner's statements that the claims *do not* require a specific time period between the logical sequence of steps. *See, e.g.*, Tr. 8:17–9:12, (addressing Petitioner's assertion that "Bytemark's main argument here is that there's no previously purchased ticket"). Petitioner asserted:

It could have been purchased two seconds ago, two weeks ago, two months ago. There's no timing requirement in the claim element that we see here. And there's also no separate transaction. You don't have to have one transaction where you buy the ticket and another transaction where you transmit the token. All that this claim element requires is that you purchase first and then you send the token for that purchased ticket. So in other words every token that gets sent is for a previously purchased ticket.  
Tr. 9:4–12.

requested to operate an application on their devices. *Id.* at 4:20–22. The application retrieves from the buyer’s device the stored ticket token and transmits that token to the seller’s system. *Id.* at 4:22–23. The seller’s database *first* looks up the buyer’s token to check that the token is “valid.” *Id.* at 4:24–25. The Specification does not state the characteristics, criteria, or method of determining what constitutes a “valid” ticket. It appears to involve merely comparing the token received by the buyer to the token stored in the seller’s database. *If the token is valid, then* the seller’s system transmits back to the buyer’s device a “ticket payload,” which contains computer code that, when operated, displays the “validating visual object.” Ex. 1001, 4:25–29. The “validating visual object” is selected by the seller. *Id.* at 3:1–3. There is a logic to these steps being performed in the order as described above.

Accordingly, regarding the order of performing steps of the claimed method in independent claim 1, or performing functions of the claimed system in independent claim 10, we determine that the claim language, as a matter of logic or grammar, requires that steps or functions be performed in the order written, or in the order the specification directly or implicitly requires.

### 3. *Claim Construction Conclusion*

We recognize that “[t]he very nature of words would make a clear and unambiguous claim a rare occurrence.” *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 396 (Ct. Cl. 1967). Using different words for the same element or step compounds the difficulties of claim interpretation. The Federal Circuit has provided a beacon, which we have followed, to guide us

in determining the proper construction when we encounter ambiguities or differing interpretations from the parties:

Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.

*Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998) (citations omitted).

Here the terms “validation display object,” in claim 1, and “validating display object” in claim 10, should be construed consistent with the term ‘visual validation display object’ in the parent ’967 patent considered in IPR2017-01449. Accordingly, we determine that all three terms should be construed as ‘an object that is readily recognizable from human observation that can verify a ticket.’” *See* IPR2017-01449, Paper 38 at 24).

We reach this conclusion mindful that the 1449 IPR used the “broadest reasonable” claim construction standard, whereas in the proceeding before us we use the *Phillips* standard. Often, different roads can lead to the same destination. *See, e.g., In re CSB-Sys. Int’l, Inc.*, 832 F.3d 1335, 1341 (Fed. Cir. 2016) (“In many cases, the claim construction will be the same under the *Phillips* and BRI standards.”) (citing *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1302 n. 1 (Fed. Cir. 2015) (noting that the claim term under review had the same construction under the BRI and *Phillips* standards); citing also *Facebook, Inc. v. Pragmatus AV, LLC*, 582 Fed. Appx. 864, 868–69 (Fed. Cir. 2014) (non-precedential) (“The

broadest reasonable interpretation of a claim term may be the same as or broader than the construction of a term under the *Phillips* standard.”)).

Moreover, the determination that two different claim construction standards produce the same result is not surprising here where the claims in the parent patent reviewed in the 1449 IPR use terms similar, if not identical, to terms in the ’764 patent, which is now before us. Additionally, in relevant parts, the written description in the parent patent reviewed in the 1449 IPR also is nearly identical to the written description in the ’764 patent. Because claim language and the written description are the primary focus of claim construction under either standard, it is understandable that, under the facts of the case before us, the different standards take us the same claim construction. *Renishaw*, 158 F.3d at 1250. (“The construction that stays true to the *claim language* and most naturally aligns with the patent’s *description of the invention* will be, in the end, the correct construction.”) (emphases added).

*D. Ground 1 – Claims 1–19, 22, and 24–28  
in View of Terrell and Saarinen*

Petitioner asserts claims 1–19, 22, and 24–28 are unpatentable under § 103(a) as obvious in view of Terrell and Saarinen. Pet. 10–49. First, we summarize these two references.

*1. Terrell (Ex. 1005)*

We make the following finding of facts concerning Terrell.

Terrell discloses a method of electronic ticketing “in which an image is displayed by a mobile device that is eye-readable for inspection

purposes.” Ex. 1005, 2:8–9.<sup>15</sup> As stated in Terrell, “[f]or the purposes of speed and economy, at times it may be preferable for such a ticket inspection to be merely done by the inspector's eyes.” *Id.* at 4:16–17. The electronic tickets disclosed in Terrell include “both a visually readable component that may be inspected by eye and also a machine-readable code that is readable by electronic reading apparatus.” *Id.* at 4:18–20.

Terrell discloses that the mobile device “displays graphical information comprising textual information and animated graphics” on the viewable screen “*for visual inspection*,” and also “presents a machine-readable code to allow *authentication* of said textual information.” *Id.* at 3:3–6 (emphasis added). Thus, Terrell distinguishes between “inspection,” which uses the graphical information, and “authentication,” which uses the machine-readable code.

The Figure 16 embodiment of Terrell concerns validating a previously purchased, but non-validated, electronic ticket. Ex. 1005, 18:8–10. Because the Figure 16 embodiment incorporates substantial portions of other embodiments, we first describe Terrell’s disclosure in general, and then discuss the Figure 16 embodiment.

As disclosed in Terrell, electronic tickets are provided by the ticket seller’s server to mobile devices of ticket buyers, such as mobile phones.

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<sup>15</sup> We note that Petitioner’s cites to Terrell are to the original page numbers (top, center) of the exhibit and not the exhibit page number added by Petitioner in the bottom right corner of each page of Exhibit 1005. Thus, for example, Petitioner’s cite to Ex. 1005, “2:7–13” (Pet. 7) is a citation to text appearing on page 2 of the original document, lines 7–13, which also is labeled by Petitioner as “Exhibit 1005 – Page 003.” To avoid additional confusion, we also will cite to the original document page number and *not* the exhibit page number added by Petitioner.

*Id.* at 4:5–6; *see also id.* at Figs. 6, 13 and *id.* at 8:18–9:14; 15:19–16:8 (illustrating and describing Terrell’s ticket purchase procedures). The ticket buyer’s mobile device sends to the seller’s server a request to purchase a ticket to a selected event. *Id.* at 16:3–8. The seller’s server responds by sending the buyer a ticket having a unique ticket number. *Id.* The server has access to a “verification database.” *Id.* at 4:30. Tickets supplied by the server to the mobile devices include unique ticket numbers, along with other details, all of which are stored in the verification database. *Id.* at 5:1–4; 16:3–8.

The server sends to the mobile device a ticket with a graphical information part and a machine-readable part, such as a barcode. *Id.* at 9:16–18; Fig. 7. The graphical information part includes data that is to be presented as “human-readable information” on the mobile device display. *Id.* at 9:19–20. The “human-readable” graphical information part includes data defining a unique ticket number (as stored in verification database 111), a date relating to the event for which the ticket was bought, a code for the day, a “valid to” time, other ticket details, and “non-textual graphical information.” *Id.* at 9:21–26.

The mobile device executes “an application” on the mobile device, which displays the text information and graphics “for visual inspection,” and the machine-readable code “to allow authentication” of the textual information. *Id.* at 2:13–17. The mobile device application requires at least one graphic element to be animated, i.e., to have a change in appearance, such as by movement, change in form, change in color, or a change in size. *Id.* at 10:26–29.

The ticket information transmitted to the ticket purchaser includes a “valid for” time (*id.* at 12:2–3), and a “code for the day” (*id.* at 13:8–9).

Figure 11 of Terrell, reproduced below, illustrates an example of the “human-readable” graphical information on a mobile phone, which includes a “valid for” time 1104, a unique ticket number 1106, a code for the day 1107, and a non-text graphic. *Id.* at 13:8–21. Button 1109 allows a user to request that the barcode part of the ticket be displayed. *Id.* at 13:27–28. The barcode is shown in Figure 12. Where the screen resolutions and dimensions of the buyer’s mobile device permit, the entire ticket, including the “human-readable” graphical information and barcode, may be presented simultaneously on a single screen. *Id.* at 15:15–17.

Figure 11 from Terrell shows mobile device 102 displaying on its screen 1101 an example of graphical information included in a ticket. *Ex.* 1005, 3:22–23.

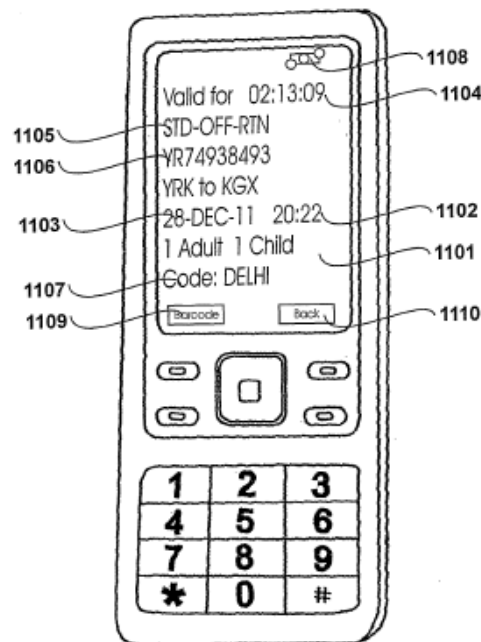


Figure 11 shows a mobile device displaying graphical information included in a ticket.

By viewing the code for the day, shown at reference numeral 1107, and/or the “valid for” time, shown at reference numeral 1104, a ticket inspector can easily observe that the ticket appears to be a valid ticket. *Id.* at 13:18–20.

The barcode may be read to obtain the unique ticket number which is then compared with unique ticket number 1106, as shown in Figure 11. *Id.* at 14:7–8. According to Terrell, this provides a simple check of the ticket’s authenticity. *Id.* at 14:9. Where a database of unique ticket numbers is available, this ticket number can also be checked against such a database to ensure that it is valid. *Id.* at 14:9–11.

Terrell also discloses that the data to be included in the graphical information part of the ticket data is encrypted using a symmetric private key obtained from the mobile device. *Id.* at 17:6–14. A part of the symmetric key comprises a selected part of the IMEI number of the requesting mobile device. *Id.* at 17:15–17. When the ticket is received back at the requesting mobile device, the *application resident on the receiving mobile device* ensures that the selected part of its IMEI number is present in the symmetric key. *Id.* at 17:17–19. If it is not present, the decryption of the graphical information part of the ticket data is blocked. *Id.* at 17:19–21. Terrell discloses that “this feature ensures that the IMEI number of the receiving mobile device matches the IMEI number of the requesting mobile device, and if not then decryption using the symmetric key is prohibited.” *Id.* at 17:19–21.

As described above, Terrell provides a validated ticket to the buyer. *Id.* at 18:7–8. In an alternative embodiment, however, Terrell discloses that a ticket is provided to the buyer’s mobile device in a *non-validated form*,

and is validated in a separate transaction initiated by the buyer. *Id.* at 18:8–10. An example of a non-validated ticket is shown in Figure 16 of Terrell.

Figure 16 of Terrell is reproduced below.

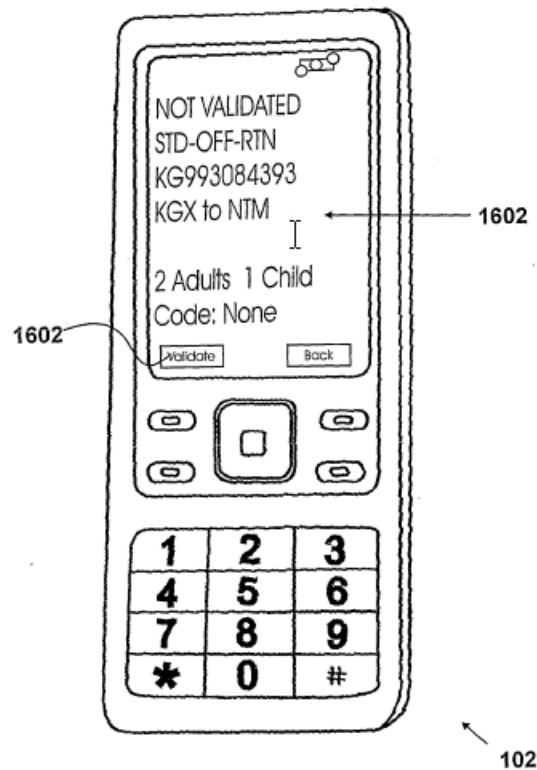


Figure 16 shows an example of a non-validated ticket.

As shown in Figure 16, the words “not validated” are displayed on the ticket. *Id.* at 18:19–26. The non-validated ticket does *not* show the “valid to” time or a decrementing “valid for” time. *Id.* The non-validated ticket also does not include a date or corresponding “code for the day.” *Id.*

When the buyer wants to use the non-validated ticket, the buyer validates the ticket by pressing “validate” button 1602 (Figure 16), which replaces barcode button 1109 shown in Figure 11. *Id.* at 18:27–30. The validation request asks the seller’s server to validate a ticket having a specified unique ticket number. *Id.*

Upon receiving the request, the server responds by assembling the required data, including date, code for the day, and “valid to” time. *Id.* at 18:30–19:5. The assembled data is transmitted to the requesting mobile device, so that the application can update the pre-validation ticket shown in Figure 16, to a validated ticket, such as shown in Figures 11 and 12. *Id.*

## 2. *Saarinen (Ex. 1006)*

We make the following findings of fact concerning Saarinen.

Saarinen discloses a method and apparatus for providing an “active” ticket in a mobile terminal for use by a mobile terminal user. Ex. 1006 ¶ 16. The “active” ticket has a ticket characteristic that dynamically changes based on one or more states in a life cycle of the ticket. *Id.* The various life cycle states of the ticket may be “purchased,” “pre-valid,” “validated,” or “invalid.” *Id.* ¶ 17. Dynamic changes to the ticket characteristic include either multimedia changes or other presentation data, including text, sound, animation, video, and still pictures. *Id.* ¶ 16. The ticket service provider or issuer can send new control data to change the characteristic and/or contents of the active ticket. *Id.* ¶ 17. This information is sent only to the mobile terminal of the original purchaser of the active ticket, so unauthorized (i.e. pirated) tickets, if any, will not receive this updated information. *Id.* Moreover, using this control data, it is also possible to change the characteristic or appearance of the ticket. *Id.*

This control data is a part of the ticket but is received, for example, at a certain time and/or location, or just before the ticket is about to be used. *Id.* ¶ 19. The control data is sent only to legally purchased tickets. *Id.* After receiving the control data, the active ticket is easily distinguishable from the illegal ones. *Id.* According to Saarinen, the disclosed method and system

“allows ticket validation without machines” and “validation by the human eye is easy.” *Id.* ¶ 20.

### 3. *Analysis of Independent Claims 1 and 10*

The issues and arguments raised by Patent Owner for independent claims 1 and 10 are substantially similar. Thus, we discuss these claims together. *See* Resp. 32–33 (Patent Owner’s assertion that “Independent claim 10 is the system claim analogue to method claim 1 and recites several analogous elements. The arguments . . . concerning the analogous elements of claim 1 are therefore equally applicable to claim 10 and claim 10 is patentable over Terrell and Saarinen for those reasons.”).

Petitioner provides a clause-by-clause analysis of claim 1, explaining where, in Petitioner’s view, each element is disclosed in Terrell or Saarinen, and why claim 1, considered as a whole, would have been obvious. Pet. 15–29. Petitioner provides a similar analysis for claim 10. *Id.* at 37–38. Throughout its clause-by-clause analysis, Petitioner cites to the disclosures of the references and to Dr. Jones’ testimony for evidentiary support.

Patent Owner argues that only two steps or limitations in claims 1 and 10 are not disclosed or suggested in either Terrell or Saarinen. According to Patent Owner:

The prior art combination, however, does not suggest a method and system that performs the claimed order of operation for a *previously purchased* ticket and does not suggest ‘code that destroys the validating visual object in a predetermined period of time after initial display or upon some predetermined input event’ as claimed for the reasons explained below. These claims are therefore not obvious in view of Terrell and Saarinen.

Resp. 14 (emphasis in original).

*a) Transmitting a Token, then Validating the Token*

We use independent method claim 1 as a specific example. The limitations in independent systems claim 10 are essentially identical. Patent Owner does not argue claims 1 and 10 separately.

Clause 1[a] states:

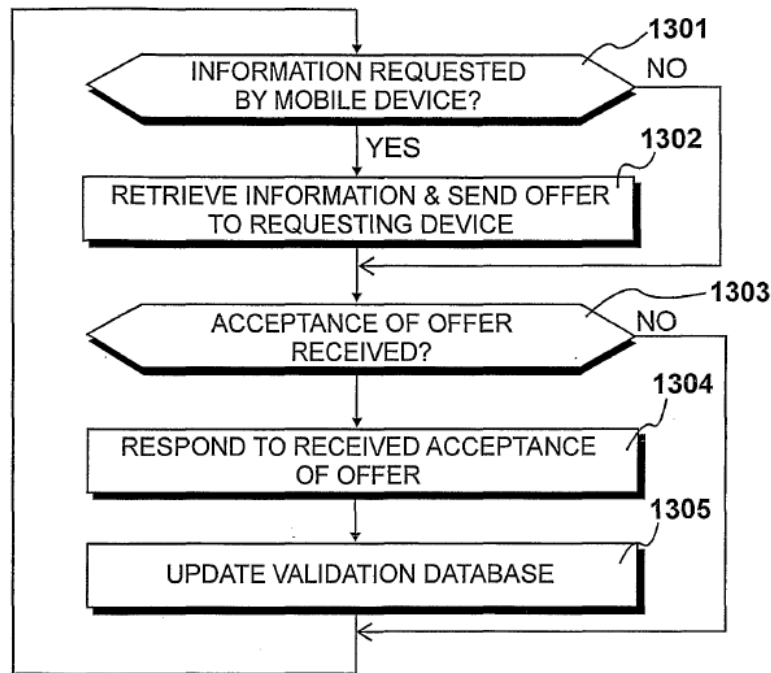
transmitting a token associated with a *previously purchased* electronic ticket to a remote display device, wherein the token is a unique identifier and a copy of the unique identifier is stored on a central computer system.

Ex. 1001, 14:43–47 (emphasis added).

As asserted by Petitioner, and discussed below, Terrell (Pet. 15–21) and Saarinen (*id.* at 11–12) discloses a method and apparatus for electronic ticketing that disclose these steps performed in the order recited in the challenged claims. Petitioner asserts “Terrell inherently discloses ‘matching the token transmitted to the remote display device to the copy of the unique identifier stored on the central computing system’ during the validation process.” *Id.* at 21. In fact, Terrell expressly discloses this limitation, as asserted by Petitioner. *Id.* (“Terrell already discloses the explicit matching of ticket numbers for validity and fraud prevention.” (citing Ex. 1003 ¶ 49)).

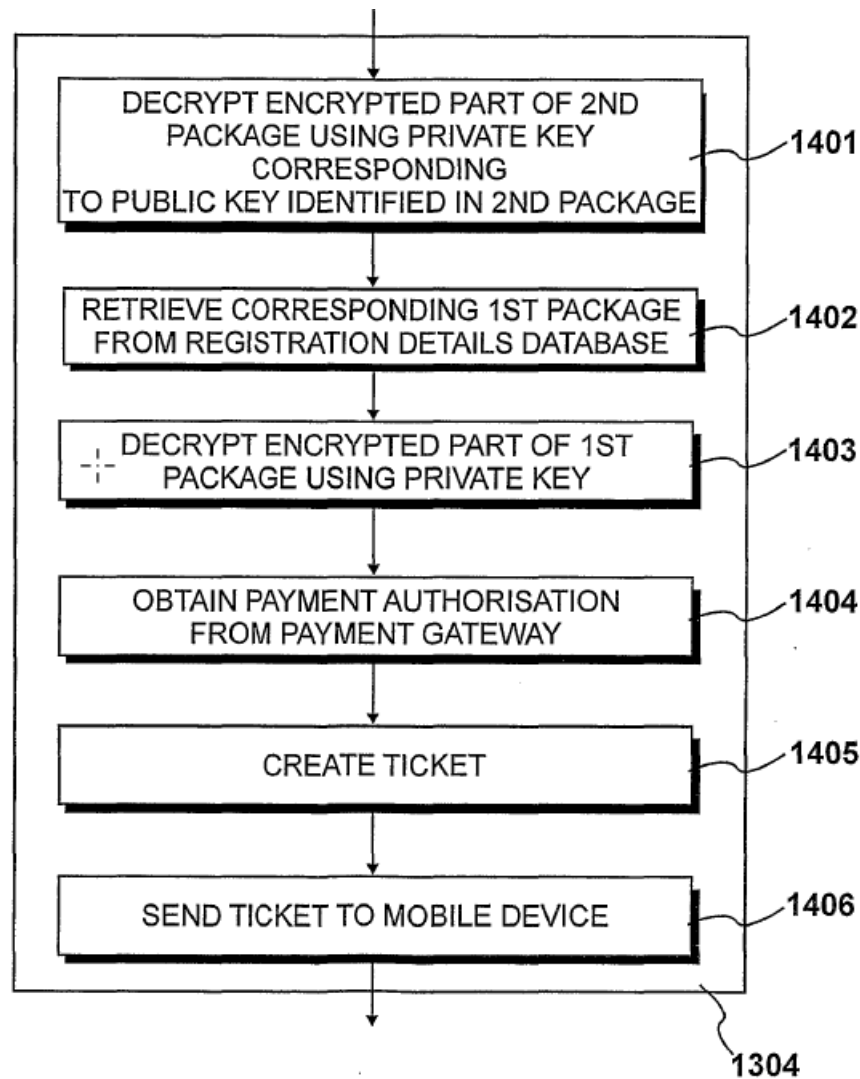
In Terrell, electronic tickets are provided by the ticket seller’s server to mobile devices of ticket buyers, such as mobile phones. Ex. 1005, 4:5–6; *see also id.* at Figs. 6, 13, 14 and *id.* at 8:18–9:14; 15:19–16:8 (illustrating and describing Terrell’s ticket purchase procedures).

Figure 13 from Terrell, a flowchart of some functions performed by the server in Terrell, is reproduced below.



As disclosed in Terrell, and as shown in Figure 13, when the ticket seller's server receives a request for information by a prospective buyer's mobile device at step 1301, responsive information is retrieved and then sent to the prospective buyer at step 1302. If the buyer accepts the offer to sell, at step 1303, the seller duly responds to the acceptance at step 1304, and updates the seller's validation database at step 1305. Ex. 1005, 15:18–16:5. Thus, at step 1304, the buyer's mobile device accepting the offer of sale of a ticket is provided with a ticket having a unique ticket number, and the details of the ticket, along with the unique identification number are logged at step 1305.

Figure 14 from Terrell, reproduced below, shows details of step 1304 of responding to a received acceptance of offer for sale. Ex. 1005,16:9–11.



As shown in Figure 14, credit card details and payment details are transmitted to the payment gateway 110 to obtain payment authorization at step 1404. *Id.* at 16:24–25. Having obtained payment authorization, a ticket is created at step 1405 and the ticket is sent to the purchasing mobile device at step 1406. *Id.* at 16:25–27. Thus, it is beyond reasonable dispute that the first substantive step in Terrell is a buyer purchasing a ticket from a seller, and the sender sending the ticket to the buyer's mobile device. Thus,

everything that follows this first substantive step is based on a previously purchased ticket.

Terrell specifically discloses that an embodiment where the ticket is provided to the mobile device in a non-validated form, and is validated in a separate transaction initiated by the user. Ex. 1005, 18:6–10; Fig. 16. This embodiment is used, for example, where the ticket is not for immediate travel. *Id.* at 18:10–11. When the user wants to use the previously purchased ticket (for example, just before boarding the train), the user validates the previously purchased ticket. *Id.* at 18:14–15.

The Terrell server sends to the mobile device a ticket with a graphical information part and a machine-readable part, such as a barcode. *Id.* at 9:16–18; Fig. 7. The graphical information part includes data that is to be presented as “human-readable information” on the mobile device display. *Id.* at 9:19–20. The “human-readable” graphical information part includes data defining a unique ticket number (as stored in verification database 111), a date relating to the event for which the ticket was bought, a code for the day, a “valid to” time, other ticket details, and “non-textual graphical information.” *Id.* at 9:21–26.

In Terrell, the mobile device then executes “an application” on the mobile device, which displays the text information and graphics “for visual inspection,” and the machine-readable code “to allow authentication” of the textual information. *Id.* at 2:13–17. The mobile device application requires at least one graphic element to be animated, i.e., to have a change in appearance, such as by movement, change in form, change in color, or a change in size. *Id.* at 10:26–29.

As disclosed in Terrell, the ticket information transmitted to the ticket purchaser includes a “valid for” time (*id.* at 12:2–3), and a “code for the day” (*id.* at 13:8–9).

The non-validated ticket shown in Figure 16 of Terrell has a validation button 1602 allowing the user of the mobile device to request, from the server 101, the validation of a ticket having a specified unique ticket number. *Id.* at 18:27–30. In validating a previously non-validated ticket, and responding to a request for validation from the buyer (Ex. 1005, 18:30 (“Upon receiving the request . . .”)), Terrell discloses that the seller’s server sends to the buyer’s mobile device the required validation data, including a “code for the day.” *Id.* at 19:1–5. This is simply a “day specific code.” *Id.* at 13:9. The buyer’s mobile device uses this data to update the “pre-validation ticket” to a “validated ticket.” Ex. 1005, 13:9.

Figure 11 from Terrell again is reproduced below, for convenient reference,

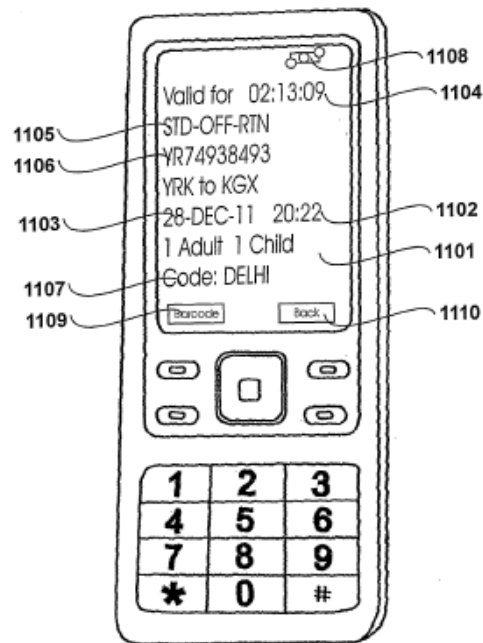


Figure 11 shows a mobile device displaying graphical information included in a ticket.

As shown in Figure 11 of Terrell, the example code for the day, shown at reference numeral 1107, is “DELHI.” This word is an object that is readily recognizable from human observation that can verify a ticket, and thus, is within our construction of the term “visual validation display object.” Indeed, Terrell discloses that the purpose of the code for the day is to allow a ticket inspector to “easily . . . observe that the ticket appears to be a valid ticket.” *Id.* at 13:18–20.

Terrell specifically discloses that the code of the day is transmitted as part of a data file that includes various codes and commands, including barcode data. As disclosed in Terrell,

Upon receiving the request the server responds by assembling the required *data*, including date, code for the day, ‘valid to’ time, and generating the corresponding barcode *data*, as previously described. The assembled *data* and the barcode *data* are then transmitted to the requesting mobile device, so that the

application can update the pre-validation ticket to a validated ticket.

Ex. 1005, 18:30–19:5 (emphases added).

Accordingly, based on the record before us, Terrell discloses first buying a ticket, then transmitting a token, or a unique identifier, to a buyer's device based on the previously purchased ticket, and then validating the token at a later time. These ordered steps all are initiated based on a previously purchased ticket.

Patent Owner asserts that Terrell “is clear that the steps cited by the Petition for validating a previously purchased ticket are part of a single ticket purchase procedure.” Sur-reply 6. We disagree. Terrell discloses a multipart procedure, as described above, for first buying a ticket, and then validating and using a previously purchased ticket. Moreover, as we also have described above, Terrell discloses in an alternative embodiment that a ticket is provided to the buyer's mobile device in a *non-validated form*, and is validated in a separate transaction initiated by the buyer. *Id.* at 18:8–10. In this purchase of a non-validated ticket, the disclosed logical order of steps in Terrell is:

- (1) buyer initiates purchase of a ticket and makes payment;
- (2) buyer receives a non-validated ticket from seller;
- (3) buyer initiates a request to validate the ticket (*id.* at 18:27–30);
- (4) seller confirms the request is from an authorized buyer and assembles the required data for the requested validation (*id.* at 18:30–19:3);
- (5) the assembled data “are then transmitted to the requesting mobile device” (*id.* at 19:3–4); and

(6) the application on the buyer's phone can then update the non-validated ticket to a validated ticket (*id.* at 19:4–5).

We determine these steps in Terrell correspond to the steps and limitations in claims 1 and 10.

*b) Code that Destroys the Validating Visual Object*

Clause 1[d] of the '764 patent states:

wherein the ticket payload contains code that destroys the validating visual object in a predetermined period of time after initial display or upon some pre-determined input event.

Ex. 1001, 14:61–64. As explained in the written description, one way the disclosed method limits piracy is that “the ticket payload can contain code that destroys the validating visual object in a pre-determined period of time after initial display or upon some pre-determined input event.” *Id.* at 3:25–28.

Petitioner asserts “Terrell discloses a ‘decrementing timer’ which indicates a ‘valid to’ time for a previously purchased ticket. Pet 23 (citing Ex. 1005, 10:26–11:5; 18:30–19:3). When the ‘valid to’ time expires, the decrementing timer ceases to display a time and the ticket is no longer valid. *Id.* at 13:15–20; 19:11–15 (“[T]he mobile device displays the time the ticket was created, the time the ticket expires, and the time remaining [until] expiry.”). As explained by Petitioner, “[a]t that point, the face of the ticket indicates that the ticket is no longer valid because the validating visual object (the decrementing timer) has been destroyed since it has been changed to show that no time remains for use of the previously valid ticket. *Id.* at 24 (citing Ex. 1003 ¶ 53). Petitioner concludes that “[t]he ‘valid to’ time is an element of ‘code’ in the ticket payload (the ‘required data’) that is sent to the user’s device from the server when the user validates the

previously purchased ticket.” Pet. 25 (citing Ex. 1005, 18:30–19:3; Ex. 1003 ¶ 55).

Terrell’s cited disclosure states “[u]pon receiving the request the server responds by assembling the required data, including date, code for the day, ‘valid to’ time, and generating the corresponding barcode data, as previously described.” Ex. 1005, 18:30–19:3.

Dr. Jones’ cited testimony supports Petitioner’s assertion. Ex. 1003 ¶ 55. Dr. Jones further testifies that

the communication in which the server sends ‘data defining a ticket’ to the mobile device ‘is performed by exchanging XML data packets using HTTP, and the application executed on the mobile device is a Java script.’ [citing Ex. 1005, 6:14–20]. XML and Java are both ‘code’ that can form the ticket payload. A POSITA would understand that this is consistent with the teachings of the ’764 Patent regarding code. Java and HTML are explicitly called out as a programming language used for source code in the ’764 at [citing Ex. 1005, 13:4–9].

Ex. 1003 ¶ 55.

The ’764 patent discloses that “[s]ource code may include a series of computer program instructions implemented in any of various programming languages (e.g., an object code, an assembly language, or a high-level language such as FORTRAN, C, C++, JAVA, or HTML) for use with various operating systems or operating environments.”

Based on Terrell’s disclosure and Dr. Jones’ testimony, it is clear that the ticket payload in Terrell “contains code that destroys the validating visual object . . . upon some pre-determined input event,” as required in claims 1 and 10.

Patent Owner asserts that Petitioner “ignores the fact that the final element of the wherein clause [in claims 1 and 10] explicitly states that ‘the

ticket payload contains code that destroys the validating visual object in a predetermined period of time *after initial display*.” Sur-reply 3 (emphasis in original). Patent Owner fails to recognize, however, that the claim language provides an alternative event for destroying the validating visual object. Claim 1 states “the ticket payload contains code that destroys the validating visual object in a predetermined period of time after initial display *or* upon some pre-determined input event.” Ex. 1001, 14:61–64 (emphasis added). Claim 10 contains identical language. Thus, the claim limitation states two alternative events that trigger destruction of the validating visual object – (1) “after initial display” *or* (2) “upon some pre-determined input event.” Petitioner asserts that Terrell does both. Tr. 17:9–12 (“Bytemark seems to argue that the expiration time or the predetermined time must be the same for every single person and every single mobile device. Again, that’s not found in the claims either.”).

Terrell’s code clearly discloses option 2, and terminates the validating visual object after a pre-determined event.

Alternatively, Petitioner asserts Saarinen teaches a method to “destroy” previously valid tickets. Pet. 27. According to Petitioner, it would have been obvious to a POSITA to include code in the ticket package that will automatically delete the old ticket once a predetermined period of time has passed (e.g., once the timer recognizes that the time for the event has passed) or modify the appearance of the ticket to show an ‘invalid ticket appearance’ once a predetermined time has passed or a ‘predetermined input event’ has occurred.

*Id.* (citing Ex. 1003 ¶ 59; Ex. 1006, Figs. 8a–8c). As Petitioner notes (Pet. 27–28), Figures 8a and 8c of Saarinen, and the related written description (Ex. 1006 ¶ 117), disclose a process for disabling or “destroying” a valid

ticket, so that it is no longer useable. Saarinen discloses that “[a]fter the ticket is used, either the ticket issuer server or the ticket inspector may disable the active ticket by either upgrading the valid ticket to an invalid ticket or *destroying* the valid ticket.” Ex. 1006 ¶ 117 (emphasis added). This is a “pre-determined input event,” as recited in the claims.

An excerpt from Figure 8c of Saarinen is reproduced below and annotated with a red circle to highlight the relevant text.

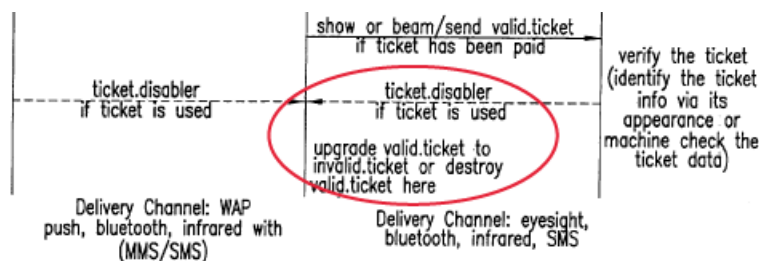


**FIG.8c:** Location-Based Active Ticketing Protocol

As shown in Figure 8c, Saarinen discloses a “ticket disabler” that will “upgrade valid ticket to invalid ticket or destroy valid ticket.”

According to Petitioner, “it would have been obvious to a POSITA to include code to remove the used ticket in the ticket payload.” Pet. 29 (citing Ex. 1006 ¶ 74; Ex. 1003 ¶ 60). Paragraph 74 of Saarinen refers to “ticket application module 22b’,” which is the code, software, or processing steps to perform the assigned function of “destroying” the valid ticket.

Why would a person of ordinary skill modify Terrell with the clear and unambiguous disclosure in Saarinen to “destroy” or remove the valid ticket? Saarinen provides the answer. Saarinen discloses:

Digital tickets are quite suitable for delivering over networks, which makes it easy to be altered, pirated or superdistributed without any change and control. The digital copy of the ticket can be the same as the original that makes the ticket verification at redemption more difficult.

Ex. 1006 ¶ 7. Destroying the valid ticket helps provide additional ticket security.

Patent Owner asserts that “[a]s the Response explained, disabling a ticket at the end of an event does not destroy a visual object in a predetermined period of time after initial display because each user displays their visual object at a different time, but all visual objects are disabled at the same time when the event ends.” Sur-reply 7 (citing Resp. 19).

Patent Owner recognizes that Terrell discloses a “decrementing timer,” and that Petitioner relies, in part, on this disclosure for the claim limitation of code for destroying a valid ticket. Resp. 17. Patent Owner asserts, however, that neither Terrell’s “decrementing timer,” indicating a “valid to” time for a purchased ticket nor Saarinen’s “ticket disabler” constitutes “code that destroys the validating visual object in a predetermined period of time. *Id.* (citing Ex. 2001, ¶¶ 58–630. Dr. Melendez testifies that neither Terrell nor Saarinen disclose “code” that performs the claimed “destroy” function.

Patent Owner’s arguments, and Dr. Melendez’s testimony, however, fail to acknowledge that Saarinen expressly discloses that “the issuer server,” that is, the ticket seller’s server, may “destroy” the valid ticket. As explained above, the way the server can do this is by sending “code,” or computer instructions, to the ticket buyer’s mobile device.

*c) Conclusion for Claims 1 and 10*

Based on the arguments and evidence in the record before us, we determine that a preponderance of the evidence supports Petitioner’s assertion that independent claims 1 and 10 would have been obvious based on Terrell and Saarinen; and that Petitioner has established a reason why a

person of ordinary skill would have combined these references, with a reasonable expectation of success in doing so.

*4. Dependent Claims 2–9, 11–19, 22, and 24–28*

Dependent claims 2–9, 11–19, 22, and 24–28 depend directly or indirectly from claims 1 and 10. Petitioner provides a clause-by-clause analysis of where each element in dependent claims 2–9, 11–19, 22, and 24–28 is disclosed in, or would have been obvious in view of, Terrell and Saarinen. Pet. 29–49. Throughout Petitioner’s analysis, Petitioner cites and relies on the testimony of Dr. Jones (Ex. 1003) for evidentiary support.

*a) Claim 2*

Claim 2, dependent from claim 1, states the specific steps of “receiving from the remote display device a request to verify the purchase of the previously purchased electronic ticket; determining the validity of the received request; and transmitting a response to the remote display device confirming the verification of the electronic ticket in order to cause the display of the validation display object on the remote display device.”

Petitioner asserts “Terrell discloses that a user can validate a previously purchased ticket by touching a “validation button” on the screen of the mobile device. Pet.29 (citing Ex. 1005, 18:30-19:3). The central server receives the request and responds to the mobile device. *Id.* Petitioner also relies on its arguments concerning claim 1. *Id.* at 29–30 (referring to arguments for claim 1, clauses 1(a) and 1(b)). Additionally, Petitioner asserts Terrell discloses that “the server responds by assembling the required data, including date, code for the day, [and] ‘valid to’ time” and transmits the information to the mobile device. *Id.* at 30 (citing Ex. 1005, 18:30–19:5). Additionally, Petitioner asserts Terrell discloses that information

received from the server, including the validation display object, is displayed on the user's mobile device, as discussed in the context of Petitioner's discussion of clause claim 1[c].

Patent Owner asserts that a “a user request to validate a ticket is not the same as a request to verify that an electronic ticket was previously purchased.” Resp. 22. According to Patent Owner, “verifying the purchase of a previously purchased electronic ticket as in claim 2 is a separate and distinct step from validating the electronic ticket.” *Id.* We agree. Where we disagree, however, is with Patent Owner's assertion that “Terrell does not disclose separately verifying the purchase of a previously purchased ticket.” Sur-reply 9. We also determine that these separate steps are disclosed in the purchase of a non-validated ticket in Terrell.

As discussed above, in the purchase of a non-validated ticket, as shown in Figure 16 and described in the related text of Terrell, the disclosed logical order of steps in Terrell is:

- (1) buyer initiates purchase of a ticket and makes payment;
- (2) buyer receives a non-validated ticket from seller;
- (3) buyer initiates request to validate the ticket (Ex. 1005, 18:27–30);
- (4) seller confirms the request is from an authorized buyer and assembles the required data for the requested validation (*id.* at 18:30–19:3);
- (5) the assembled data “are then transmitted to the requesting mobile device” (*id.* at 19:3–4); and
- (6) the application on the buyer's phone can then update the non-validated ticket to a validated ticket (*id.* at 19:4–5).

At the end of these steps in Terrell, the non-validated ticket is validated.

In step (4) above, upon receiving the request to validate in step (3), the ticket seller's server "responds by assembling the required data." *Id.* at 18:30–19:1. "[A]ssembling the required data" requires determining from whom the request was made by identifying the buyer's mobile device that sent the request, which allows the ticket seller's server to then retrieve the correct data, including date, code for the day, "valid to" time, and corresponding bar code data for the previously purchased ticket. *Id.* at 19:1–3. Once the buyer's ticket information is gathered, the seller's server sends to the buyer's mobile device the information to allow the buyer's mobile device to convert the non-validated ticket shown in Figure 16 to a validated ticket, shown in Figure 11.

Accordingly, we determine that Petitioner has shown by a preponderance of evidence that Terrell discloses the ordered steps in claim 2.

*b) Claim 3*

Claim 3, dependent from claim 2, states "transmitting the validation display object to the remote display device prior to the step of receiving the request for verification."

Petitioner asserts [c]laim 3 is obvious in view of the disclosure in Terrell and Saarinen coupled with the knowledge of a POSITA." Pet. 30. Petitioner's assertion relies on "an alternative embodiment" in Terrell. *Id.* Petitioner relies on Terrell's disclosure that "[i]n an alternative embodiment . . . the validation process is performed by the mobile device, without communication with the server." *Id.* (citing Ex. 1005, 19:6–8).

The complete cited disclosure in Terrell states:

In an alternative embodiment, normally reserved for blocks of lower value tickets, *the validation process is performed by the mobile device, without communication with the server.* In this case all tickets within the block have the same barcode and the same code of the day, but the mobile device issues a new sequence number for each ticket from the block, and this sequence number is displayed on the ticket. The application on the mobile device ensures that only a set number of tickets can be created and controls the sequence numbering of the ticket.

Ex. 1005, 19:6–13 (emphasis added) (the “page 19 disclosure”). Petitioner concludes from this disclosure that “[t]hus, Terrell contemplates delivery of the validation display object (the graphical information part of a ticket, [citing Ex. 1005, 18:20-23]) to the mobile device prior to validation.” Pet. 30 (citing Ex. 1003, ¶ 64). The cited testimony from Petitioner’s expert, Dr. Jones (Ex. 1003, ¶ 64), is a verbatim repetition of Petitioner’s argument to which we give little probative weight. *See* IPR2022-00624, Paper 12 at 5 (PTAB Feb. 10, 2023). Thus, the evidence on which we rely are the disclosures in Terrell and Saarinen.

The complete cited passage from Terrell on which Petitioner relies to support this latter conclusion states:

An example of a non-validated ticket 1601 is shown displayed on mobile device 102 in Figure 16. The graphical information part of the ticket, shown in Figure 16 is similar to that of a valid ticket but does not show the “valid to” time 1102 (as shown in Figure 11). Instead, the words ‘not validated’ are displayed. Also, as the ‘valid to’ time was not included in the ticket data the displayed graphical information also does not show a decrementing ‘valid for’ time. Furthermore, the ticket does not include a date or corresponding ‘code for the day.’

In addition, in place of the button 1109 (shown in Figure 11) the nonvalidated ticket of Figure 16 has a validation button 1602 *allowing the user of the mobile device to request, from the server*

*101, the validation of a ticket having a specified unique ticket number.*

Ex. 1005, 18:19–30 (emphasis added) (the “page 18 disclosure”).

In this argument concerning claim 3, Petitioner mingles two different embodiments from Terrell.

The page 18 disclosure from Terrell, quoted immediately above, involves a non-validated ticket that is *validated at a later time by the ticket seller’s “server 101”* based on a request from the ticket buyer.

The page 19 disclosure from Terrell, quoted earlier, involves a non-validated ticket that is “validated” at a later time by the ticket buyer’s mobile device, *without* communication with the server. In this mobile device validation “all tickets within the block have the same barcode and the same code of the day, *but the mobile device issues a new sequence number for each ticket, which is displayed on the ticket.*” Ex. 1005, 19:8–11 (emphasis added). Thus, it is clear the buyer’s mobile device, *not* the seller’s server, “*issues*” the required validation. *Id.* As further stated in Terrell, “[i]n this embodiment, the mobile device displays the time the ticket was created, the time the ticket expires, and the time remaining [until] expiry.” Ex. 1005, 19:13–15. Petitioner also asserts claim 3 is unpatentable based on the “combination of Terrell and Saarinen.” Pet. 31–32. According to Petitioner, “Saarinen discloses an embodiment in which after a ticket is purchased, the ticket provider “upgrades the ticket status and provides a valid appearance command (or valid set of media) to the mobile terminal.” *Id.* at 31 (citing Ex. 1006 ¶ 88; Figure 6).

The cited paragraph in Saarinen, paragraph 88, discloses that “the ticket service provider generates an application active ticket with pre-valid event ticket.” Ex. 1006 ¶ 88. It also states:

To start a ticket life cycle, the user of the mobile terminal requests a valid ticket media with payment, time and location (with MID<sup>[16]</sup> data) to the ticket service provider. *In response, the ticket service provider verifies payment, upgrades the ticket status and provides a valid appearance command (or valid set of media) to the mobile terminal.*

Ex. 1006 ¶ 88 (emphasis added).

Thus, in Saarinen, the ticket seller first generates an application *active ticket with pre-valid event ticket* data. *Id.* Then, *after* the ticket buyer completes the purchase the ticket seller verifies payment, upgrades the ticket status and provides a valid appearance command (or valid set of media) to the ticket buyer using the mobile terminal. In Saarinen, a valid “appearance command” (or valid set of media) ( “the validation display object”) is sent to the remote display device *after* receiving the request for verification. Claim 3 requires the validation display object to be sent the remote display device *prior to* the step of receiving the request for verification.

Patent Owner asserts that “[t]o satisfy claim 3, the validation display object must be transmitted to the remote display device prior to a request for [payment] verification from the remote display device.” Resp. 26.

Based on the arguments and disclosures in Terrell and Saarinen , Petitioner has not met its burden to establish that claim 3 is unpatentable.

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<sup>16</sup> “MID is Saarinen’s acronym for “mobile information device.” Ex. 1006 ¶ 88

There is no persuasive evidence that neither Terrell alone or in combination with Saarinen, meet the limitations in claim 3.

*c) Claim 4*

Claim 4 depends from claim 3 and states “securing the validation display object prior to transmission of the validation display object so that it is secured against being displayable on the remote display device in the absence of the condition that the previously purchased electronic ticket has been verified.”

Based on its dependency on patentable claim 3, we determine Petitioner has not met its burden to establish that claim 4 is unpatentable.

*d) Claim 5*

Claim 5 depends from claim 4 and states “the securing step is comprised of encrypting the validation display object.”

Based on its dependency on patentable claim 4, we determine Petitioner has not met its burden to establish that claim 5 is unpatentable.

*e) Claim 6*

Claim 6 depends from claim 1 and states “transmitting validation display object to the remote device prior to the device verifying the electronic ticket.”

Petitioner asserts here the same argument it made for claim 3. Pet. 34–35. For the reasons stated in our analysis of claim 3, we determine Petitioner has not met its burden to establish that claim 6 is unpatentable.

*f) Claim 7*

Claim 7 depends from claim 6 and states “securing the validation display object prior to its transmission so that it is secured against being displayable on the remote display device in the absence of the condition that

the remote display device has verified the previously purchased electronic ticket.”

Based on its dependency on patentable claim 6, we determine Petitioner has not met its burden to establish that claim 7 is unpatentable.

*g) Claim 8*

Claim 8 depends from claim 7 and states “the securing step is comprised of encrypting the validation display object.”

Based on its dependency on patentable claim 6, we determine Petitioner has not met its burden to establish that claim 7 is unpatentable.

*h) Claim 9*

Claim 9 depends from claim 1 and states “transmitting security data to the remote display device in order to cause the remote device to authenticate the validation display object.”

Petitioner asserts that Terrell discloses that communications between the server and the user’s mobile device are encrypted. Pet. 36 (citing Ex. 1005, 8:19–9:28; 17:6–23). As asserted by Petitioner, the graphical information part of the ticket is encrypted at the server and sent to the user’s mobile device. *Id.* (citing Ex. 1005, 9:6-14). If the encryption key does not match the encryption key stored on the mobile device then the ticket payload, including the graphical information part of the ticket, cannot be decrypted. *Id.* Petitioner also asserts “the security data sent by the server to the remote device is used to authenticate the encrypted graphical information, which includes the validation display object.” *Id.* (citing Ex. 1003 ¶ 75).

Additionally, Petitioner asserts that Saarinen also discloses the transmission of security data during the validation process. Pet. 36.

Saarinen discloses that an encrypted ticket can be delivered to the user's device when payment is complete. *Id.* (citing Ex. 1006 ¶ 151). According to Petitioner, before the ticket is used, Saarinen discloses that “authentication is required via a ‘key or command’ from the server to indicate that the ticket is valid.” Pet. 36.

Petitioner also provides a detailed analysis of why a person of ordinary skill would combine the disclosures of Terrell and Saarinen to meet the limitations of claim 9. Pet. 10–15.

Patent Owner characterizes Petitioner's two theories for how Terrell and Saarinen suggest claim 9 as (1) Terrell transmits encrypted ticket data to the mobile device for decryption or (2) Saarinen transmits the encrypted ticket to the user's device, which is verified by a “key or command” from the server indicating the key is valid. Resp. 30–31 (citing Ex. 1003 ¶¶ 75–76). Patent Owner asserts that “[n]either of these embodiments however shows the transmitting step ‘causes’ the authentication of the validation display object.” *Id.* at 30–31 (citing Ex. 2001 ¶¶ 83–87). According to Patent Owner, “Terrell's encryption key is not sent to the mobile device and therefore cannot be ‘transmitt[ed] security data’ that causes the authentication of the validation display object.” *Id.* at 31. We disagree.

As explained above, if the encryption key in Terrell does not match the encryption key stored on the mobile device then the ticket payload, *including the graphical information part of the ticket*, cannot be decrypted. the security data sent by the server to the remote device is used to authenticate the encrypted graphical information, which includes the validation display object.

Petitioner also asserts that in Terrell the validation display object is part of the payload, is already resident on the user's mobile device, and when a user seeks to validate a previously purchased ticket (Ex. 1005, 18:27-19:5), the security data sent by the server to the remote device is used "to authenticate (and cause display of) the encrypted graphical information, which includes the validation display object." Reply 14–15 (citing Ex. 1003 ¶ 75).

Petitioner also asserts that "Saarinen likewise discloses a 'causal' relationship in which the 'key or command' causes the display of the validation display object." *Id.* at 15.

Based on these disclosures in Terrell and Saarinen, we find that the references disclose that the encrypted security data in Terrell, which is sent to the remote display device, causes the remote device to authenticate the validation display object, as required by claim 9.

Accordingly, based on the arguments and evidence before us, Petitioner has met its burden to establish that claim 9 is unpatentable.

*i) Claims 11–13*

Claims 11–13 are the analogues to claims 4–7. For the same reasons that Petitioner has not met its burden to establish that claims 4–7 are unpatentable over the combination of Terrell and Saarinen, we find that Petitioner has not met its burden to establish that claims 11–13 are unpatentable over that combination.

*j) Claim 14*

Claim 14 depends from and further limits claim 13. Based on its dependency on patentable claim 13, we determine Petitioner has not met its burden to establish that claim 14 is unpatentable.

*k) Claim 15*

Claim 15 depends from claim 10 and states the remote display device is further configured to display the validating display object in the absence of a connection with the central system.

The entirety of Petitioner's argument in the Petition asserting that claim 15 is not patentable is "*See Claim 14.*" Pet. 41.

In its analysis of claim 14, Petitioner asserts Terrell discloses that "[i]n an alternative embodiment . . . the validation process is performed by the mobile device, without communication with the server." Pet. 39 (citing Ex. 1005, 19:6–8). The cited disclosure in Terrell states "[i]n an alternative embodiment, normally reserved for blocks of lower value tickets, the validation process is performed by the mobile device, *without* communication with the server." Ex. 1005, 19:6–8. The disclosure continues by stating:

[i]n this case all tickets within the block have the same barcode and the same code of the day, but the mobile device issues a new sequence number for each ticket from the block, and this sequence number is displayed on the ticket. The application on the mobile device ensures that only a set number of tickets can be created and controls the sequence numbering of the ticket. In this embodiment, the mobile device displays the time the ticket was created, the time the ticket expires, and the time remaining [until] expiry.

Ex. 1005, 19:8–15. Thus, in this embodiment it is clear that, without the mobile device being in communication with the server, the mobile device displays the validating display object, in the form of the time the ticket was created, the time the ticket expires, and the time remaining until expiry.

Patent Owner does not address claim 15 in its Response or its Sur-reply.

Based on the arguments and evidence before us, we determine Petitioner has met its burden to establish that claim 15 is unpatentable.

*l) Claim 16*

Claim 16 depends from claim 15 and states the transmitted validating display object is further comprised of data parameters that are configured to be used by the remote display device to perform the purchase validation.

Petitioner asserts that the “data parameters,” including the date, code for the day, and valid to time, as well as animation control parameters, such as a “time-related element” for “animated graphics” are provided to the user’s mobile device. Pet. 41. Petitioner also asserts that these “data parameters” are configured to be used by the user’s mobile device “to perform the purchase validation,” which occurs when the user shows the mobile device to a ticket taker for visual inspection. *Id.* (Citing Ex. 1005, 5:7–17; 4:10-17.

Patent Owner asserts the “purchase validation” of claim 16 refers to verifying payment of the purchase price. Resp. 35 (citing Ex. 2001 ¶91). Additionally, Petitioner asserts “[n]either Terrell nor Saarinen teach data parameters in the validating display object that are used to perform the purchase validation as claimed. *Id.* (citing Ex. 2001 ¶¶ 91–95). Patent Owner’s views assume that “purchase validation” is done only by the ticket seller at the time of sale. There is no persuasive evidence to support this construction, Patent Owner has not proposed a specific construction for this term, and we have not made a specific construction for this term. Accordingly, this term has its ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of

the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–14.

The '764 patent states that the disclosed invention “provides a mechanism whereby a venue or other facility that meters usage by means of tickets can distribute tickets electronically and use a visual aid on an electronic device to visually confirm that a person is a valid ticket holder.” Ex. 1001, 1:21–25. This visual confirmation is done by the ticket taker at the venue entrance. An objective of the disclosed invention is to avoid, or limit ticket “piracy.” *Id.* at 3:19–39. Avoiding piracy occurs both at the time of purchase, and at the venue gate. Thus, confirming that a “purchase validation” occurs when the ticket taker confirms the validating visual object. At that point they are confident it is not a counterfeit copy made illegally. Thus the “data parameters,” including the date, code for the day, and valid to time in Terrell, along with other data parameters, provide “purchase validation” that a ticket is not a counterfeit or copy, as required by claim 16.

Accordingly, based on the arguments and evidence before us, we determine Petitioner has met its burden to establish that claim 16 is unpatentable.

*m) Claim 17*

Claim 17 depends from claim 10 and states the validating display object is further configured to change based on a user of the remote display device actuating the user interface of the device in a predetermined manner.

Petitioner asserts Terrell discloses that the user can touch a “validation button” on the screen of the mobile device to validate the previously purchased ticket and display the correct validating display object. Pet. 42

(citing Ex. 1005, 18:27–30). Once the user touches the “validation button,” the graphical information on the screen of the mobile device is changed to show the date, code for the day, “valid to” time, and the corresponding barcode data. *Id.* at 42–43.

Petitioner also asserts that Saarinen discloses that the user can open the ticket application and push a “use ticket” button in order to validate the ticket for use. Pet. 43 (citing Ex. 1006 ¶¶ 163–164). According to Petitioner, by pressing the “use ticket” button, the user is “actuating the user interface of the device in a predetermined manner.” *Id.* (citing Ex. 1003 ¶ 94; Ex. 1006 ¶ 88). Petitioner states “[w]hen the computer system in Saarinen ‘verifies the appearance of the active ticket’ and ‘upgrades the ticket status,’ the validating display object changes in response to a user ‘actuating the user interface of the device in a predetermined manner.’” *Id.* (citing Ex. 1003 ¶ 94).

Patent Owner asserts the Petition fails to show that the validating display object changes based on the user’s actuation. Resp. 38 (citing Ex. 2001 ¶¶ 96-101. As correctly stated by Patent Owner, the Petition relies on Terrell’s disclosure of a user validating a ticket, as well as Saarinen’s disclosure of pressing a “use ticket” button to upgrade the status of the ticket, as suggesting changing the validating display object based on a user actuation. Pet. 42-43. According to Patent Owner, “[n]either of these examples, however, changes the validating display object.” We disagree.

As discussed above, as shown in Figure 16 of Terrell, the words “not validated” are displayed on the ticket. Ex. 1005, 18:19–26. The non-validated ticket does *not* show the “valid to” time or a decrementing “valid

for” time. *Id.* The non-validated ticket also does not include a date or corresponding “code for the day.” *Id.*

When the buyer wants to use the non-validated ticket, the buyer validates the ticket by pressing “validate” button 1602 (Figure 16). Upon receiving the request, the server responds by assembling the required data, including date, code for the day, and “valid to” time. *Id.* at 18:30–19:5. The assembled data is transmitted to the requesting mobile device, so that the application can update the pre-validation ticket shown in Figure 16, to a validated ticket, such as shown in Figures 11 and 12. *Id.* Comparing the screens of the mobile devices shown in Figures 11 and 16 confirms that the validating display object changes. The validated screen in Figure 11 contains “code for the day” as well as a timer.

Based on the arguments and evidence before us, Petitioner has met its burden to establish that claim 17 is unpatentable.

*n) Claims 18 and 19*

Claim 18 depends from claim 17 and states the predetermined manner of actuation is the user touching a predefined area of a display screen on the remote device.

Claim 19 depends from claim 18 and states the predefined area of the display screen appears as a button.

Petitioner asserts Terrell discloses the use of a “validation button” on the screen of the mobile device. Ex. 1005, 18:27–30. According to Petitioner the validation button is “a predefined area of the display device” that is touched by the user to validate a previously purchased ticket. Pet. 43 (citing Ex. 1003 ¶ 95).

Petitioner also asserts Saarinen discloses that the user can touch a predefined area of the display screen of the remote device to actuate the “use ticket” button on the screen. *Id.* at 44 (citing Ex. 1006 ¶¶ 77, 163, 165).

Patent Owner does not address specifically claims 18 or 19, but merely asserts that these claims depend from claim 17 and are patentable because Patent Owner asserts claim 17 is patentable. We have determined otherwise; claim 17 has been determined to be unpatentable.

We determine that Petitioner's arguments and evidence meet its burden to show that claims 18 and 19 also are unpatentable.

*o) Claim 22*

Claim 22 depends from claim 17 and states the predetermined manner of actuation is the detection of a predetermined location by means of a GPS detector incorporated within or attached to the remote device.

Petitioner asserts Terrell discloses the validation of a previously purchased ticket and that Saarinen discloses changing the validating display object in response to the detection of a predetermined location by a GPS detector incorporated within a mobile device. Pet. 44 (citing Ex. 1003 ¶ 98). Petitioner notes that “[w]hile Saarinen doesn’t explicitly disclose a ‘GPS detector,’ neither does the ’764 Patent.” *Id.* According to Petitioner, however, “a POSITA would understand that a ‘GPS detector’ could be a GPS location sensor in the mobile device that is capable of detecting the proximity of a user to the GPS coordinates of a venue.” Pet. 44. Petitioner states “Saarinen discloses specific examples where tickets can be validated based on the presence of the user’s mobile device at a specific location.” *Id.*

Petitioner concludes from the asserted disclosures that “[i]t would have been obvious to a POSITA to use a ‘GPS detector’ within the mobile

device to determine the ‘location’ at which to set the ticket status to ‘valid’ given the widespread inclusion of GPS units within cell phones and other mobile devices at the time of the alleged priority date of the ’764 Patent.” *Id.* at 45 (citing Ex. 1003 ¶¶ 98). Petitioner also cites to Saarinen’s claims 54 and 61, which recite dynamic changes to ticket characteristics based on “predetermined or changing geographic location”). *Id.*

Patent Owner takes a different view of the evidence. According to Patent Owner, “[t]he Petition fails to show Terrell and Saarinen actuate the user interface by both a user and a GPS detector.” Resp. 40 (citing Ex. 2001 ¶¶ 102–105). Patent Owner asserts that “the Petition only alleges that ‘Saarinen discloses changing the validating display object in response to the detection of a predetermined location by a GPS detector incorporated within a mobile device.’” *Id.* Patent Owner concludes “[t]he Petition provides no explanation for how determining a location by a GPS detector simultaneously fulfills claim 22’s requirement to also actuate the user interface by a user.” *Id.* (citing Ex. 2001 ¶¶ 102–105).

Petitioner responds by stating the GPS detection *is* the predetermined actuation. Reply 18–19. This is consistent with Saarinen’s disclosure that the “ticket characteristic dynamically changes based on a predetermined or changing geographic location.” *See* Ex. 1006, claims 54, 61.

We determine that the evidence supports Petitioner. GPS technology is a common part of cell phone technology and similar mobile devices. Saarinen discloses changing, or actuating, a ticket characteristic based on a predetermined or changing geographic location. The mobile device, which contains the ticket, also knows the geographic location of the ticket holder. We agree with Petitioner that it would have been obvious to combine the

two functions of the mobile device – storing the ticket and monitoring the ticket holder’s location – into a combined function.

Accordingly, we determine Petitioner has met its burden to establish that claim 22 is not patentable.

*p) Claim 24*

Claim 24 depends from claim 10 and states the validating display object is further configured to display in different versions of appearance where the selection of version is dependent on a pre-determined schedule.

Petitioner asserts that Terrell teaches that animated graphics can be used for the validating display object, and that a “time-related element” can be used to configure the display of the validating display object. Pet. 45 (citing Ex. 1005, claim 2; 10:26–29). Thus, Terrell teaches that the validating display object can be configured to display in different versions on a predetermined schedule. *Id.* (citing Ex. 1003 ¶ 99).

The cited disclosure in Terrell states “the application requires at [l]east one graphic element to be animated. That is, at least one graphic element must have a change in appearance, such as by movement, change in form, change in colour, change in size, etc.” Ex. 1005 10:26–29. Terrell also discloses that “in the present embodiment the graphical information includes an animated graphical element in the form of a decrementing timer and two interchanging logos that move across the top of the screen.” Ex. 1005, 10:29–11:3. Terrell’s claim 2 includes “incorporating a time-related element into said animated graphics that is maintained during said valid time interval.” *Id.* at 20:20–21.

Petitioner also relies on Saarinen, which discloses embodiments in which “[t]icket validation can also be based on unique light emitted by the

active ticket,” so that upon validation “it may emit light in a sequence” “based on a relative time duration of the luminous intensity sequences.” Pet. 45–46 (citing Ex. 1006 ¶ 22). According to Petitioner, “the time-dependent light sequences emitted by the active ticket are part of the ‘multimedia feature of the active ticket’ that is dynamic and ‘contains an algorithm to change [the] appearance’ of the validation display object ‘when some event happens (e.g. when expiration time comes, when the ticket has been used, etc.).’” *Id.* at 45–46 (citing Ex. 1006 ¶¶ 23, 25; Ex. 1003 ¶ 101).

Patent Owner asserts “[t]he Petition fails to show that the alleged validation display objects of Terrell and Saarinen vary in appearance based on a *predetermined* schedule.” Resp. 42 (citing Ex. 2001 ¶¶ 107-111). Dr. Melendez’s cited testimony merely repeats Patent Owner’s argument, and thus is entitled to little probative weight. According to Patent Owner, “[v]arying a graphic over time does not suggest the graphic depends on a schedule, and certainly does not suggest the schedule is predetermined.” We disagree.

The validation display objects in Terrell and Saarinen do not vary over time unless the remote display device is programmed or configured to vary them over some predetermined time. The objects may change every second, every minute, or at random intervals, but whatever the time is over which the objects change, the interval is predetermined by the code or program controlling the remote display device.

Accordingly, we determine that Petitioner’s arguments and evidence meet its burden to show that claim 24 is not patentable.

*q) Claim 25*

Claim 25 depends from claim 10 and states that the system of claim 10 is further configured to transmit the validating display object to the remote device in dependence on completion of a purchase of the electronic ticket.

Petitioner asserts only that we should “see claims 3 and 6.” Pet. 47.

In claim 3, we determined there is no persuasive evidence that either Terrell or Saarinen, alone or in combination, meet the limitations in claim 3. Also, there is no persuasive evidence as to why a person of ordinary skill would have combined Terrell and Saarinen as proposed by Petitioner.

In claim 6, we stated that Petitioner asserts here the same argument it made for claim 3. Pet. 34–35. For the reasons stated in our analysis of claim 3, we determine Petitioner has not met its burden to establish that claim 6 is unpatentable.

Accordingly, we reach the same determination for claim 25. Petitioner has not met its burden to establish that claim 25 is unpatentable.

*r) Claim 26*

Claim 26 depends from claim 10 and states the validation display object is configured to be unique to the specific remote device it is intended to be displayed on.

Petitioner states Terrell discloses the validation of a previously purchased ticket that has a unique ticket number. Pet. 47. Petitioner also asserts Terrell discloses encrypted communications between the server and the mobile device that use encryption key formed, in part, from “the IMEI number of the requesting mobile device.” *Id.* (citing Ex. 1005, 17:6-23). Petitioner concludes that “ticket data sent between the server and the mobile

device are unique to the specific mobile device on which the validation display object is to be displayed because Terrell’s encryption key ‘ensures that the IMEI number of the receiving mobile device matches the IMEI number of the requesting mobile device, and if not then decryption . . . is prohibited.’” *Id.* (citing Ex. 1003, ¶105).

Patent Owner asserts “[n]one of these elements [asserted by Petitioner], however, are unique to the specific remote device intended for display as claimed, rather than unique to the user or ticket purchaser or unique to the user’s or ticket purchaser’s account.” Resp. 45.

Petitioner responds that “[i]t is well known in the art that each user device has a unique IMEI number, and decryption of the validating visual object is dependent on the IMEI number matching the number of the device.” Reply 19–20 (citing Ex. 1003 ¶ 105).

In its Sur-reply, Patent Owner asserts “neither Terrell nor Saarinen suggest that an IMEI number forms part of the validation display object or to provide any rationale for displaying an IMEI number.” Sur-reply 17. Patent Owner misconstrues claim 26 and/or Petitioner’s argument. The IMEI number associated with a mobile device is unique to that device. Claim 26 does not require this number to form the validation display object. It merely requires that something, such as the unique number IMEI number, allows the remote device to be configured so that the validation display object can be unique to the specific remote device it is intended to be displayed on. The ’764 recognizes that the IMEI number is used for this specific purpose. *See* Ex. 1001, 6:1–19. Terrell uses the IMEI for this specific purpose. *See Id.* at 17:15–23.

Based on the arguments and evidence, we determine Petitioner met its burden to show that claim 26 is not patentable.

*s) Claim 27*

Claim 27 depends from claim 10 and states the data communication network is configured to have a persistent channel between the central system and the remote device through which the central system can push content.

Petitioner asserts both Terrell and Saarinen disclose communication using a data communication network. Pet. 48. Terrell discloses that the central computer system can communicate with mobile devices using short message service (SMS) messaging. *Id.* (citing Ex. 1005, 6:1–6). Petitioner asserts a “POSITA would understand that SMS systems can push content to mobile devices over a persistent communication network.” *Id.* (citing Ex. 1003 ¶ 107.

According to Petitioner, “Saarinen also discloses the use of a data communication network that content, including tickets, can be pushed to an application on mobile handsets using the ‘Wireless Access Protocol (WAP) push Java mobile information device profile (MIDP).’” Pet. 48 (citing Ex. 1006 ¶¶ 35, 48 (“Control data can be pushed to the applications”)). Petitioner also asserts that Saarinen discloses that new ticket appearances can be “pushed” to mobile devices at valid times or valid locations. *Id.* Based on this evidence, Petitioner asserts that a “POSITA would be motivated to modify Terrell using these teachings because Terrell provides little detail on its use of SMS, and a POSITA, being familiar with push technology, would look to Saarinen for these details.” *Id.* (citing Ex. 1003 ¶ 108. Petitioner asserts “[a]ll of these push protocols require a persistent

communications channel, such as a mobile communication network, that enables a ticket issuer to push control data or content to the user's mobile device.” *Id.*

Patent Owner does not address claim 27 in its Response or Sur-reply.

Based on the arguments and evidence, we determine Petitioner met its burden to show that claim 27 is not patentable.

*t) Claim 28*

Claim 28 depends from claim 27 and states the content is an advertisement that is selected from a plurality of advertisements in dependence on the type of purchased electronic ticket.

Petitioner asserts “Terrell and Saarinen disclose the elements of Claim 27, including the ability to push content to user's mobile devices.” Pet. 49. Petitioner also asserts that Saarinen teaches that content, including advertisements, can be sent to users. *Id.* (citing Ex. 1006 ¶¶ 47, 163). According to Petitioner, Saarinen also discloses that other “campaign tickets” that include coupons with “special offer[s] described by text, image and audio, etc.” can be sent to ticket holders. Pet. 49 (citing Ex. 1006 ¶ 43).

Patent Owner asserts that Saarinen does not disclose or suggest a plurality of advertisements or selecting an advertisement from the plurality based on the type of purchased ticket. Resp. 47 (citing Ex. 2001 ¶¶ 117–119).

Petitioner points out that Saarinen discloses expressly that users “may receive information text about the show and advertisement about one or more articles of merchandise available at a given price and/or location.” Reply 21 (citing Ex. 1006 ¶ 166). And, Patent Owner reiterates that

Saarinen discloses advertising based on the location of the goods advertised, not the type of ticket purchased.

Based on the evidence, Patent Owner's understanding of Saarinen's disclosure is too narrow. Saarinen discloses the location determines merchandise sold, but it also determines the type of purchased ticket. A movie theater location obviously sells movie tickets and would base its advertising on customers buying movie tickets, that is, on the type of purchased electronic ticket. Similarly, a sports arena would sell tickets based on location but also on the type of purchased electronic ticket, that is whether the ticket was for a basketball game, a hockey game, or a musical event.

Based on the arguments and evidence, we determine Petitioner met its burden to show that claim 28 is not patentable.

*E. Ground 2 – Claims 20, 21, 23 “  
in View of Terrell, Saarinen, and Arimori*

Petitioner asserts claims 20, 21, and 23 are unpatentable under § 103(a) as obvious in view of Terrell, Saarinen, and Arimori. Pet. 50–55. We first summarize the disclosure in Arimori.

*1. Arimori (Ex. 1007)*

We make the following findings regarding Arimori.

Arimori is titled “Electronic Ticket System Using Mobile Terminal.” Ex. 1007, code (54).

Arimori discloses a system to provide an electronic ticket that “can be acquired anywhere at any time and can be used with [a] manned ticket inspection and ticket checking.” Ex. 1007, Abstr. In Arimori, a mobile terminal, such as a mobile phone, can be used to purchase passenger or

commuter tickets electronically and enables the mobile device itself to serve as a ticket. *Id.* ¶¶ 5, 7, 8; Ex. 1003 ¶ 33. The mobile device can then be used to access an event by sending information from the mobile device to an automatic ticket inspection device (Ex. 1007 ¶ 14) or a manned ticket gate with a mobile ticket checker device (*id.* ¶ 15) to confirm the validity of the ticket. Ex. 1003 ¶ 33.

Identity verification is carried out in the mobile terminal. Ex. 1007 ¶ 13. Specifically, the mobile terminal has a voice recognition function, and therefore the individual is identified by voice recognition through cross-referencing with preregistered voiceprint data. *Id.* Alternatively, a camera is attached to the mobile terminal and retina recognition is carried out through cross-referencing with preregistered retinal image data. *Id.* Another alternative is that the individual can be identified through manual or voice input of a user ID and password. *Id.*

## 2. *Analysis of Claims 20, 21, and 23*

Claims 20, 21, and 23 are each a “system” claim, and each claim depends from claim 17, which, in turn, depends from claim 10.

Claim 20 further limits claim 17 by reciting that “the predetermined manner of actuation is the input of a code into the remote device by the user.” Ex. 1001, 16:35–37. Claim 21 further limits claim 17 by reciting that “the predetermined manner of actuation is the input of a sound into the remote device.” *Id.* at 16:38–40. Claim 23 further limits claim 17 by reciting that “the predetermined manner of actuation is input of a predetermined visual image.” *Id.* at 16:45–47.

Petitioner provides an element-by-element analysis of where each element in the challenged claims is disclosed in, or would have been obvious

in view of, the cited references. Pet. 53–55. Petitioner also provides a reason why it would have been obvious to modify and combine the references with a reasonable expectation of success, as proposed by Petitioner. *Id.* Petitioner also relies on the testimony of Mr. Jones (Ex. 1003) for evidentiary support.

Patent Owner asserts that its arguments regarding claims 10 and 17 are equally applicable to the claims of Ground 2. Resp. 48. We have determined, however, that Patent Owner’s arguments were not persuasive, and that claims 10 and 17 are not patentable. Patent Owner also asserts that Arimori discloses the use of voice recognition, retinal recognition, and user ID and password for identifying a user of the mobile terminal for electronic payment (purchasing a ticket), not for validating a ticket. To the extent a person of ordinary skill wanted more security to permit ticket holders to an event, Arimori clearly discloses a viable option.

Moreover, the Supreme Court informs us that when a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. *KSR*, 550 U.S. 398 at 417. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. *Id.* For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Id.*

Accordingly, based on the arguments and our findings of fact about the evidence in the record before us, we determine Petitioner has met its burden in establishing that claims 20, 21, and 23 are not patentable.

### III. CONCLUSION<sup>17</sup>

Petitioner has established that claims 1, 2, 9, 10, 15–21, 23, and 26–28 are not patentable.

Petitioner has *not* established that 3–8, 11–14, 22, 24, and 25 are unpatentable.

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<sup>17</sup> Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

#### IV. SUMMARY TABLE

| <b>Claim(s)</b>            | <b>35<br/>U.S.C. §</b> | <b>Reference(s)/Basis</b>         | <b>Claim(s)<br/>Shown<br/>Unpatentable</b> | <b>Claim(s)<br/>Not shown<br/>Unpatentable</b> |
|----------------------------|------------------------|-----------------------------------|--------------------------------------------|------------------------------------------------|
| 1–19, 22,<br>and 24–<br>28 | 103                    | Terrell, Saarinen                 | 1, 2, 9, 10,<br>15–19, 26–28               | 3–8, 11–14,<br>22, 24, 25                      |
| 20, 21,<br>23              | 103                    | Terrell, Saarinen,<br>and Arimori | 20, 21, 23                                 |                                                |
| <b>Overall<br/>Outcome</b> |                        |                                   | 1, 2, 9, 10,<br>15–21, 23,<br>26–28        | 3–8, 11–14,<br>22, 24, 25                      |

#### V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has established that claims 1, 2, 9, 10, 15–21, 23, and 26–28 are unpatentable; and

FURTHER ORDERED that Petitioner has not established that claims 3–8, 11–14, 22, 24, and 25 are unpatentable over Terrell and Saarinen.

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