

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TESLA, INC.,  
Petitioner,

v.

CHARGE FUSION TECHNOLOGIES, LLC,  
Patent Owner.

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IPR2023-00062  
Patent 9,853,488 B2

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Before MEREDITH C. PETRAVICK, JEREMY M. PLENZLER, and  
CARL M. DEFRANCO, *Administrative Patent Judges*.

PLENZLER, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining Challenged Claims Unpatentable  
*35 U.S.C. § 318(a)*

I. INTRODUCTION

*A. Background and Summary*

Tesla, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–15 of U.S. Patent No. 9,853,488 B2 (Ex. 1001, “the ’488 patent”). Paper 2 (“Pet.”). Charge Fusion Technologies, LLC (“Patent

Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Upon request of the parties and pursuant to our authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response (Paper 11; “Pet. Reply”).

We instituted an *inter partes* review of claims 1–15 of the ’488 patent on all grounds of unpatentability alleged in the Petition. Paper 13 (“Institution Decision” or “Inst. Dec.”).

After institution of trial, Patent Owner filed a Response (Paper 19, “PO Resp.”), Petitioner filed a Reply (Paper 22, “Pet. Reply”), and Patent Owner filed a Sur-Reply (Paper 23, “PO Sur-Reply”).

An oral hearing was held on February 13, 2024, and the record includes a transcript of the hearing. Paper 33 (“Transcript” or “Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–15 of the ’488 patent are unpatentable.

#### *B. Related Matters*

The parties indicate that the ’488 patent is involved in *Charge Fusion Technologies, LLC v. Tesla, Inc.*, No. 1:22-cv-00488-LY (W.D. Tex. 2021) (“Texas Litigation”). Pet. 75; Paper 4, 1. The ’488 patent was also challenged in IPR2022-00519.

IPR2022-01217 (challenging U.S. Patent No. 10,998,753 B2 (“the ’753 patent”)) and IPR2023-00063 (challenging U.S. Pat. No. 10,819,135 B2 (“the ’135 patent”)) are related to this proceeding. The ’753 patent is a continuation filing of the ’135 patent, which is continuation of the ’488 patent. A final written decision has been entered in IPR2022-01217. *See* IPR2022-01217, Paper 29. Trial has been instituted for IPR2023-00063, which is pending.

### *C. The '488 Patent*

The '488 patent relates to “[s]ystems and methods for charging electric vehicles and for quantitative and qualitative load balancing of electrical demand.” Ex. 1001, Abstract. The '488 patent explains that “the owner of an electrical automobile must often times adhere to a schedule of charging that renders the automobile unusable for protracted stretches of time.” *Id.* at 1:24–27. The '488 patent describes reducing cost and providing more efficient charging based on scheduled charging. *See, e.g.*, 6:39–53, 8:13–25. The scheduled charging is determined by the Electric Charging System. *Id.* at 2:64–3:8, 19:50–51. The schedule may be based on user preferences, such as charging cost and desired charging level, and provider attributes, such as market rates for electricity. *See id.* at 9:57–10:50. Based on a known timeframe during which the vehicle is available for charging, the user preferences, and provider attributes, the charging schedule is determined to optimize charging (e.g., reduce cost based on market rates that vary throughout the day). *Id.* at 19:50–63.

### *D. Illustrative Claim*

1. An electrical charging system, comprising:
  - a vehicle sensor;
  - a communication device;
  - a processor in communication with the vehicle sensor and the communication device; and
  - a memory in communication with the processor, the memory storing instructions that when executed by the processor cause the processor to:
    - (a) receive, from the vehicle sensor, information indicative of a presence of a vehicle in a parking space;
    - (b) receive, from the communication device, information indicative of one or more charging preferences

corresponding to a desired charging of the vehicle, wherein the one or more charging preferences are defined by an operator of the vehicle;

(c) determine a first value of a dynamic attribute of an electric charge provider;

(d) determine, based at least on the one or more charging preferences and the first value of the dynamic attribute, a charging schedule for the vehicle;

(e) initiate a charging of the vehicle in accordance with the charging schedule;

(f) retrieve a second value of the at least one dynamic attribute; and

(g) repeat (d) and (e), utilizing the retrieved second value of the dynamic attribute as the first value of the dynamic attribute.

Ex. 1001, 29:4–31.

*E. Evidence and Asserted Ground*

Petitioner asserts that claims 1–15 would have been unpatentable on the following ground:

<b>Claim(s) Challenged</b>	<b>35 U.S.C. §<sup>1</sup></b>	<b>Reference(s)/Basis</b>
1–3, 5–8, 10, 13–15	103	Ferro <sup>2</sup> , Lowenthal <sup>3</sup>
9	103	Ferro, Lowenthal, Evans <sup>4</sup>
4, 11, 12	103	Ferro, Lowenthal, Boll <sup>5</sup>

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<sup>1</sup> The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application from which the ’488 patent issued was filed before this date, the pre-AIA version of § 103 applies.

<sup>2</sup> US Patent Pub 2009/0313034 A1, published Dec. 17, 2009 (Ex. 1006).

<sup>3</sup> US Patent 7,956,570 B2, issued June 7, 2011 (Ex. 1007).

<sup>4</sup> US Patent Pub. 2009/0144622 A1, Jan. 29, 2009 (Ex. 1009).

<sup>5</sup> US Patent 5,623,194, issued Apr. 22, 1997 (Ex. 1008).

Petitioner submits a declaration from Arthur MacCarley, Ph.D., PE. Ex. 1002 (“MacCarley Declaration”). Patent Owner submits a declaration from Steven Goldberg, Ph.D. (Ex. 2020, “Goldberg Declaration”).

## II. ANALYSIS

### A. *Legal Standards*

Petitioner bears the burden of persuasion to prove unpatentability, by a preponderance of the evidence, of the claims challenged in the Petition. 35 U.S.C. § 316(e). This burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Petitioner’s challenges are based on obviousness. A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious at the time of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved based on 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 in the record, objective evidence of non-obviousness. *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966).

### B. *Level of Ordinary Skill in the Art*

The level of ordinary 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). The person of ordinary skill in the art is a

hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *Id.*

Petitioner’s declarant, Dr. MacCarley, testifies that one skilled in the art during the relevant timeframe “would have had at least a bachelor’s degree in electrical engineering, mechanical engineering, or physics (or an equivalent field) and at least two years of work experience involving automotive systems, including vehicle information systems, vehicle sensors, and vehicle controllers,” but “[m]ore education can supplement practical experience and vice versa.” Pet. 10 (citing Ex. 1002 ¶ 26). Patent Owner does not contest Petitioner’s articulation of the level of skill in the art. *See* PO Resp. 14 (“Because [the proposed level of ordinary skill] does not affect the ultimate analysis, Patent Owner takes no position with respect to Petitioner’s proposed level of ordinary skill in the art.”).

We analyze the asserted prior art with respect to the level of skill set forth by Petitioner because it is consistent with the prior art.

### *C. Claim Construction*

In an *inter partes* review, we construe a patent 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, the words of a claim generally are given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the

entire patent including the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

According to Petitioner, “[n]o terms here require construction and so all claim terms should be given their plain and ordinary meaning.” Pet. 10–11. Similarly, “Patent Owner submits that the Board need not expressly construe any claim term.” PO Resp. 18.

We do not need to construe any terms expressly to reach our decision. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those 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))).

#### *D. Antedating*

Patent Owner contends that “Ferro postdates the claimed invention and is not prior art.” PO Resp. 20. A patent owner may antedate a reference by “proving earlier conception and reasonable diligence in reducing to practice.” *Perfect Surgical Techniques, Inc. v. Olympus Am., Inc.*, 841 F.3d 1004, 1007 (Fed. Cir. 2016); *see* 37 C.F.R. § 1.131(b).

##### *1. Conception*

According to Patent Owner, “[t]he declarations of Jeffrey Ambroziak (Ex. 2025) (“Ambroziak Declaration”) and Carson Fincham (Ex. 2026) (“Fincham Declaration”), the co-inventors of the ’488 Patent, establish that the subject matter of the ’488 Patent was conceived by Jeffrey Ambroziak no later than April 3, 2008.” PO Resp. 20. Patent Owner relies on its April 3, 2008 Draft Provisional Application (Ex. 2023, “the April Draft Provisional”) to establish conception. Specifically, Patent Owner contends that “the Ambroziak Declaration includes detailed charts for each of the

Challenged Claims that show where each element of the Challenged Claims is disclosed in the April 3, 2008 Draft Provisional.” PO Resp. 24–25 (citing Ex. 2025, 5–37).

Petitioner does not appear to dispute whether the claim charts included in the Ambrosiak Declaration support Patent Owner’s contentions regarding conception. *See* Pet. Reply 1–3. Rather, Petitioner contends that the “only explanation as to why the April Draft shows conception is in an inventor declaration that is not explained in the [Patent Owner Response]” and, therefore, “should[be] disregard[ed].” *Id.* at 1.

Although Patent Owner responds that “the Patent Owner Response does not incorporate by reference any of the declarations or exhibits relied upon as Petitioner claims” (PO Sur-Reply 1), it is clear that no explanation of the claim charts from the Ambrosiak Declaration is included in the Patent Owner Response. Patent Owner provides the relevant explanation with respect to claim 1 of the ’488 patent in its Sur-Reply. *See id.* at 3–6.

Even if we consider these claim charts and the corresponding explanation from Patent Owner’s Sur-Reply, and accept that they provide adequate evidence to support Patent Owner’s contentions regarding conception, Patent Owner’s antedating contentions still fail because of the failure to establish diligence as explained below.

## 2. *Reduction to Practice*

“The diligence requirement implements the principle that, to antedate a reference,” an inventor “must not only have conceived the invention before the reference date, but must have reasonably continued activity to reduce the invention to practice.” *ATI Techs. ULC v. Iancu*, 920 F.3d 1362, 1369 (Fed. Cir. 2019). “A patent owner need not prove the inventor continuously exercised reasonable diligence throughout the critical period; it must show



there was reasonably continuous diligence.” *Perfect Surgical*, 841 F.3d at 1009 (emphasis by the court). An inventor’s testimony does not alone suffice to prove diligence. *Id.* at 1007. A “variety of activities” may corroborate an inventor’s testimony about diligence, and any corroborating evidence is considered “as a whole.” *Id.* at 1007–08.

Patent Owner relies on constructive reduction to practice. PO Resp. 25–26. Patent Owner needs to show diligence from June 15, 2008, before the June 16, 2008 filing of Ferro, to the July 11, 2008 filing date for its constructive reduction to practice.

Patent Owner notes that “Ferro was filed on June 16, 2008—less than one month before the ’646 Application’s July 11, 2008 file date to which the Challenged Claims of the ’488 Patent claim priority.”<sup>6</sup> *Id.* at 19. Patent Owner contends that it “has shown ‘reasonable continuous diligence’ in pursuing patent protection from the conception date of April 3, 2008 to the July 11, 2008 file date of the ’646 Application.” *Id.* at 25.

Patent Owner notes:

In his sworn declaration, Jeffrey Ambroziak testified that when he received Mr. Fincham’s edits to the draft provisional application on April 3, 2008, Mr. Ambroziak “reviewed Mr. Fincham’s comments over the immediately ensuing weekend,” and on “[t]he following workday, Monday April 7, 2008, [Mr. Ambroziak] instructed Mr. Fincham in his capacity as a registered patent attorney to proceed to file the ’646 Application.”

PO Resp. 25 (citing Ex. 2025 ¶¶ 12–13). Patent Owner further explains that “[a]fter he [‘]received the finalized documents for filing by Express Mail with return receipt postcard from Mr. Fincham,’ Mr. Ambroziak [‘]filed the

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<sup>6</sup> The ’646 Application refers to U.S. Provisional Application Serial Number 61/134,646.

'646 Application by mail on July 11, 2008.” *Id.* (citing Ex. 2025 ¶ 15; Ex. 2026 ¶¶ 12–13).

Petitioner responds that “[Patent Owner] has shown no diligence in between the filing date of Ferro and the '646 Provisional.” Pet. Reply 3. Petitioner contends that “[Patent Owner] argues that the invention in the '488 patent was conceived on April 3, 2008 and constructively reduced to practice on July 11, 2008,” but “[t]he only diligence [Patent Owner] identifies in that range is ‘pursuing patent protection from the conception date of April 3, 2008 to . . . July 11, 2008.’” *Id.* at 4 (citing PO Resp. 25–26). Petitioner notes that Patent Owner’s “only description of this pursuit is that the inventors took ‘the necessary steps to finalize the '646 Application documents for filing,’” but this “fails to specify when these ‘necessary steps’ occurred or what they are.” *Id.* at 4–5 (citing PO Resp. 26; Ex. 2026 ¶ 12; Ex. 2025 ¶ 15). Petitioner contends that “even if [Patent Owner]’s uncorroborated statements were sufficient to establish diligence, at best, they would only show that the diligence occurred on July 11, 2008.” *Id.* at 5.

Petitioner is correct. We know nothing about the activities that occurred from June 15, 2008 to July 11, 2008, other than the application was filed on July 11, 2008. Patent Owner does not even allege, let alone provide corroborating evidence, that any work occurred on the '646 Application between June 15, 2008 and July 11, 2008, other than the filing of the application. Based on the record before us, it is possible that *nothing* occurred from June 15, 2008 to July 11, 2008, other than the filing of the provisional application on July 11, 2008. For at least these reasons, Patent Owner’s diligence contentions fail.

Moreover, as Petitioner notes, “the inventor declarations [from Mr. Ambroziak and Mr. Fincham] are inconsistent and vague as to what

occurred during the application preparation.” Pet. Reply 5. As Petitioner accurately explains:

Inventor Ambroziak testified that he received a copy of draft provisional from Inventor Fincham on April 3, 2008 and that he instructed Mr. Fincham to file the application on April 7, 2008. EX2025 ¶¶11, 13. But, Mr. Ambroziak also testified that he filed the application himself over three months later on July 11, 2008. *Id.* ¶15. Mr. Fincham’s testimony is similar. EX2026 ¶¶11–13.

*Id.* And Petitioner is correct that “[t]he inventors are also vague as to when those final documents were provided from Mr. Fincham to Mr. Ambroziak,” as “[n]either inventor states who was doing what and when after April 7, 2008 when Mr. Fincham was supposed to file and before July 11, 2008 when Mr. Ambroziak actually filed.” *Id.* at 5–6 (citing Ex. 2025 ¶ 15; Ex. 2026 ¶ 13).

For at least the reasons set forth above, Patent Owner has failed to antedate Ferro.

### *E. Petitioner’s Challenge*

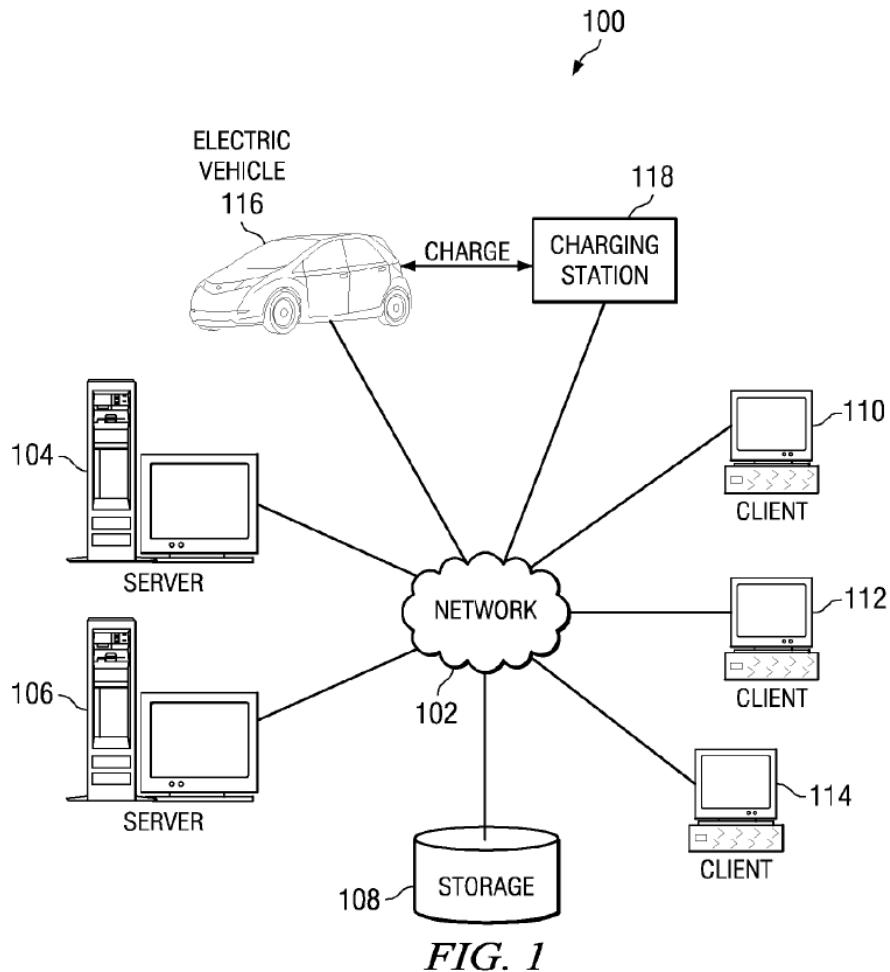
Petitioner asserts that claims 1–15 are unpatentable under 35 U.S.C. § 103 as obvious over various combinations of Ferro, Lowenthal, Evans, and Boll. Pet. 11–63. Patent Owner’s contentions focus on Ferro and Lowenthal. PO Resp. 27–67.

#### *1. Ferro*

Ferro “is related generally to an improved data processing system, and in particular, to a method and apparatus for managing electric vehicle charging transactions.” Ex. 1006 ¶2. “More particularly, [Ferro] is directed to . . . generating dynamic energy transaction plans for controlling charging an electric vehicle, de-charging the electric vehicle, and/or storing of electric

power in an electric vehicle in real-time during an electric vehicle charging transaction.” *Id.*

Figures 1 and 2 of Ferro, reproduced below, illustrate “exemplary diagrams of data processing environments . . . in which illustrative embodiments may be implemented.” Ex. 1006 ¶ 31.



“F[igure] 1 is a block diagram of a network of data processing systems in which illustrative embodiments may be implemented.” *Id.* ¶ 13.

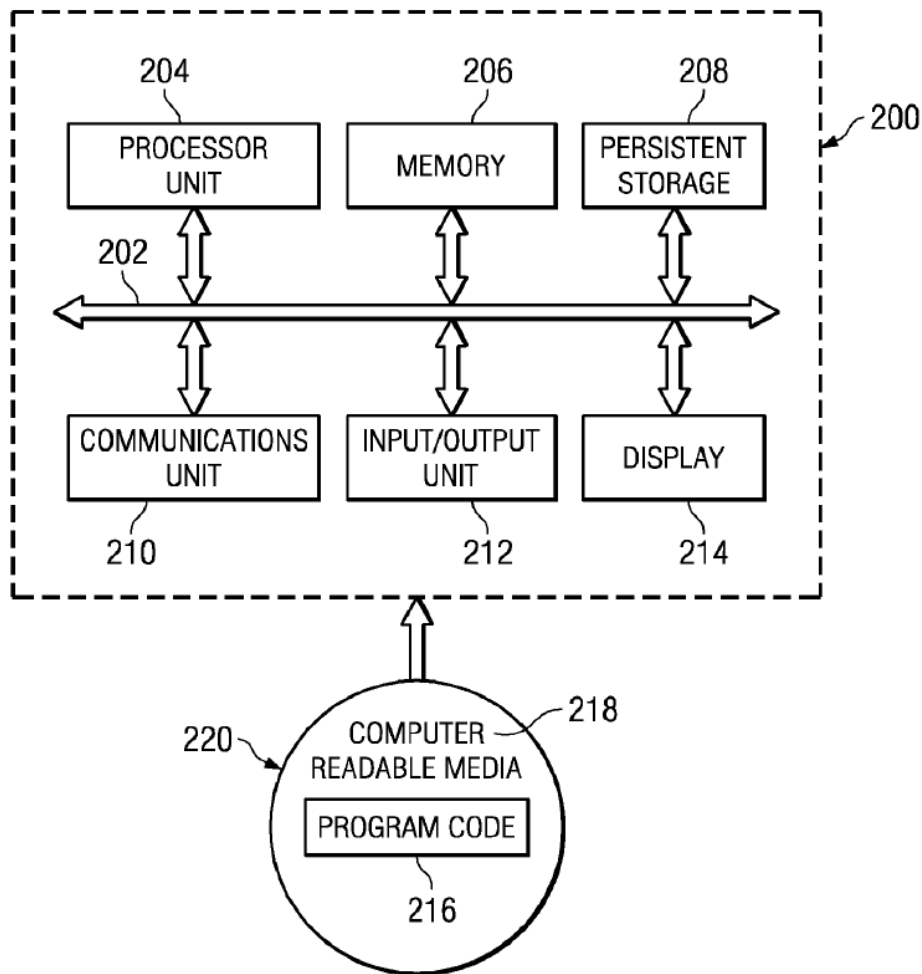


FIG. 2

“F[igure] 2 is a block diagram of a data processing system in which illustrative embodiments may be implemented.” *Id.* ¶ 14.

As seen in Figure 1, “[n]etwork data processing system 100 is a network of computers . . . contain[ing] network 102, which is the medium used to provide communications links between various devices and computers connected together within network data processing system 100.” Ex. 1006 ¶ 32. Figure 1 provides an example where servers 104, 106 and clients 110, 112, 114 connect to network 102 along with storage unit 108. *Id.* ¶ 33. “Electric vehicle 116 and charging station 118 are optionally connected to network 102.” *Id.* ¶ 37.

In Figure 2, “[d]ata processing system 200 is an example of a computer, such as server 104 or client 110 in F[igure] 1, in which computer-usable program code or instructions implementing the processes may be located for the illustrative embodiments,” but “may also be implemented as a computing device on-board an electric vehicle, such as electric vehicle 116 in F[igure] 1.” Ex. 1006 ¶ 39. “[D]ata processing system 200 includes communications fabric 202, which provides communications between processor unit 204, memory 206, persistent storage 208, communications unit 210, input/output (I/O) unit 212, and display 214.” *Id.* ¶ 40. “Processor unit 204 serves to execute instructions for software that may be loaded into memory 206.” *Id.*

Ferro explains that “[e]lectric vehicle charging transactions can be divided into the pre-charge phase, the charge phase, and the post-charge phase.” Ex. 1006 ¶ 51. “During the pre-charge phase of decision enablement, a charging plan is generated and all parties are presented with the conditions governing the charging transaction.” *Id.* Ferro’s “dynamic energy transaction planner generates a dynamic energy transaction plan based on charging transaction information.” *Id.* ¶ 66. In Ferro,

[the] dynamic energy transaction plan comprises an identification of the electric vehicle, an identification of a principal in a set of principals to pay for the charging transaction, an identification of at least one utility associated with the charging transaction, an owner of the charging station, and a first set of terms of the charging transaction.

*Id.* Ferro explains that “[t]he dynamic energy transaction planner receives updated charging transaction information during execution of the charging transaction and updates the dynamic energy transaction plan based on the updated charging transaction information to form an updated dynamic

energy transaction plan.” *Id.* ¶ 67. “The updated dynamic energy transaction plan comprises a second set of terms” and “[a] second portion of the charging transaction is implemented in accordance with the second set of terms in the updated dynamic energy transaction plan.” *Id.*

Ferro describes the first and second sets of terms as being first and second sets of charging transaction time driven sequences. Ex. 1006 ¶ 70. Ferro explains that “[c]harging transaction time driven event sequences specif[y] charging, discharging, or storing of power at a given rate during a particular time interval,” which “may be denoted by a start time and a stop time or by a length of time to continue charging, discharging, or storing.” *Id.*

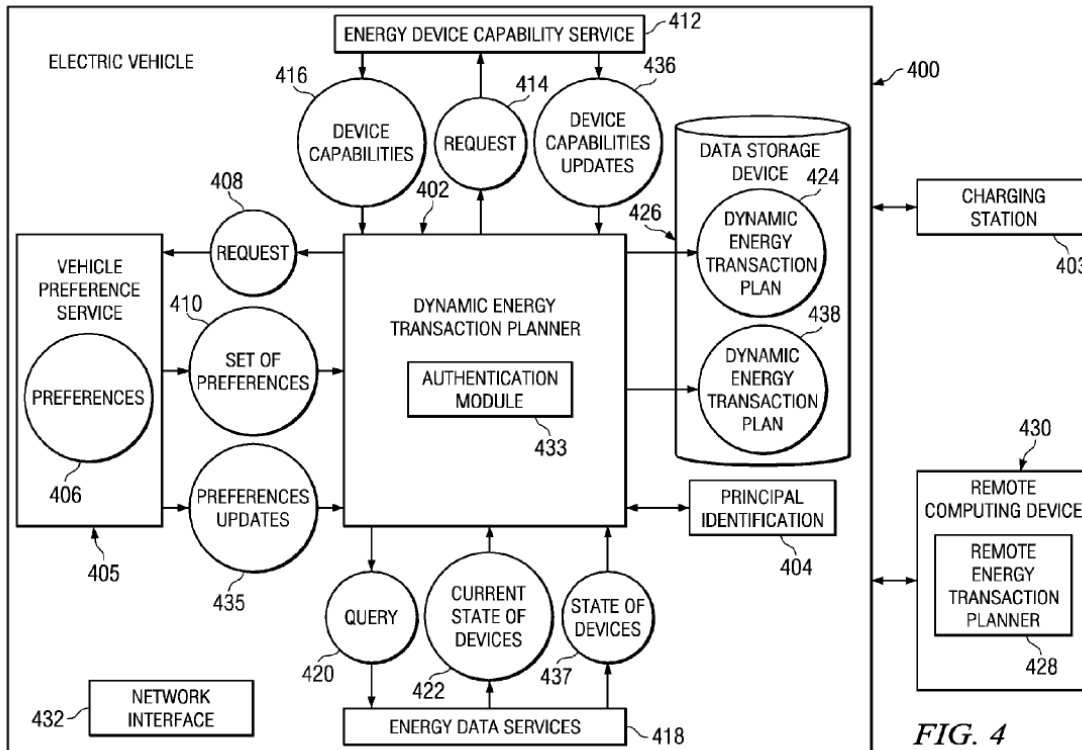
In Ferro’s system, “[a] principal may create preferences for managing parameters of the electric vehicle’s charging transactions.” Ex. 1006 ¶ 93. The “[d]ynamic energy transaction plan comprises a set of terms for governing all aspects of the charging transaction based on the set of preferences.” *Id.* ¶ 97. “[D]uring the charging transaction, the operator may update preferences.” *Id.* ¶ 98. Ferro provides an example where the operator “indicate[s] that instead of leaving the charging station at 5:00 p.m., the operator will not be leaving until 7:30 p.m.” *Id.* In this example:

As a result, dynamic energy transaction planner 402 may alter dynamic energy transaction plan 424 to permit electric vehicle 400 to discharge electric power in the afternoon when electric power usage is higher and then charge electric vehicle 400 beginning at 6:00 p.m., when electricity rates are lower so that electric vehicle will have sufficient charge to return to the operators home when the operator is ready to leave at 7:30 p.m.

*Id.* That is, the dynamic energy transaction planner determines when to charge or discharge the electric vehicle based on an available time window

specified by the operator and the varying cost of electricity during that time window.

Ferro explains that its “dynamic energy transaction planner [may be] on-board an electric vehicle [a]s shown in accordance with an illustrative embodiment” in Figure 4, reproduced below. Ex. 1006 ¶ 76.



“F[igure] 4 is a block diagram of a dynamic energy transaction planner on-board an electric vehicle in accordance with an illustrative embodiment.” *Id.* ¶ 16. “Dynamic energy transaction planner 402 is a software component that creates a transaction plan for controlling a charging transaction for electric vehicle 400.” *Id.* ¶ 76; *see also id.* ¶¶ 104–105. According to Ferro, “[i]n [one] example, dynamic energy transaction planner 402 is located on electric vehicle 400,” but “in another embodiment, remote dynamic energy transaction planner 428 is located on remote computing device 430 that is not bolted or coupled to electric vehicle 400.” *Id.* ¶ 105. When “[r]emote



dynamic energy transaction planner 428 [is utilized, it] transmits dynamic energy transaction plan 424 to an energy transaction approval service, an energy transaction execution engine, or a data storage device, such as data storage device 426.” *Id.*

## 2. *Lowenthal*

Lowenthal “relates to the field of systems and methods for recharging electric Vehicles and to network-controlled electrical outlets used in Such systems.” Ex. 1007, 1:14–16. According to Lowenthal, “[t]here is a need for a communication network which facilitates finding the recharging facility, controlling the facility, and paying for the electricity consumed.” *Id.* at 1:33–36.

Lowenthal describes its system as including “electrical outlets, called Smartlets™” and explains that “[s]ome system[s] may be enhanced with a device for detecting the presence of a vehicle occupying the parking space in front of the Smartlet™ . . . includ[ing] sonar, TV camera and induction coil devices.” Ex. 1007, 3:37–38, 59–62. Lowenthal explains that the “vehicle detector . . . may be used to determine whether a parking space is available.” *Id.* at 4:62–64.

## 3. *Claim 1*<sup>7</sup>

Claim 1 requires “a vehicle sensor,” “a communication device,” “a processor in communication with the vehicle sensor and the communication device” and “a memory in communication with the processor.” Ex. 1001, 29:5–11.

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<sup>7</sup> For ease of reference and clarity, we use the same limitation designations as used by Petitioner and Patent Owner.

Although Patent Owner’s briefing appears to dispute a multitude of issues, the scope of the actual dispute is small. We begin by summarizing the issues not in dispute.

Petitioner contends that “Lowenthal’s vehicle detector 115 teaches the recited ‘vehicle sensor.’” Pet. 13. Patent Owner does not dispute that Lowenthal teaches “a vehicle sensor.” *See* PO Resp. 27.

Petitioner contends that “in F[igure] 1 [of Ferro], . . . server 104 . . . disclose[s] a communication device, because [it] is a device in communication with network 102” (Pet. 19) and “[a]s described by Ferro, including as shown in FIG. 2, . . . th[is] device[] include[s] a communications unit 210” (*id.* at 20). Patent Owner does not dispute that Ferro’s communications unit 210 corresponds to the communication device recited in the claim. *See* PO Resp. 28–32.

Petitioner contends that “Ferro’s energy preference server 104 contains a processor unit 204, disclosing the claimed *processor*.” Pet. 23. Patent Owner does not dispute that Ferro’s energy preference server includes a processor, such as processing unit 210 in the example cited by Petitioner. *See* PO Resp. 33–41.

Petitioner points to Ferro’s memory 206 and persistent storage 208 for the recited “memory.” Pet. 26. Patent Owner does not dispute that Ferro’s memory 206 and persistent storage 208 are “memory” as recited in the claim. *See* PO Resp. 41–42.

The dispute before us relates to the recited instructions. And even that dispute is narrow. As explained below, whether Ferro teaches the recited instructions is not actually in dispute. Rather, the heart of the dispute concerns whether Ferro teaches a memory and processor at a single location

that stores and carries out those instructions, and whether one skilled in the art would have included a vehicle sensor taught by Lowenthal in Ferro.

The recited instructions include: “receiv[ing], from the communication device, information indicative of one or more charging preferences . . . defined by an operator of the vehicle” (limitation 1[f]), “determin[ing] a first value of a dynamic attribute of an electric charge provider” (limitation 1[g]), “determin[ing], based at least on the one or more charging preferences and the first value of the dynamic attribute, a charging schedule for the vehicle” (limitation 1[h]), “initiat[ing] a charging of the vehicle in accordance with the charging schedule” (limitation 1[i]), and “retriev[ing] a second value of the at least one dynamic attribute” (limitation 1[i]) and repeating the charging schedule determination and charging “utilizing the retrieved second value of the dynamic attribute as the first value of the dynamic attribute” (limitation 1[j]).<sup>8</sup>

Simply stated, the instructions determine a charging schedule based on charging preferences from an operator and a dynamic attribute of an electric charge provider, and initiate vehicle charging based on that schedule. The dispute with respect to Ferro’s teachings noted above centers on Ferro’s dynamic energy transaction planner, which Petitioner cites as corresponding to the recited charging schedule. *See* Pet. 33–35. And, more specifically, the dispute focuses on where that dynamic energy transaction planner is located in Ferro.

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<sup>8</sup> The claim additionally recites “receiv[ing], from the vehicle sensor, information indicative of a presence of a vehicle in a parking space” (Ex. 1001, 29:12–13), but that information is not expressly used in the claim.

a) *Dynamic Energy Transaction Planner as Charging Schedule*

Petitioner contends that “Ferro discloses ‘[d]ynamic energy transaction planner 310 is an application that creates a transaction plan for governing electric vehicle charging transactions based on preferences of one or more principals.’” Pet. 34 (citing Ex. 1006 ¶ 59). Petitioner contends that “Ferro’s energy preference service ‘is a software component that generates, stores, and retrieves preference information associated with an electric vehicle and the preference information associated with the parties to the transaction.’” Pet. 28 (Ex. 1006 ¶ 54).

Petitioner contends that Ferro teaches the charging preferences being defined by an operator because “Ferro states that its ‘preferences may be pre-generated by one or more of the parties to the transaction,’ and that the parties to a charging transaction ‘may include, without limitation, the owner of the electric vehicle to be charged, the operator of the electric vehicle . . . .’” Pet. 30 (citing Ex. 1006 ¶¶ 52, 54).

Petitioner further contends that “with reference to F[igure] 4, ‘[d]ynamic energy transaction planner 402 is a software component that creates a transaction plan for controlling a charging transaction for electric vehicle 400 coupled to charging station 403, such as dynamic energy transaction planner 310 in F[igure] 3.’” *Id.* (citing Ex. 1006 ¶ 105). Petitioner contends that Ferro’s transaction plan includes a charging schedule. Pet. 33–35. Petitioner additionally contends that the “[transaction] plan is based in part on ‘energy data services,’” and “Ferro also explains that the ‘[e]nergy data services 418 may also include information relevant to the energy transaction . . . such as, without limitation

. . . charging station prices, charging station locations, or any other relevant third party information.” Pet. 34 (citing ¶¶ 101, 104).

Petitioner contends that “Ferro discloses one or more dynamic attributes of an electric charge provider—including many of the same dynamic attributes considered by the ’488 patent.” Pet. 31–32 (citing Ex. 1002 ¶ 81). Petitioner includes a footnote explaining that “[d]ynamic attributes’ are not defined in the ’488 patent” but notes that “during the prosecution history of the ’488 patent, the applicant explained the term dynamic attribute as ‘descriptive of the numerous instances in which we refer to the price per kilowatt hours changing and very explicitly changing the charging schedule based on that attribute.’” *Id.* at n.5 (citing Ex. 1005, 431). Petitioner contends that Ferro teaches the dynamic attribute limitation because “Ferro discloses or suggests determining a value for a price per kilowatt hour that is received from a power grid (‘a first value of a dynamic attribute’) of a charging kiosk or a utility (‘an electric charge provider’).” *Id.* at 33. Petitioner cites Dr. MacCarley’s testimony and a number of passages from Ferro to support this position. *See id.* at 32–33 (citing Ex. 1002 ¶¶ 82, 83; Ex. 1006 ¶¶ 37, 52, 54, 59, 80, 88, 119).

The Petition explains that “Ferro’s attributes of the set of principals ‘may include, without limitation, a maximum price per kilowatt hour of electricity to be paid by a party, . . . or any other preferences associated with charging an electric vehicle.’” Pet. 32 (citing Ex. 1006 ¶ 54). But the Petition goes on to further explain that “Ferro’s disclosure related to the price of electricity [received from a power grid] is a dynamic attribute because Ferro describes numerous instances where the price of electricity changes.” *Id.* That is, we read the Petition as asserting that the price of

electricity *charged by the provider* in Ferro corresponds to the dynamic attribute limitation, not the price limit *set by the operator of the vehicle*.

We agree that Ferro teaches the charging schedule determination recited in the claim.

Ferro describes the electric vehicle receiving “the price of electricity . . . from a power grid.” Ex. 1006 ¶ 37. Ferro further describes a transaction plan that governs charging. *Id.* ¶¶ 52, 54, 59. The vehicle operator may specify limits on the charging price as part of the transaction plan. *Id.* ¶ 88. Ferro teaches the price of electricity *charged by the provider* is dynamic because it expressly contemplates that price changing. *See id.* (“[P]references may indicate that charging when the price per kilowatt hour is less than thirteen cents is to be maximized and charging when prices are higher than thirteen cents per kilowatt hour is to be minimized or prohibited all together.”); *see also id.* ¶ 119 (“[I]f a user charges an electric vehicle at night when the price of the electricity is only nine cents per kilowatt hour, the user may wish to de-charge or provide electricity from the electric vehicle back to the charging station at noon when the price per kilowatt hour is fifteen cents.”).

The disclosure from Ferro above is similar to what occurs in the ’488 patent. The ’488 patent describes determining when to charge the vehicle based on an available charging window specified by the user and price of electricity during that time. *See* Ex. 1001, 19:50–63. The ’488 patent explains, for example, that “[t]he ECS, via communication with the power supplier, determines that the present cost of electricity is \$0.12/kWh but will fall to \$0.09/kWh in two hours,” and “[t]he system therefore waits for two hours before charging the automobile for approximately three hours.”

Ex. 1001, 19:58–63. As discussed above, Ferro’s system also maximizes charging during lower cost times.

Paragraph 98 of Ferro, cited by Petitioner (Pet. 34–35), teaches its system determining when to charge based on a time window and price variations. Based on the record before us, we are not apprised of anything missing from Ferro’s teachings that is required by the charging schedule limitation.

Ferro explains:

[T]he operator may update preferences to indicate that instead of leaving the charging station at 5:00 p.m., the operator will not be leaving until 7:30 p.m. As a result, dynamic energy transaction planner 402 may alter dynamic energy transaction plan 424 to permit electric vehicle 400 to discharge electric power in the afternoon when electric power usage is higher and then charge electric vehicle 400 beginning at 6:00 p.m., when electricity rates are lower so that electric vehicle will have sufficient charge to return to the operator[’]s home when the operator is ready to leave at 7:30 p.m. In this manner, dynamic energy transaction plan 424 is able to change in response to changing conditions to maximize the benefits of charging, discharging, and/or storing electricity associated with electric vehicle 400 at charging station 403.

Ex. 1006 ¶ 98. We fail to see how this is different from even the particular example in the ’488 patent, which explains:

Once the information is received, the ECS operates to determine an appropriate charging schedule. For example, a driver parks his car in a space having an ECS. The driver knows that his car will sit in the space all work day, hence the chosen charging duration of eight hours. The ECS, perhaps relying on other retrieved information specifying the charging characteristics of the automobile, computes that it will take approximately three hours of charging to charge the automobile to a minimum of 80% charged. The ECS, via communication with the power supplier, determines that the present cost of

electricity is \$0.12/kWh but will fall to \$0.09/kWh in two hours. The system therefore waits for two hours before charging the automobile for approximately three hours.

Ex. 1001, 19:50–63.

As seen above, both the '488 patent and Ferro adjust (i.e., schedule) charging based on the time window available for charging and the variation in price of electricity during that charging time window. That is, both create a charging schedule in generally the same manner.

Patent Owner offers no meaningful dispute as to whether Ferro teaches the charging schedule, itself. Rather, the dispute centers on whether one skilled in the art would appreciate, based on the disclosure of Ferro, that Ferro's dynamic energy transaction planner can be either on the vehicle or at a location remote from the vehicle. But as explained by Patent Owner's counsel at oral hearing, the dispute does not really concern whether Ferro's dynamic energy transaction planner can be either on the vehicle or at a location remote from the vehicle, or even whether Ferro expressly teaches both on-vehicle and remote arrangements. *See* Tr. 33:3–4 (“Well, I think our position is that we understand that it can be remote.”); 33:9–12 (“I agree that Ferro discloses something that can do the functionality of the dynamic planner, that Ferro discloses that a separate component that's called the remote dynamic energy transaction planner 428.”); 33:16–17 (“I don't believe that there is much of a discernable difference [between remote and on-vehicle], but it did call it different things.”); 34:3–4 (“I understand that it



teaches remote. It's that Petitioner doesn't illustrate how this is all put together.'").

That is, Patent Owner's dispute is actually that Petitioner did not point out, with enough specificity, the portions of Ferro that teach its dynamic energy transaction planner can be remote.

*b) Location of Dynamic Energy Transaction Planner*

Patent Owner contends, for example, that "Ferro explicitly discloses that 'dynamic energy transaction planner 402' is located on-board electric vehicle 400." PO Resp. 38. Patent Owner reiterates these contentions throughout its briefing. *See, e.g., id.* at 42 ("Petitioner has not shown how Ferro's 'dynamic energy transaction planner' or its 'energy transaction execution engine' is 'stored' on 'the memory' that purportedly resides on 'Ferro's server 104' such that those instructions 'cause the processor to perform' elements 1[g]-1[k].").

Although the specific embodiment of dynamic energy transaction planner 402, cited by Petitioner for the features corresponding to the charging schedule, is described as being onboard the electric vehicle, Ferro is not limited to such an arrangement, and teaches that a remote option is also possible. *See, e.g., Ex. 1006 ¶¶ 64, 105.*

Ferro provides various embodiments of its system, but considering the teachings of Ferro, it is clear that it contemplates on-vehicle and remote options for various components or even the entirety of its system. For example, as an alternative to being remote, Ferro explains that its "[d]ata processing system 200[, which includes processor unit 204, memory 206, persistent storage 208, and communications unit 210] may also be implemented as a computing device on-board an electric vehicle, such as electric vehicle 116 in FIG. 1." *Ex. 1006 ¶ 39.* Ferro, describes "F[igure] 4

[as] a block diagram of a dynamic energy transaction planner[, which includes dynamic energy transaction planner 402] on-board an electric vehicle,” but that is simply “an illustrative embodiment.” *Id.* ¶ 76. Ferro later explains that “[i]n this example, dynamic energy transaction planner 402 is located on electric vehicle 400. However, in another embodiment, remote dynamic energy transaction planner 428 is located on remote computing device 430 that is not bolted or coupled to electric vehicle 400.” *Id.* ¶ 105. Moreover, as explained with respect to Figure 3, which is another illustrative embodiment in Ferro including energy transaction planner 310, Ferro explains that “[i]f one or more components shown in FIG. 3 are located remotely, the components may transfer data using any type of wired or wireless network connection to connect to a network, such as network 102 in F[igure] 1.” *Id.* ¶ 64.

Based on at least these teachings, we understand that Ferro’s dynamic energy transaction planner could be on-vehicle or remote.

Patent Owner additionally contends that “Petitioner has not shown that the ‘one or more charging preferences’ that are ‘receive[d]’ by Ferro’s energy preference server 104 (i.e., what Petitioner accuses is ‘the processor’ for element 1[f]) ‘are defined by the operator of the vehicle’ as recited in element 1[b].” PO Resp. 30. That, too, is ultimately based on the location of Ferro’s dynamic energy transaction planner.

As noted above, Petitioner contends that Ferro teaches the charging preferences being defined by an operator because “Ferro states that its ‘preferences may be pre-generated by one or more of the parties to the transaction,’ and that the parties to a charging transaction ‘may include, without limitation, the owner of the electric vehicle to be charged, the operator of the electric vehicle . . . .” Pet. 30 (citing Ex. 1006 ¶¶ 52, 54).

Patent Owner acknowledges that “Ferro discloses that ‘a party’ may be ‘the operator of the electric vehicle’ (Ex. 1006, [0052]), and that ‘users of vehicle preference service 405’ can ‘request[] input/access to vehicle preference service 405 to create, update, modify, delete, view, or otherwise access their electric vehicle charging preferences’ (*id.*, [0082]).” PO Resp. 30. Patent Owner’s contention is that “there would be no practical reason and it would be inefficient for the electric vehicle 400 to send preferences entered through the vehicle preference service 405 to a remote server—only to be resent to the dynamic energy transaction planner 402 located on-board electric vehicle 400.” *Id.* at 31.

Patent Owner’s concern does not exist when Ferro’s dynamic energy transaction planner is remote, which is the basis for Petitioner’s challenge, rather than on-board the vehicle.

*c) Proposed Modification to Ferro*

Claim 1 recites “an electrical charging system” that includes “a vehicle sensor” and a processor and memory that receive information regarding the “presence of a vehicle in a parking space” from the vehicle sensor. Ex. 1001, 29:4–13. The claim later recites various instructions involving charging *the* vehicle (i.e., the vehicle detected in the parking space). But the claim does not recite any further use for that sensor information. For example, the claim allows for the electrical charging system to receive the vehicle presence information and use that information to notify *other* vehicles of parking spot availability, similar to the teachings Lowenthal discussed below.

Patent Owner appears to be reading the claim in a very limited manner, essentially requiring the specific embodiment discussed in its Specification. *See* PO Resp. 55. Patent Owner states:

Even if the Board finds that Petitioner did establish that a POSITA would have been motivated to combine Lowenthal’s sensor in Ferro—not to detect the presence of a vehicle as the claims require (because, as the Board acknowledged, Ferro already knows when a vehicle is present)—but rather to, for example, detect the availability of parking spaces and outlets (see, e.g., Paper 13 at 28), the purported combined system would still not arrive at the Challenged Claims for the reasons discussed in Sections IX-XI (incorporated herein by reference).

*Id.* But as explained above, the claim is not so limited.

Petitioner explains that “although Ferro’s system describes functionality for determining that a vehicle is in a certain location (e.g., parked at a charging station), it does not explicitly provide the implementation details as to how this may be accomplished.” Pet. 14. There is no dispute that Ferro identifies the presence of a vehicle. *See* PO Resp. 56. Patent Owner, however, contends that “Ferro does provide sufficient implementation details of how it detects the presence of a vehicle” (*id.*) and “[a] POSITA would understand that the ‘implementation’ of detecting a vehicle was not an issue in Ferro such that a POSITA would look to add Lowenthal’s sensor to Ferro” (*id.* at 58–59).

The sufficiency of implementation details noted by Patent Owner are generally that Ferro teaches its vehicle and charging station connected to a network, as well as ways in which charging can be manually initiated. PO Resp. 57–58 (citing Ex. 1006 ¶¶ 37, 109). This disclosure does not detract from Petitioner’s proposed modifications.

Regardless of the sufficiency of implementation details in Ferro for its vehicle presence detection, one of the reasons that Petitioner cites Lowenthal is for its “explicit disclosure of a vehicle detector that ‘is used to detect the presence of a vehicle in [a] parking space.’” Pet. 14 (citing Ex. 1007, 7:61–8:12, 11:39–42, 4:63–64). Petitioner notes that “[t]his detector can determine the availability of charging outlets, e.g., by determining whether the parking space corresponding to the charging outlet is available.” *Id.* (citing Ex. 1007, 9:38–44).

As noted above, Patent Owner does not dispute Petitioner’s contentions regarding the teachings of Lowenthal. *See* PO Resp. 27, 55–67. Lowenthal explains that its “vehicle detector . . . may be used to determine whether a parking space is available.” *Id.* at 4:62–64. That is, the sensor determines the presence of a vehicle in order to determine whether a parking space is available (a parking space would be unavailable when vehicle presence is determined).

Petitioner notes that “Ferro’s charging station may be ‘any station, kiosk, garage, power outlet, or other facility for providing electricity to electric vehicle 116.’” Pet. 13–14 (citing Ex. 1006 ¶ 35). Petitioner contends, for example, that “[a] POSITA would have understood the benefits of incorporating Lowenthal’s vehicle detector into the charging stations of Ferro (or, implemented as a separate component to Ferro’s system),” such as “allow[ing] for the combined system to detect vehicles, detect availability of parking spaces, and detect available outlets at charging locations.” *Id.* at 14 (citing Ex. 1007, 9:38–44; Ex. 1002 ¶ 49). There is no dispute Lowenthal teaches these benefits.

As for the reasonable expectation of success, the modification required is simply to use a sensor and provide the data indicating the

presence of a vehicle in a parking spot (i.e., provide information on available charging locations). To the extent Patent Owner implies that there is some sort of detail lacking from the Petition that one skilled in art would have needed to implement the proposed modification, such an implication is countered by the lack of detail regarding such implementation in the '488 patent, itself, which describes its system at a high level of detail.

#### 4. *Claim 2*

Claim 2 depends from claim 1 and adds that “the receiving of the one or more charging preferences comprises receiving an identifier that uniquely identifies the vehicle and . . . the determining of the charging schedule comprises accessing the one or more preferences corresponding to the identifier.” Ex. 1001, 29:32–37.

Petitioner contends that Ferro teaches the features recited in claim 2. Pet. 41–42. Specifically, Petitioner cites Ferro’s discussion of dynamic energy transaction plan 424 including an identification of electric vehicle 400.” *Id.* at 41 (citing Ex. 1006 ¶96). Petitioner explains:

Ferro contemplates that the “identification [of a user] is associated with the set of preferences to map the set of preferences with the identification of the user that created the set of preferences.” *Id.*, [0081]. That is, the identification of a user is associated with a set of preferences. EX1002, ¶98. A POSITA would have understood that an identification of a user could also identify the vehicle. *Id.* Therefore in Ferro the user ID is an identifier that uniquely identifies the vehicle and is associated with preferences. *Id.*

*Id.* at 41. Petitioner explains that “preferences associated with the vehicle identification [are] received with the dynamic energy transaction plan as it is part of the dynamic energy transaction plan.” *Id.* at 42.

Patent Owner responds that “Petitioner alleges only that the ‘dynamic energy transaction plan 424 includes an identification of electric vehicle 400,’ but does not explain how ‘energy preference server 104’ receives ‘an identification of electric vehicle’ that is later included in the dynamic energy transaction plan 424.” PO Resp. 50.

Patent Owner’s contentions relate to the issues discussed above relative to claim 1. As Petitioner explains, “Ferro discloses that the ‘dynamic energy transaction plan’ can be run on ‘energy preference server 104’ and so receives an identification of the electric vehicle.” Pet. Reply 19. Patent Owner does not respond to this explanation in its Sur-Reply.

We adopt Petitioner’s contentions and supporting evidence related to claim 2 and reiterate our discussion above regarding claim 1 as it relates to Patent Owner’s dispute with respect to claim 2.

### 5. *Claim 3*

Claim 3 depends from claim 1 and adds that “the one or more charging preferences comprise a preference that specifies that the vehicle needs to be charged to a certain percentage of total charge capacity by a certain time.” Ex. 1001, 29:38–41.

Petitioner contends that Ferro teaches the features recited in claim 3. Pet. 42–43 (citing Ferro ¶¶ 118, 121–123). Specifically, Petitioner cites Ferro’s explanation that “[a]mount of charge 514 preferences may . . . specify different levels of charge depending on power source 540 of the electricity used to charge the electric vehicle.” Pet. 42 (citing Ex. 1006 ¶ 123). Petitioner additionally cites Ferro’s explanation that “[t]ime 512 preferences may specify, without limitation, time of day 530 for charging the vehicle, time of day to stop charging the vehicle, day of month 532 for

charging, and/or day of the week 534 for charging the electric vehicle.”  
*Id.* at 43 (citing Ex. 1006 ¶ 122).

Based on these teachings, Petitioner contends that Ferro teaches its preferences include “a preference that specifies that the vehicle needs to be charged to a certain level to allow for travel of a specified distance corresponding to at least a user’s home or workplace” and “preferences that the vehicle is charged by a certain time.” Pet. 42–43.

Patent Owner responds that “Ferro indicates that [amount of charge] preferences specify a ‘minimum level 536 of charge in the electric vehicle’s storage device’ and ‘a maximum level of charge 538.’” PO Resp. 51 (citing Ex. 1006 ¶ 122). Patent Owner contends that “[a] POSITA would not understand either the minimum level 536 or the maximum level 538 to be ‘a certain percentage of total charge capacity’ as recited in claim 3.” *Id.*

Petitioner responds that “[Patent Owner] disregards the relevant disclosure in Ferro to dispute claim 3” (Pet. Reply 19) and “attacks . . . an alternative to what Petitioner relies on, not the disclosure on which Petitioner relies” (*id.* at 20). Petitioner explains that “Ferro states that the preferences 514 may specify the minimum and maximum level (as PO discusses) “*or* . . . different levels of charge” (as Petitioner relied on).” *Id.* (citing Ex. 1006 ¶ 123).

We adopt Petitioner’s contentions and supporting evidence, which are consistent with disclosure of Ferro. Patent Owner does not respond to Petitioner’s explanation in its Sur-Reply.

#### 6. Claim 4

Claim 4 depends from claim 1 and adds that “the one or more charging preferences comprise a preference that specifies that the vehicle



needs to be charged to a certain level to allow travel of a specified distance by a certain time.” Ex. 1001, 29:42–45.

Petitioner cites the combined teachings of Ferro, Lowenthal and Boll for the challenge to claim 4. Pet. 55–60. Although Patent Owner includes a separate heading that purports to dispute the challenge to claim 4, there is nothing new in that discussion, as it simply reiterates the contentions presented and addressed above regarding claim 1. *See* PO Resp. 52.

We adopt Petitioner’s contentions and supporting evidence related to claim 4 and reiterate our discussion above regarding claim 1 as it relates to Patent Owner’s dispute with respect to claim 4.

#### 7. *Claims 5–15*

Other than reiterating its contentions discussed above, Patent Owner does not present separate contentions regarding Petitioner’s challenges to claims 5–15. We reiterate the relevant portions of our discussion above and adopt Petitioner’s contentions and supporting evidence for claims 5–15.

#### 8. *Summary*

For the reasons explained above, we determine that the preponderance of the evidence before us supports Petitioner’s challenges to claims 1–15.

### III. CONCLUSION<sup>9</sup>

<b>Claims</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Claims Shown Unpatentable</b>	<b>Claims Not Shown Unpatentable</b>
1–3, 5– 8, 10,	103	Ferro, Lowenthal	1–3, 5–8, 10, 13–15	

<sup>9</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.

13–15				
9	103	Ferro, Lowenthal, Evans	9	
4, 11, 12	103	Ferro, Lowenthal, Boll	4, 11, 12	

#### IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–15 of the '488 patent are proven unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to this proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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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).

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