UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner

v.

CHARGE FUSION TECHNOLOGIES LLC,
Patent Owner

Inter Partes Review Case No. IPR2025-00152
U.S. Patent No. 11,990,788

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,990,788

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I. INTRODUCTION

Petitioner Tesla, Inc. ("Petitioner") requests *inter partes* review ("IPR") of Claims 1-17 (collectively, the "Challenged Claims") of U.S. Patent No. 11,990,788 ("the '788 Patent"). The Challenged Claims broadly encompass well-known features for managing an electric vehicle's battery charging. *'788 Patent* (Ex. 1001), Claims 1, 6, 11. Despite the breadth of the Challenged Claims, the application that issued as the '788 Patent received a first action notice of allowance where the Examiner stated that "the best prior art of record…neither anticipates, nor, alone or combined, renders obvious as a whole, the specific combination of inventive features as currently recited in the independent claims." *'788 Patent File History* (Ex. 1002), 307. The Examiner did not identify "the specific combination of inventive features" that were allegedly missing in the prior art. *Id*. However, all of the claimed features are plainly encompassed by the prior art, and the Challenged Claims should be found obvious and canceled.

II. THE '788 PATENT

A. Summary

The '788 Patent is directed to an electrical charging system for charging electric vehicles, including "any vehicle that utilizes, stores, and/or provides electrical power (e.g., buses, trains, cars, semi-trucks, ships, submarines, aircraft, dirt bikes, All Terrain Vehicles (ATV), scooters, and/or lawn mowers)." *'788 Patent*

(Ex. 1001), 3:36-40, Abstract. The charging system uses charging preferences, including a desired charge level, which are entered by a user via a GUI. *Id*., 14:20-25, 14:63-15:7, FIG. 7. The charging system then charges the vehicle's battery to the user's desired charging level and displays the charging status on GUI. *Id.,* 23:37-45.

B. Priority

The '788 Patent claims priority to Provisional Application 61/134,646 ("'646 Provisional," Ex. 1023). Each of the '788 Patent's independent claims recites a GUI comprising a slider. In IPR2022-01217, the Board determined that the claimed slider in USPN 10,998,753 (a '788 Patent family member) was not supported by the '646 Provisional. IPR2022-01217, Paper 11, 8-10. All claims of the '788 Patent are only entitled to a priority date of the '788 family's earliest non-provisional application, July 13, 2009. *Dec.,* ¶46.[1]

C. Level of Skill

A POSITA at the time of the '788 Patent would have had at least a bachelor's degree in electrical or mechanical engineering (or an equivalent field) and at least two years of work experience involving automotive systems, including electric vehicle power management. *Dec.,* ¶29. Additional industry experience or technical

[1] References to *Dec.* are to paragraphs of Ex. 1003, Declaration of Scott Andrews.

training may offset less formal education, while advanced degrees or additional formal education may offset lesser levels of industry experience. *Id*.

III. REQUIREMENTS UNDER 37 C.F.R. § 42.104

A. Grounds for Standing Under 37 C.F.R. § 42.104(a)

Petitioner certifies the '788 Patent is eligible for IPR.

B. Identification of Challenge Under 37 C.F.R. § 42.104(b)

Petitioner requests the Challenged Claims be found unpatentable on the following grounds.

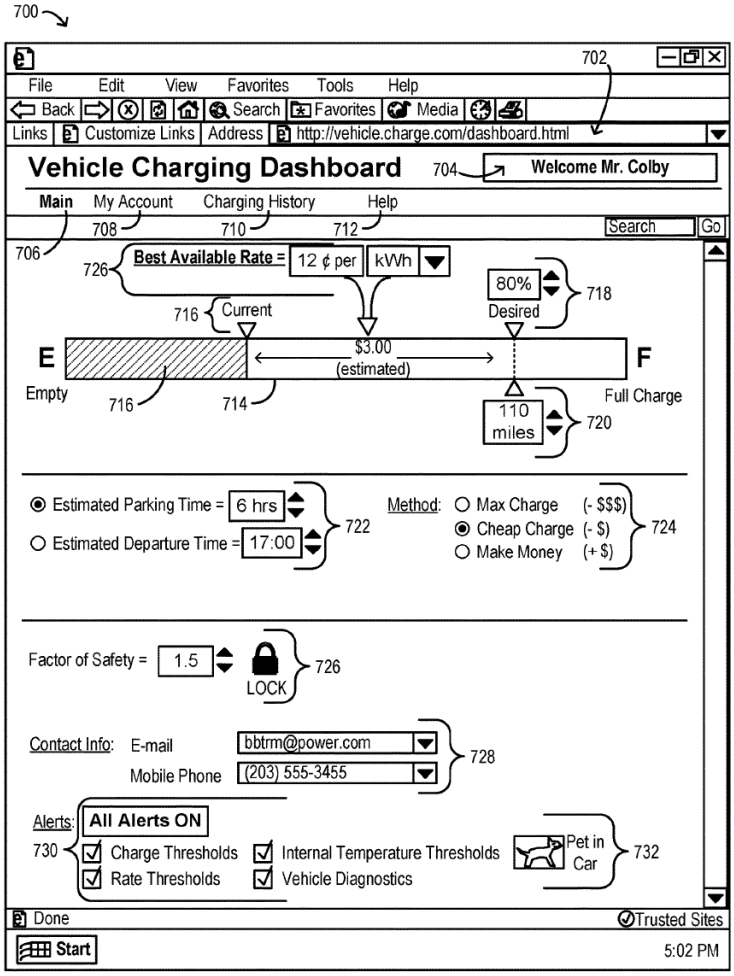
Proposed Grounds of Unpatentability	Exhibits
Ground 1: Sutardja, Donnelly, and Letendre Render Claims 1-4, 6-9, and 11-14 Obvious Under § 103	1011, 1006, 1007
Ground 2: Sutardja, Donnelly, Letendre, and Seelig Render Claims 5, 10, and 15 Obvious Under § 103	1011, 1006, 1007, 1078
Ground 3: Sutardja, Donnelly, Letendre, and Knockeart Render Claims 16-17 Obvious Under § 103	1011, 1006, 1007, 1010

C. Claim Construction Under 37 C.F.R. § 42.104(b)(3)

In this proceeding, claims are interpreted under the same standard applied by Article III courts (i.e., the *Phillips* standard). 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*). For all terms not included below, Petitioner applies the ordinary and customary meaning of the claim terms as understood by a POSITA.

1. "unitary vehicle charge indicator" (Claims 1, 6, 11)

The term "unitary" is only used in the claims of the '788 Patent. The '788 Patent describes a vehicle charge indicator element 714 combining portions indicating an amount of charge remaining in a battery, an uncharged capacity of the battery, and a slider in a bar graph, as shown in FIG. 7:



'788 Patent, FIG. 7; 14:63-15:7.

Therefore, the claim term "unitary vehicle charge indicator" at least includes a bar graph comprising the charged, uncharged, and slider portions, such as illustrated in FIG. 7.

2. "(i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle" (Claims 1, 6, 11)

Independent claims 1, 6, and 11 recite "a Graphical User Interface (GUI)…adapted to display a unitary vehicle charge indicator comprising a combination of input and output GUI elements the GUI elements comprising: (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and (iii) a third portion comprising a slider by which an amount of charge may be specified[.]" The first and second portions of the GUI are not entitled to any patentable weight under the printed matter doctrine.

It has long been recognized "that certain 'printed matter' falls outside the scope of patentable subject matter under U.S. patent law." *C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020) (citing *AstraZeneca LP v. Apotex, Inc.*, 633 F.3d 1042, 1064 (Fed. Cir. 2010); *In re Chatfield*, 545 F.2d 152, 157 (CCPA 1976)). Although "printed matter" historically referred to claim elements involving actual "printed" material, the doctrine encompasses any information claimed for its communicative content, regardless of medium. *Id.*

The CAFC applies a two-step test to determine whether a limitation should be accorded patentable weight under the printed matter doctrine. *Praxair Distrib., Inc. v. Mallinckrodt Hosp. Prods. IP Ltd.*, 890 F.3d 1024, 1032 (Fed. Cir. 2018). In the first step, it must be determined whether the claim limitation in question is directed to printed matter. i.e., "if it claims the content of information." *Praxair*, 890 F.3d 1032 (citing *In re DiStefano*, 808 F.3d 845, 848 (Fed. Cir. 2015)). In other words, printed matter is "matter claimed for what it communicates." *Distefano*, 808 F.3d at 850.

Here, the claims recite a GUI requiring communicative content, including "(i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle." These limitations are clearly directed to informational content – i.e., "the amount of charge residing in a battery" and "an uncharged capacity of the battery" – that is displayed on a GUI.

The second step determines whether the printed matter is functionally related to its "substrate," i.e., whether the printed material is "interrelated with the rest of the claim." *Praxair*, 890 F.3d 1032. Printed matter is functionally related to its substrate when the language "interacts with other elements of the claim to … cause a specific action in a claimed process." *C R Bard*, 979 F.3d 1372, 1381.

Here, the first and second GUI portions merely inform people of the claimed information (i.e., the current battery charge and the uncharged capacity of the battery). Unlike the third GUI portion, which is "a slider by which an amount of charge may be specified," the first and second GUI portions do not interact with any other elements of the claim. Thus, the first and second GUI portions are not functionally related to the substrate, and these limitations are not entitled to any patentable weight.

3. "determining…a charging schedule for the electric vehicle" (Claims 2, 7, 12)

Petitioner submits the term "determining…a charging schedule for the electric vehicle" should not be construed under § 112(6). *Cf.* IPR2023-00062, Papers 13, 25 (challenging related USPN 9,853,488, which includes a "charging schedule" limitation where § 112(6) issues were not raised by the Parties or the Board). The presumption of no application under § 112(6) is not overcome, at least because the term recites an algorithmic step (i.e., structure) for how to "determine" a "charging schedule" based "at least on the desired charge level[.]" *'788 Patent*, Claim 2; *Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1368 (Fed. Cir. 2022) ("[W]hen the structure-connoting term … is coupled with a description of the [term's] operations, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art, and § 112 ¶ 6 presumptively will not apply."). To the extent the Board or PO construes as means-plus-function, the structure is a processor executing computer

program instructions for performing the disclosed algorithm of "calculate[ing] an estimated time to achieve the desired charge and [] identify[ing] when, during the available charging window [] would be [the] most cost effective [] to acquire the desired estimated charge." *'788 Patent*, 11:3–11, 20:13–21. The function is the claimed function. The support for the claimed structure and/or function at least includes '788 Patent, 10:52–55, 11:3–11, 17:6–20, 20:13–21.

IV. THE PRIOR ART IS ANALOGOUS TO THE '788 PATENT

A. Sutardja

USPGPub 2008/0136371 to Sutardja (Ex. 1011) was filed on December 4, 2007, and published on June 12, 2008, qualifying as prior art under § 102(b). *See* Section II.A. Sutardja was neither cited nor considered during prosecution of the '788 Patent. *See generally*, *'788 Patent File History*.

Sutardja describes a system for charging an electric vehicle's battery according to a set of user-defined charging parameters. *Sutardja,* Abstract, [0004], [0008]. Sutardja's system includes a charge management system (CMS) 100, having a vehicle 102 that "is charged at a location such as a home or work location." *Id.*, [0239], FIG. 3A. "The location may include the supply outlet 20 that may receive power from the utility company 23 via the power distribution line 21." *Id.,* [0240]. "The cable and connector 19 may connect the supply outlet 20 to the power receptacle 18 of the vehicle 102-1." *Id*. "The vehicle 102-1 may draw power from

the supply outlet 20 to charge the battery 14[,]" and "[a] power meter 24-1 may measure the amount of power exchanged between the utility company 23 and the vehicle 102-1 via the supply outlet 20." *Id.*

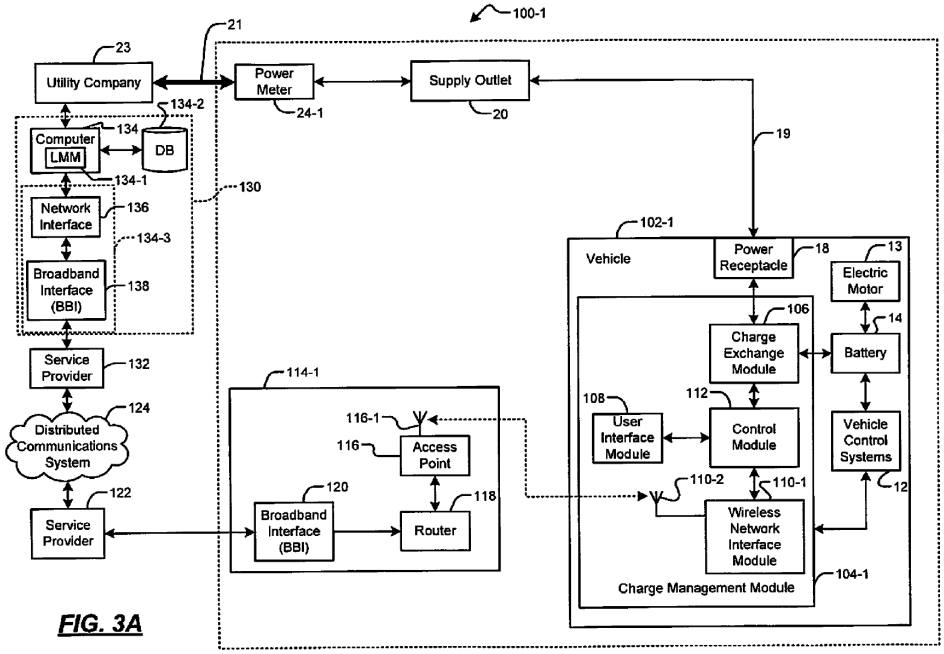


FIG. 3A

Id., FIG. 3A.

"The vehicle 102-1 includes the vehicle control systems 12, the electric motor 13, the battery 14, a CMM [charge management module] 104-1, and the power receptacle 18." *Id.*, [0239]. "The CMM 104-1 charges the battery 14 using the power supplied by the utility company 23 to the supply outlet 20." *Id.*, [0241]. "The CMM 104-1 includes a charge exchange module 106, a user interface module 108, a wireless network interface module 110-1, and a control module 112." *Id.* "A user of the vehicle 102-1 may use the user interface module 108 to set charging parameters for charging the battery 14[.]" *Id.*, [0243]. Charging parameters include a desired

charge level (e.g., full charge) and a requested charge completion time. *Id.*, [0119] ("[O]ne or more of the N first sets of charging parameters include charge levels and requested charge completion times for the batteries of corresponding ones of the N vehicles."), [0270] ("The charge monitoring module 150 may inform the control module 112 when the battery 14 is charged to a predetermined level (e.g., full charge) that may be indicated in the charging parameters.").

The charging parameters are communicated "to the utility company 23 via the wireless network interface module 110-1." *Id.*, [0244]. "The utility company 23 may receive the charging parameters generated by the user and may respond to requests for charging the battery 14." *Id*., [0251].

Sutardja is analogous to the claimed invention of the '788 Patent because Sutardja is from a same field of endeavor: systems for charging batteries in vehicles. *Cf. Sutardja*, [0002], [0231]–[0233], *with '788 Patent*, 3:22–35, 8:25–52; *Dec.*, ¶82.

Sutardja is also reasonably pertinent to a particular problem with which the inventor of the '788 Patent was involved: intelligently charging a vehicle in accordance with a charging schedule. *Cf. Sutardja*, [0116], [0122], [0253] *with '788 Patent*, 2:27–32; *Dec.*, ¶83.

B. Donnelly

USPN 7,124,691 to Donnelly (Ex. 1006) was neither cited nor considered during prosecution of the ’788 Patent. Donnelly issued October 24, 2006, qualifying as prior art under § 102(b).

Donnelly teaches a touchscreen GUI for hybrid vehicles, including cars. *Donnelly*, 21:47–58, 26:6–8, 1:36–38.

Donnelly is analogous to the claimed invention of the ’788 Patent because Donnelly is from a same field of endeavor: GUIs for electric vehicles. *Cf. Donnelly*, 21:47–58, 26:6–8, *with ’788 Patent*, 3:37–43, 14:40–16:21, FIG. 7; *Dec.*, ¶89.

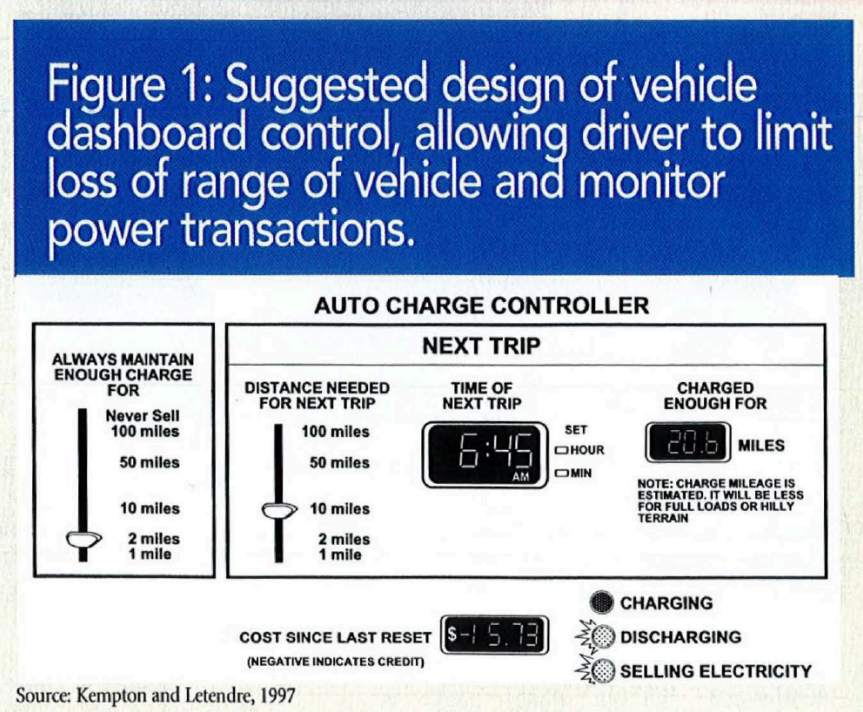
Donnelly is also reasonably pertinent to a particular problem with which the inventor of the ’788 Patent was involved: displaying the battery status of an electric vehicle. *Cf. Donnelly*, 23:16–33, FIG. 28, *with ’788 Patent*, 14:63–15:7, FIG. 7; *Dec.*, ¶90.

C. Letendre

The article, *The V2G Concept, A New Model for Power,* by Letendre et al., was published in the periodical PUBLIC UTILITIES FORTNIGHTLY, Vol. 140, No. 4 on February 15, 2002, qualifying as prior art under § 102(b). *Letendre* (Ex. 1007); *Munford Dec*. (Ex. 1086), ¶27. Letendre was neither cited nor considered during the prosecution of the ’788 Patent. Letendre was obtained directly from the Western Michigan University Library’s collection. *Letendre*, TOC; *Munford Dec*., ¶5.

Letendre is a printed publication. *Hulu, LLC v. Sound View Innovations*, No. IPR2018-01039, 2019 WL 7000067, *5 (P.T.A.B. Dec. 20, 2019). The preponderance of the evidence confirms that Letendre was publicly available by February 15, 2002. **First**, every page of Letendre is dated February 15, 2002. *See generally, Letendre*. **Second**, Letendre bears a copyright date of 2002. *Letendre*, 4; *Munford Dec*., ¶17. **Third**, Letendre expressly states that "The Public Utilities Fortnightly Database is accessible through LEXIS®/NEXIS® and WESTLAW®." *Letendre*, 4; *Munford Dec*., ¶18. **Fourth**, Letendre was stamped by the Western Michigan University Library on February 13, 2002, and by the Penn State University Library on February 12, 2002, demonstrating that Letendre was printed and shipped to subscribers on or before February 12, 2002, so that it could be publicly available on or before the issue date of February 15, 2002. *Letendre*, TOC; *Munford Dec*., ¶¶15-16, ¶¶25-26. **Fifth**, the MARC records for PUBLIC UTILITIES FORTNIGHTLY in both the Western Michigan University Library and the Penn State University Library demonstrate that issues of the magazine were indexed and searchable in the libraries' interactive library catalogs on or around the time of receipt. *Munford Dec*., ¶¶9-13, ¶¶19-22, ¶¶28-31. **Sixth**, Letendre was expressly cited in the prior art itself, demonstrating its actual publication and availability to interested POSITAs. *Munford Dec*., ¶¶32-47.

Letendre teaches a user interface comprising a slider by which a user specifies parameters managing the charging of an electric vehicle's battery. *Letendre*, 18–20.



Letendre is analogous to the claimed invention of the '788 Patent because Letendre is from the same field of endeavor: GUIs for charging electric vehicles. *Cf. Letendre*, 16–20, *with '788 Patent*, 14:63–15:19, 20:1–12, FIG. 7; *Dec.*, ¶95.

Letendre is also reasonably pertinent to a particular problem with which the inventor of the '788 Patent was involved: providing convenient interface elements for managing vehicle charging. *Cf. Letendre*, 16–20, *with '788 Patent*, 14:40–15:19, FIG. 7; *Dec.*, ¶96.

D. Seelig

USPN 5,654,621 to Seelig (Ex. 1078) was neither cited nor considered during prosecution of the ’788 Patent. Seelig issued August 5, 1997, qualifying as prior art under § 102(b).

Seelig describes a system for wirelessly charging an electric vehicle. *Seelig,* Abstract, 1:6–8.

Seelig is analogous to the claimed invention of the ’788 Patent because Seelig is from a same field of endeavor: methods and systems for charging batteries in vehicles. *Cf. Seelig*, Abstract, 1:6–8, FIG. 1, *with ’788 Patent*, 3:22–35, 8:25–52; *Dec.*, ¶101.

Seelig is also reasonably pertinent to a particular problem with which the inventor of the ’788 Patent was involved: avoiding overcomplexity and reducing the burden on the user in vehicle systems that provide EV charging. *Cf. Seelig*, 1:17–29, 3:45–61, FIG. 1, *with ‘788 Patent*, 1:55–58, 2:23–27, FIG. 5; *Dec.*, ¶102.

E. Knockeart

USPN 6,622,083 to Knockeart (Ex. 1010) was neither cited nor considered during prosecution of the ’788 Patent. Knockeart issued September 16, 2003, qualifying as prior art under § 102(b).

Knockeart describes a system for utilizing a user’s device (e.g., smartphone) to provide a vehicle’s GUI. *Knockeart,* Abstract, 4:49–67.

Knockeart is analogous to the claimed invention of the ’788 Patent because Knockeart is from a same field of endeavor: managing vehicle systems, including communication of a user’s personal device with the vehicle’s information system. *Cf. Knockeart*, 1:39-51, FIG. 7, *with ’788 Patent,* 14:29-35, 20:1-12, FIGs. 6-7; *Dec.*, ¶106.

Knockeart is analogous to the claimed invention of the ’788 Patent because Knockeart is reasonably pertinent to a particular problem with which the inventor of the ’788 Patent was involved: facilitating user-friendly communication with the vehicle’s information system. *Cf. Knockeart*, Abstract, 4:49-67, *with ’788 Patent*, 11:45–60, 20:1–12, FIGs. 6-7; *Dec.*, ¶107.

V. GROUND 1: OBVIOUSNESS OF CLAIMS 1-4, 6-9, AND 11-14

A. Claim 1

1. Claim 1[Pre]: “An electrical charging system, comprising:”

Sutardja discloses “systems and methods for charging batteries in vehicles.” *Sutardja*, [0002]. Per Sutardja, “[s]ome vehicles are powered at least partially by electric motors[,]” including “purely electric vehicles” that “rely solely on electric motors and batteries” and “[h]ybrid vehicles” that “include a first propulsion source such as an engine or fuel cell and a second propulsion source such as an electric motor.” *Id.,* [0004]. “[A]n increasing number of users of vehicles may attempt to simultaneously recharge batteries in vehicles as use of vehicles with rechargeable batteries and electric motors proliferates.” *Id.*, [0229]. To accommodate recharging

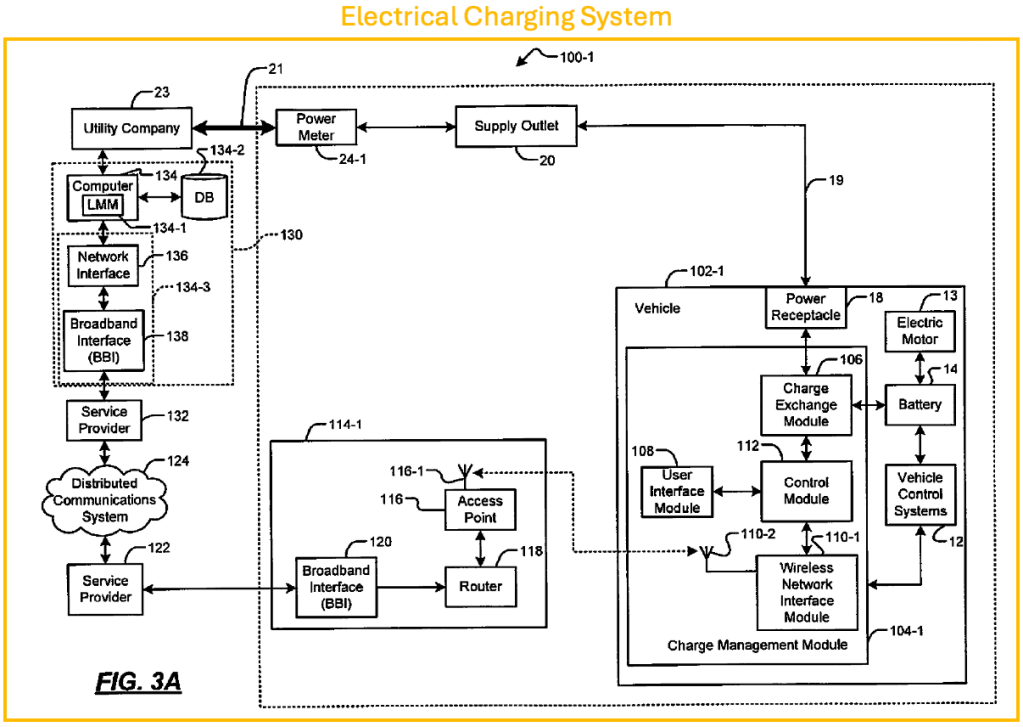
multiple electric vehicles, Sutardja proposes "a **charge management system (CMS)** to coordinate charging of batteries in vehicles at multiple locations." *Id*., [0231]. [2] The CMS includes, among other things, a vehicle 102 having a charge management module (CMM) 104. *Id.*, [0239] ("In FIG. 3A, a CMS 100-1 is shown. A vehicle 102-1 is charged at a location such as a home or work location. The vehicle 102-1 includes the vehicle control systems 12, the electric motor 13, the battery 14, a CMM 104-1, and the power receptacle 18."); FIG. 3A.

"[T]he utility company 23 may communicate with the CMM 104 in the vehicle 102 via a LAN 130" where the LAN 130 includes "at least one computer 134 with a load management module (LMM) 134-1." *Id.,* [0252]. The CMM communicates the user's charging parameters to the LAN 130, and the LMM determines a charging schedule for the user's vehicle based on the user's charging parameters and the load on the power distribution system. *Id.*, [0256] ("The LMM 134-1 may receive the charging parameters transmitted by the CMM 104-5 and/or the user."), [0253] ("The LMM 134-1 may analyze the load on the distribution system based on the requested charging parameters from multiple customers. The LMM 134-1 may determine a schedule for charging batteries in multiple vehicles."). The CMS includes a supply outlet 20 at the user's location that "receive[s] power

[2] All emphasis added by Petitioner unless noted otherwise.

from the utility company 23 via the power distribution line 21" and the vehicle 102 "draw[s] power from the supply outlet 20 to charge the battery 14[.]" *Id.*, [0240].

Accordingly, Sutardja teaches *an electrical charging system*,[3] including a CMS 100 communicating with a utility company via LAN 130:



Dec., ¶¶108-112 (citing *Sutardja*, FIG. 3A); *Sutardja*, FIGS. 3B, 4A-B.

2. Claim 1[a]: "one or more processing devices; and"

Sutardja teaches *one or more processing devices*. Sutardja's system includes, among other things, a "computer 134 with a load management module (LMM)" and control module 112. *Sutardja*, [0252], [0243]-[0244] (describing control module 112). A POSITA would have understood that a computer is a type of *processing*

[3] Claim terms are italicized.

device. *Dec.*, ¶114 (citing *Microsoft Computer Dictionary,* 118 (defining "computer" as "Any device capable of processing information to produce a desired result."). Moreover, the '788 Patent discloses, "[a] 'processor' means any one or more…computing devices…" *'788 Patent*, 27:23-27. Thus, computer 134 qualifies as a claimed *processing device*. *Dec.*, ¶114.

Control module 112 "communicate[s] with the charge exchange module 106, the user interface module 108, and the wireless network interface module 110-1 and may control the operation of the CMM 104-1." *Id.,* [0243]. Per Sutardja, the term "module…refers to an Application Specific Integrated Circuit (ASIC), an electronic circuit, **a processor (shared, dedicated, or group) and memory that execute one or more software or firmware programs**, a combinational logic circuit, and/or other suitable components that provide the described functionality." *Id.,* [0228]. Sutardja also teaches implementing the system using "a computer program executed by one or more processors" where the computer program "reside[s] on a computer readable medium such as but not limited to memory, non-volatile data storage and/or other suitable tangible storage mediums." *Id.,* [0208]. As explained by Mr. Andrews, the control module 112 also performs I/O and data processing tasks typically performed by processors executing software or firmware programs. *Dec.*, ¶¶115-118. Thus, Sutardja's control module 112 also qualifies as a *processing device*. *Id*.

Although Sutardja's list of "module" elements does not qualify as a large list of elements requiring an obviousness analysis, it would have been obvious to a POSITA to implement control module 112 using "a processor (shared, dedicated, or group) and memory that execute one or more software or firmware programs," as expressly suggested by Sutardja. *Dec.*, ¶¶119-120. Processors programmed to perform tasks were ubiquitous long before the alleged invention of the '788 Patent. *Dec.*, ¶119. Thus, a POSITA would have been motivated to implement control module 112 as a processor and memory that executes software, per Sutardja, thus representing a combination of prior art elements according to known methods to yield predictable results and with a reasonable expectation of success (REOS) given the ubiquity of processors. *Id*., ¶120.

For these reasons, Sutardja teaches *one or more processing devices,* including control module 112 and LMM/computer 134:

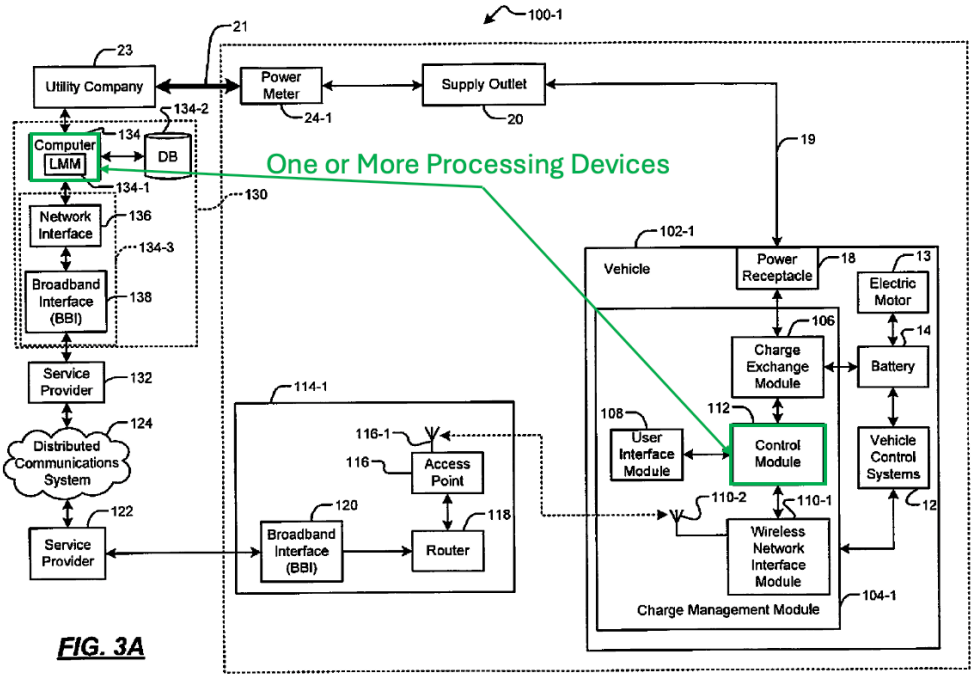


FIG. 3A

Dec., ¶121 (citing *Sutardja*, FIG. 3A); *Sutardja*, FIGS. 3B, 4A-B.

3. Claim 1[b]: "a non-transitory memory device in communication with the one or more processing devices, the non-transitory memory storing instructions that when executed by the one or more processing devices, result in:"

Petitioner notes there is no antecedent basis for "non-transitory memory[,]" as the earlier-recited limitation is a "non-transitory memory *device*[.]" *Compare '788 Patent*, 29:39-40, *with id.*, 29:38. For purposes of this Petition, Petitioner construes "non-transitory memory" as the "non-transitory memory device" recited at '788 Patent, 29:38.

As shown below, each of Sutardja's *processing devices* (i.e., computer 134 and control module 112) has an associated *non-transitory memory device* that stores

instructions executed by the processing device.[4] Sutardja's system is "implemented by a computer program executed by one or more processors" where the computer program "reside[s] on a computer readable medium such as but not limited to **memory, non-volatile data storage and/or other suitable tangible storage mediums**." *Sutardja*, [0208]. Sutardja also teaches that "the term module…refers to…a processor (shared, dedicated, or group) and **memory that execute one or more software or firmware programs**…." *Id.*, [0228].

As discussed, Sutardja teaches at least two *processing devices*, including computer 134 and control module 112. *See* Claim 1[a].[5] Because Sutardja's LMM (load management module) 134-1 resides on computer 134, LMM is implemented as a computer program/software residing on a "memory, non-volatile data storage and/or other suitable tangible storage mediums" that is executed by computer 134's processor. *Dec.*, ¶¶124-125. Alternatively, it would have been obvious, and a POSITA would have been motivated to implement LMM as a computer program/software residing on a "memory, non-volatile data storage and/or other

[4] The '788 Patent expressly defines "[t]he terms 'a', 'an' and 'the' [to] mean 'one or more', unless expressly specified otherwise." *'788 Patent*, 24:41-42.

[5] All citations to a claim limitation are citations to the claim limitation's mapping in this Petition and are otherwise incorporated.

suitable tangible storage mediums" that is executed by computer 134's processor. *Id.* For the reasons discussed above, Sutardja teaches and/or renders obvious implementing control module 112 as a processor and memory that executes software. *See* Claim 1[a]. Thus, computer 134 and control module 112 each have an associated *memory device* that stores computer programs/software. *Dec.*, ¶¶123-126.

A POSITA would have understood that computer programs and software comprise sequences of instructions that are executed by a processor. *Dec.*, ¶127 (citing *Microsoft Computer Dictionary*, 424 (defining "program" as "A sequence of instructions that can be executed by a computer."), 488 (defining "software" as "Computer programs.")). Thus, Sutardja's computer program/software qualifies as the claimed *instructions*. *Id*.

A POSITA would have also understood that the processors of computer 134 and control module 112 would necessarily communicate with their respective memories to execute the *instructions* stored in memory. *Dec.*, ¶128 (citing *Microsoft Computer Dictionary*, 200 ("In programming, execution implies loading the machine code of the program into memory and then performing the instructions.")). Thus, Sutardja's teaching of the processors executing the computer program residing in the memory device inherently teaches a *memory device in communication with the one or more processing devices* because the processor would not be able to execute the program unless it were in communication with the memory device

storing the program. *Dec.*, ¶128. Alternatively, it would have been obvious, and a POSITA would have been motivated to utilize memory devices in communication with each processing device for the same reasons. *Id.*

Regarding the requirement for *non-transitory memory*, Courts have interpreted transitory media as "fleeting" and "devoid of any semblance of permanence during transmission." *In re Nuijten*, 500 F.3d 1346, 1356 (Fed. Cir. 2007). It can be physical, like "radio broadcasts, electrical signals through a wire, and light pulses through a fiber-optic cable," but does not possess concrete structure that would qualify as a device or machine. *Id.* at 1353, 1355. By contrast, Courts have found that *non-transitory* media encompasses a concrete structure like a "random-access memory" or "optical data storage devices" and be a manufacture, matter, machine, or process. *See Mentor Graphics Corp. v. EVE-USA, Inc.*, 851 F.3d 1275, 1294 (Fed. Cir. 2017) (explaining that the challenged claim included patent-eligible embodiments, like "random-access memory" or "optical data storage devices," that—unlike a carrier wave—would not run afoul of *Nuijten*); *see also, Sequoia Tech., LLC v. Dell, Inc.,* 66 F.4th 1317, 1322 n.1 (Fed. Cir. 2023).

A POSITA would have understood that each *memory device* storing the computer programs/software (i.e., *instructions*) executed by computer 134 and control module 112 would be a concrete structure that persistently stores the *instructions* and not a transitory media, such as a carrier wave. *Dec.*, ¶129. This is

consistent with Federal Circuit precedent, which found that a POSITA "would not understand transitory signals, such as carrier waves, to record or store instructions in memory systems…because transitory signals, by their very nature, are fleeting and do not persist over time." *Sequoia,* 66 F.4th at 1323; *Dec*., ¶129. This is also consistent with Sutardja's teachings of utilizing a "non-volatile" or "other suitable tangible" memory device to store the computer program. *Sutardja*, [0208]. Thus, a POSITA would have understood that the memory associated with each of the *processing devices* (i.e., computer 134 and control module 112) would have been *a non-transitory memory device* persistently storing the *instructions* so that they can be *executed by the one or more processing devices*. *Dec.*, ¶129. Alternatively, it would have been obvious, and a POSITA would have been motivated to implement each memory as *a non-transitory memory device* for the same reasons. *Id*.

4. Claim 1[b][i]: "receiving information indicative of a desired charge level of a battery of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle"

Each of Sutardja's processors (i.e., control module 112 and computer 134) is programmed to *receiv[e] information indicative of a desired charge level of a battery of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle*.

Control module 112 "receive[s] data input by the user for charging the battery 14…from the user interface module 108[,]" including charging parameters.

Sutardja, [0244], [0267] ("[T]he control module 112 may **receive charging parameters** input by the user…"). User interface module 108 includes "a keypad, a display, a microphone, and/or a speaker (all not shown)[,]" and "[a] user of the vehicle 102-1 may use the user interface module 108 to set charging parameters for charging the battery 14…." *Id.*, [0243]. Therefore, Sutardja teaches receiving charging parameters *defined by a user of the electric vehicle*.

The user's charging parameters include *a desired charge level of a battery of an electric vehicle* (e.g., full charge) and a requested charge completion time. *Id.*, [0051] ("In another feature, the computer program further comprises monitoring a charge level of the battery and **including the charge level in the first set of charging parameters**."), [0119] ("[O]ne or more of the N first sets of **charging parameters include charge levels** and requested charge completion times for the batteries of corresponding ones of the N vehicles."), [0270] ("The charge monitoring module 150 may inform the control module 112 when the **battery 14 is charged to a predetermined level (e.g., full charge) that may be indicated in the charging parameters**."). For example, the user may enter parameters requesting "**a full charge** daily between 9 pm and 6 am." *Id*., [0262]. Thus, control module 112 is programmed to *receiv[e] information indicative of a desired charge level of a battery of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle* via the vehicle 102's user interface module 108. *Dec.*, ¶132.

After the control module 112 receives the user's charging parameter data, "[t]he CMM 104-1 may transmit the data received by the control module 112 to the utility company 23 via the wireless network interface module 110-1." *Sutardja*, [0244]. "The utility company 23 may receive the charging parameters generated by the user and may respond to requests for charging the battery 14." *Id*., [0251]. Specifically, "[t]he computer 134 located at the utility company 23 may comprise the LMM 134-1." *Id*., [0256]. "The **LMM 134-1 may receive the charging parameters** transmitted by the CMM 104-5 and/or the user." *Id*.; [0253] ("The communication module 134-3 may receive charging parameters from CMMs and/or users of multiple vehicles. The LMM 134-1 may analyze the load on the distribution system based on the requested charging parameters from multiple customers."). Because the LMM 134-1 is implemented on computer 134, computer 134 receives the charging parameters, which include the user's desired charge level. *Dec.*, ¶133. Thus, computer 134 (*one or more processing devices*) is also programmed to *receiv[e] information indicative of a desired charge level of a battery* (i.e., a predetermined level) *of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle*. *Id*.

Accordingly, Sutardja discloses limitation 1[b][i] in two ways. First, this limitation is met by control module 112 receiving the user's charging parameters from the user interface module 108. *Dec.*, ¶134. Second, this limitation is also met

by computer 134 receiving the user's charging parameters from the CMM 104 via the communications network. *Id*.

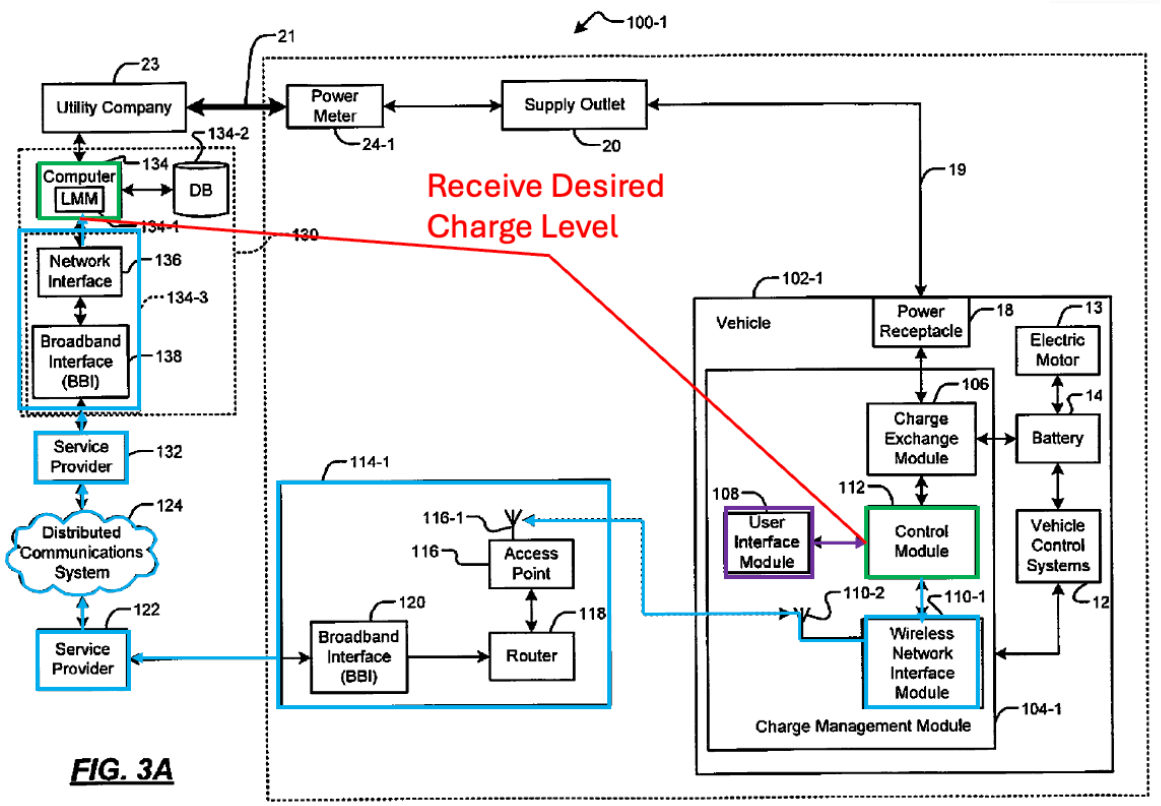


FIG. 3A

Id. (citing *Sutardja*, FIG. 3A); *Sutardja*, FIG. 4A.

5. Claim 1[b][ii]: "via a Graphical User Interface (GUI) forming a part of the electric vehicle and"

Sutardja's user interface module 108 in vehicle 102 "may comprise a keypad, a display, a microphone, and/or a speaker[,]" which the user uses to enter the charging parameters, including a desired charge level (e.g., full charge). *Sutardja*, [0243]; Claim 1[b][i].

In related art, Donnelly teaches a hybrid vehicle with a GUI displayed on a touchscreen that receives the user's commands. *Infra*. The combination of Sutardja and Donnelly renders obvious the user defining a desired charge level of a battery *via a Graphical User Interface (GUI) forming a part of the electric vehicle*. *Dec.*, ¶135.

a) Donnelly's Teachings

Donnelly teaches a GUI implemented via a display configured to receive touchscreen commands for a hybrid vehicle, such as trains, cars, and trucks. *Donnelly*, 21:47-58, 26:6-8 (disclosing "various inventive features are applied to vehicles other than locomotives, such as cars,…and trucks"), 1:36-38; *cf. '788 Patent*, 3:37-41 (describing trains as exemplary electric vehicles); *Dec.*, ¶136. Donnelly teaches:

> [T]he **control system for the various components of the locomotive requires a Graphical User Interface display ("GUI") to provide a user interface** for viewing the various monitored parameters and the operational states of the various components and **providing operational commands** to the various components. This GUI is preferably implemented using a series of related display screens which are configured to **receive touch screen commands**. This system of screens allows the operator and maintenance crew to monitor and control, for example, the **state of the charging generator, the battery pack**, the individual drive axles and other functions.

Donnelly, 21:47-58.

Donnelly thus teaches user input received via *a graphical user interface*, namely the touchscreen commands received via Donnelly's GUI. *Dec.*, ¶138.

b) Motivation to Combine

A POSITA would have found it obvious and been motivated to implement Sutardja's user interface module 108 in vehicle 102 with a GUI displayed on a touchscreen for receipt of the charging parameters or information inputted by the user, per Donnelly. *Dec.*, ¶139. Sutardja already teaches that user interface module 108 has input elements, including a keypad, and output elements, including a display. *Sutardja*, [0243]. Sutardja's user interface module 108 in vehicle 102 *form[s] a part of the electric vehicle*, because the user interface module is in the vehicle. *Id.*, FIG. 3A (depicting user interface module 108 in vehicle 102). Similarly, in the combination where Sutardja's user interface module is implemented as Donnelly's touchscreen displaying a GUI, the modified user interface module displaying a GUI likewise *form[s] a part of the electric vehicle*. *Dec.*, ¶139.

As opined by Mr. Andrews, GUIs were the standard paradigm for Human-Computer Interaction long before the alleged invention of the '788 Patent. *Dec.*, ¶140 (citing *Ishii*). Indeed, it was well-known that GUIs were favorable for facilitating user input because GUIs make "an application easy, practical, and efficient to use" and "allow the user to concentrate on the task at hand." *Id.*, (citing *Jansen*). Thus, a POSITA would have understood that it would have been

advantageous to allow the user to enter Sutardja's charging parameters via a GUI because users would have already been accustomed to interacting with GUIs for data entry tasks. *Dec.*, ¶141. A POSITA would have been motivated to combine the prior art elements of Sutardja's user interface module 108 that allows the user to enter charging parameters with Donnelly's known method of using a GUI displayed on a touchscreen to receive user inputs to yield the predictable result of allowing the user to efficiently enter their desired charging parameters in a familiar and user-friendly manner. *Id*., ¶¶141-144 Given the ubiquity of GUIs and touchscreens in vehicles and the familiarity of users entering information via GUIs, there would have been a reasonable expectation of success (REOS) configuring Sutardja's control module 112 to receive the user's charging parameters via a GUI. *Id.*, ¶145.

6. Claim 1[b][iii]: "adapted to display a unitary vehicle charge indicator comprising a combination of input and output GUI elements the GUI elements comprising: (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and (iii) a third portion comprising a slider by which an amount of charge may be specified;"

The Sutardja-Donnelly touchscreen displaying a GUI combined with Letendre renders obvious Claim 1[b][iii]. As discussed below, Donnelly teaches a GUI displayed on a touchscreen that includes a bar graph, where the bar graph comprises an *output GUI element* comprising*: (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion*

indicative of an uncharged capacity of the battery of the electric vehicle.[6] Letendre teaches a GUI displaying an *input GUI element* comprising *a third portion comprising a slider by which an amount of charge may be specified*. It would have been obvious to modify the Sutardja-Donnelly touchscreen displaying a GUI to include Donnelly's bar graph modified to include Letendre's slider for inputting the desired charge. Thus, the combination of Sutardja-Donnelly-Letendre renders obvious a GUI *adapted to display a unitary vehicle charge indicator comprising a combination of input and output GUI elements the GUI elements comprising* the *first*, *second*, and *third* portions.

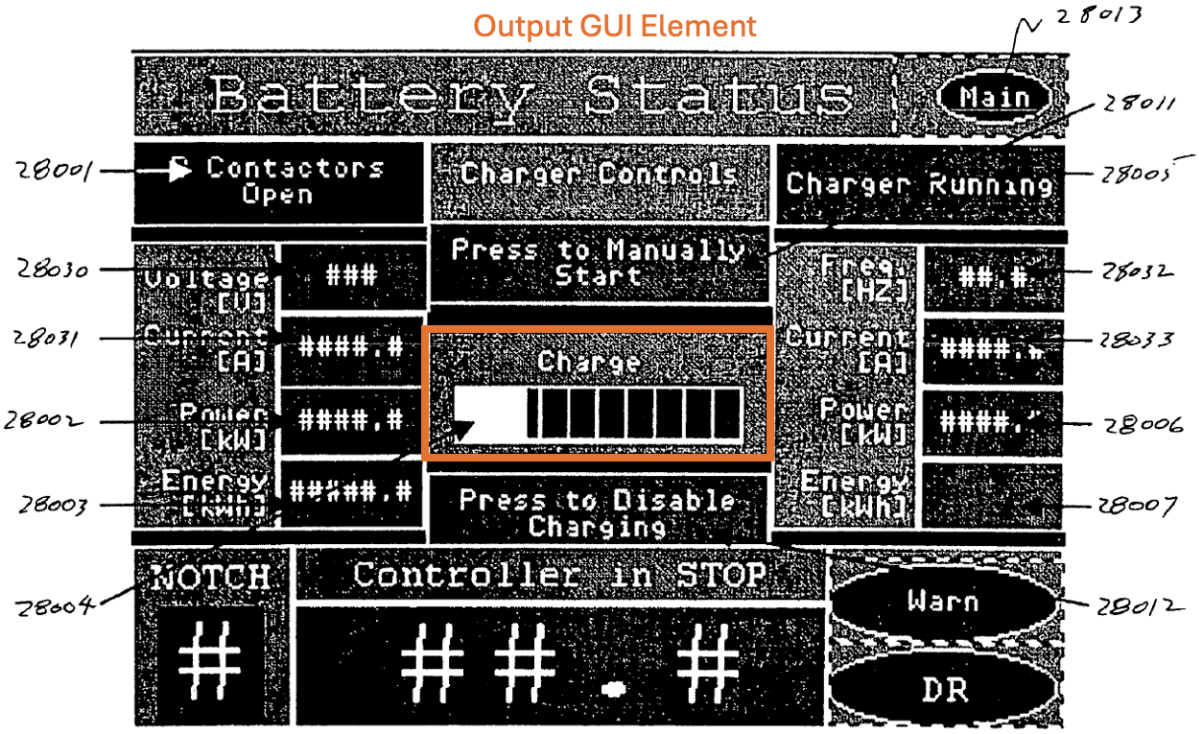
[6] Petitioner notes that dependent Claim 4 recites "the first portion operates to **output** the amount of charge residing in the battery, the second portion operates to **output** the uncharged capacity of the battery and the third portion is **an input GUI element**." Likewise, dependent Claim 9 recites "the first portion is an output GUI element, the second portion is an output GUI element and the third portion is an input GUI element." Therefore, Petitioner interprets *a combination of input and output GUI elements* to at least include the *first*, *second*, and *third* portions.

a) Output GUI Element Comprising First and Second Portions

(1) <u>Donnelly's Teachings</u>

Donnelly's GUI includes an *output GUI element, the GUI elements comprising (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle*.

Regarding the claimed *output GUI element*, Donnelly's GUI displays, among other things, a bar graph depicting the state of charge of the battery on the touchscreen display. *Donnelly*, 21:47-58 (disclosing GUI receiving touchscreen commands and displaying "state of the charging generator, the battery pack"), 23:16-20, 23:31-33, FIG. 28. Donnelly teaches a "Battery Status Screen" that "displays details about the electrical state of the energy storage unit (e.g., battery)" and includes a "Battery State of Charge 28004, which depicts, in a bar graph format, the state of charge of the energy storage unit by measuring the amp-hours in and the amp-hours out[.]" *Id.,* 23:16-33. Donnelly expressly discloses an exemplary "energy storage unit" is a battery, and the header for Fig. 28 is "Battery Status[.]" *Donnelly*, 23:16-19, FIG. 28. Therefore, field 28004 discloses the state of charge for a *battery*. *Dec.*, ¶150. Because the Battery State of Charge bar graph 28004 outputs "the state of charge of the energy storage unit[,]" it qualifies as the claimed *output GUI element*:



Dec., ¶149 (citing *Donnelly*, FIG. 28); *'788 Patent*, 4:60-63 ("A touch sensitive display device (or 'touch screen'), for example,…may also provide output such as graphics, text, and/or other data via the same display screen.").

For the reasons discussed above, the claimed *first* and *second portions* of the GUI are printed subject matter and are not entitled to any patentable weight. *See* Section III.C.1. Regardless, Donnelly's field 28004 displaying a bar graph indicating the amount of charge and uncharged capacity *compris[es] (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle*; and *(ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle*.

The bar graph of field 28004 illustrates two portions: (1) the filled-in portion comprising dark-colored rectangles; and (2) the unfilled portion comprising white space. A POSITA would have reasonably understood or found obvious that because the bar graph of field 28004 depicts the "state of charge[,]" one of the portions indicates *an amount of charge residing in a battery of the electric vehicle*, and the other of the portions indicates *an uncharged capacity of the battery of the electric vehicle*. *Dec.*, ¶¶151-153.

Additionally, variable levels of a fillable object are commonly depicted via portions of a bar graph "filled in" versus "not filled in." *Dec.*, ¶154. Because (1) field 28004 is a bar graph depicting the state of charge; (2) visual indicators representing an amount of a filled object were well known; and (3) Claim 1[b][iii] does not recite any visual characteristics of the first and second portion, other than the information being indicated within the *unitary vehicle charge indicator*, a POSITA would have found obvious one portion of the Donnelly bar graph represents the charged amount of the battery (e.g., dark portion), and the other, visually-contrasting portion represents the uncharged capacity of the battery (e.g., white portion). *Dec.*, ¶155.

(2) Motivation to Combine

A POSITA would have found it obvious and been motivated to modify Sutardja-Donnelly's touchscreen displaying a GUI to provide an *output GUI element comprising (i) a first portion indicative of an amount of charge residing in a battery*

of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle, as taught by Donnelly. *Dec.*, ¶156. It would also have been obvious to include Donnelly's Battery State of Charge bar graph as an output GUI element so that the user knows the current level of charge of vehicle 102's battery. *Id.*

Sutardja teaches that CMM 104 includes a charge exchange module 106 that "may monitor the **amount of charge in the battery 14**, may communicate data regarding the **amount of charge in the battery 14** to the control module 112…" *Sutardja*, [0242]. Because Sutardja's control module 112 already has "data regarding the amount of charge in the battery 14," it would have been obvious to a POSITA to include an output GUI element, such as Donnelly's Battery State of Charge bar graph, to communicate that information to the user. *Dec.*, ¶¶157-159. Namely, a POSITA would have been motivated to look to the teachings of Donnelly's output GUI because it would have advantageously communicated to the user information already within Sutardja's control module (i.e., data regarding the amount of charge in the battery 14) and users would have found it beneficial to be able to more easily and conveniently see the information in the bar graph form taught by Donnelly (rather than for example mere words or digits on a screen that would have been more dangerous to read while driving). *Id.*, ¶157.

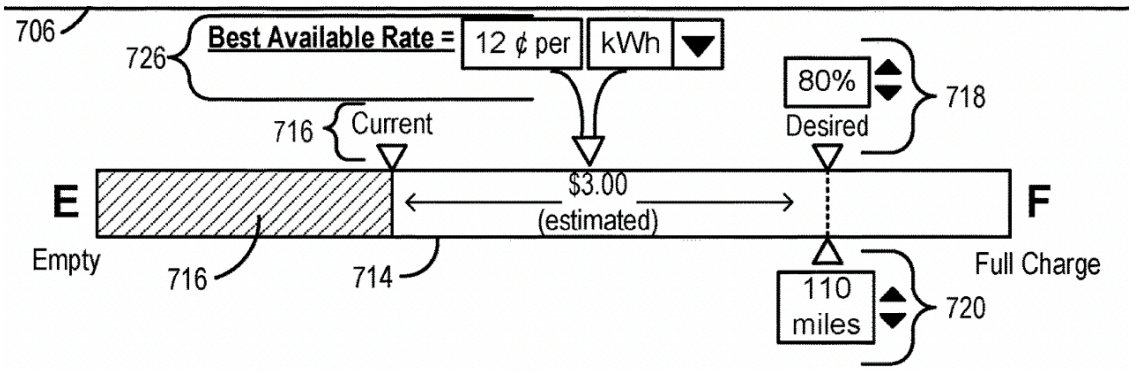
Modifying the Sutardja-Donnelly touchscreen GUI in this way would have simply required combining prior art elements (i.e., an output GUI element depicting a bar graph showing the amount of charge in the battery) according to known methods to yield predictable results of allowing the user to view the current charge level of the battery. *Dec.* ¶160. Additionally, a POSITA would have been motivated to ensure the user sees the current charge level prior to choosing charging parameters. *Dec.* ¶¶158-159. A user would appreciate viewing this displayed information would help them decide the amount of charge to specify in the charging parameters. *Id.*

The modification would have had a REOS, as Sutardja's modified user interface module 108 includes a touchscreen display presenting a GUI. *See* Claim 1[b][i].; *Dec.*, ¶161. The user interface module 108 communicates with control module 112 (*Sutardja*, [0243], FIG. 3A) and control module 112 already receives information about the current level of battery charge ([242]). Thus, all that is required in the modification is (1) including programming in the memory that control module 112 executes to generate a GUI on the touchscreen displaying the output GUI element, including the bar graphic showing the uncharged and charged amount of the batteries; and (2) programming the control module 112 to use the current charge of battery information when generating the GUI bar graphic. *Dec.*, ¶161.

b) Input GUI Element Comprising a Slider for Specifying an Amount of Charge

(1) ’788 Patent’s Description of a Slider

The ’788 Patent describes that “a desired charging level” may be “based on a desired distance of travel.”



’788 Patent, FIG. 7 (excerpt) (illustrating RN 720, desired charge level for a set range of 110 miles), 19:59-67, 15:8-18 (describing setting “desired charge range level 720 to match the desired distance”); *Dec.*, ¶162.

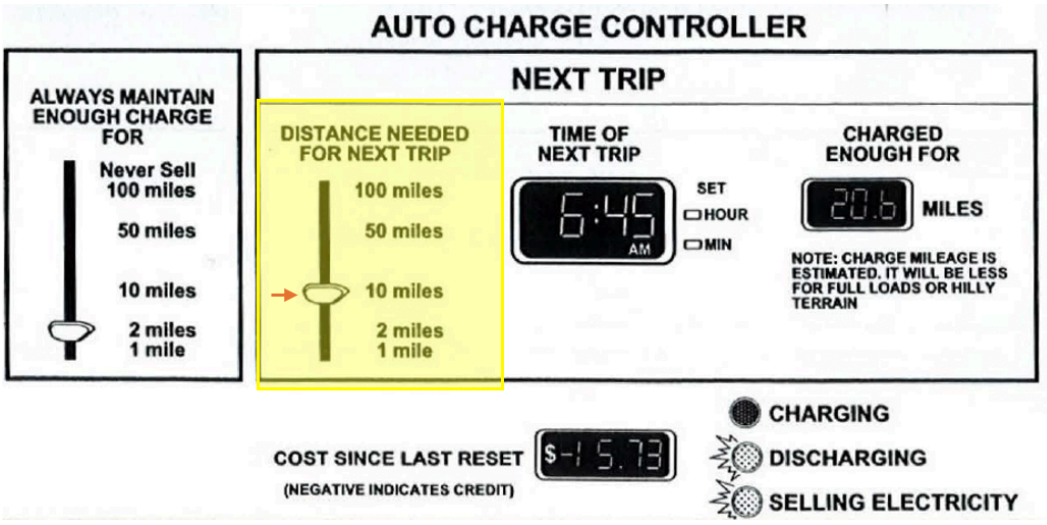
(2) Sutardja’s Teachings

Sutardja teaches that “[a] user of the vehicle 102-1 may use the user interface module 108 to set charging parameters for charging the battery 14...” *Sutardja*, [0243]. The user’s charging parameters include a desired charge level (e.g., full charge) and a requested charge completion time. *Id.*, [0051] (“In another feature, the computer program further comprises monitoring a charge level of the battery and **including the charge level in the first set of charging parameters**.”), [0119] (“[O]ne or more of the N first sets of **charging parameters include charge levels**

and requested charge completion times for the batteries of corresponding ones of the N vehicles."), [0270] ("The charge monitoring module 150 may inform the control module 112 when the **battery 14 is charged to a predetermined level (e.g., full charge) that may be indicated in the charging parameters**."). For example, the user may enter parameters requesting "**a full charge** daily between 9 pm and 6 am." *Id.*, [0262]. Therefore, Sutardja teaches that *an amount of charge may be specified*. *Dec.*, ¶163.

(3) Letendre's Teachings

Letendre teaches an *input GUI element* comprising *a slider by which an amount of charge may be specified*, namely an "auto charge controller" "control panel" including a slider the driver selects to "set [] the length of the expected next trip" (here, 10 miles):



Letendre, 18 and 20, 19 (disclosing "a control that the driver sets according to driving needs"); *Dec.*, ¶166 (citing *Kempton* (Ex. 1073), identified in Letendre, 19, as the source for the above figure, and which refers to the control as a "slider").

Letendre discloses the control may be "physical, on the dash, or on a Webpage." *Letendre*, 19-20. A POSITA would have understood or found obvious a selectable control (e.g., Letendre's slider) on a Webpage is a visually selectable element on a GUI. *Dec.*, ¶168. Specifically, a Webpage displays graphical elements, and because the control is selectable by a user, per Letendre, the control is a graphical element on a GUI. *Id.*

Letendre thus discloses a slider similar to that described in the '788 Patent, namely a selectable control to indicate a desired level of charge based on the miles needed for travel. *Dec.*, ¶¶164-169.

(4) <u>Sutardja-Donnelly-Letendre Teach Claim 1[b][iii], Including a "Unitary" Indicator</u>

The Sutardja-Donnelly touchscreen displaying a GUI is modified to display Donnelly's bar graph, where the bar graph includes an output element comprising *(i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle;* and *(ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle. See* Section V.A.6.a). The Sutardja-Donnelly GUI displaying a bar graph is further modified to display Letendre's slider on the bar graph to select an amount of charge, such that Letendre's slider is *an input GUI*

element…comprising a slider by which an amount of charge may be specified. The resulting bar graph displaying an amount of charge and an uncharged capacity and a slider for selecting a charge amount results in *a combination of input and output GUI elements* as required by the claim.

Regarding the claimed *unitary vehicle charge indicator* and applying the construction in Section III.C.1 that a *unitary vehicle charge indicator* at least includes a bar graph comprising the charged, uncharged, and slider portions, Donnelly's bar graph presented on the GUI modified to include Letendre's slider is a ***unitary*** *vehicle charge indicator*. *Dec.*, ¶170. The proposed combination of Letendre's slider and Donnelly's battery status indicator into Sutardja's user interface 108 renders obvious *a unitary vehicle charge indicator* comprising the charged, uncharged, and slider portions, as construed above.

(5) Motivation to Combine

A POSITA would have been motivated and found it obvious to modify Sutardja-Donnelly to include Letendre's graphical slider on the charge level bar graph of the GUI, where the user moves the slider to specify a desired charge. *Dec.*, ¶171. For the reasons discussed above, it would have been obvious to a POSITA to implement Sutardja's user interface module 108 in vehicle 102 with a GUI displayed on a touchscreen for receipt of the charging parameters or information inputted by the user. *See* Claim 1[b][i]. A POSITA would have understood that input GUI

elements would be required to allow the user to input the charging parameters. *Dec.*,¶171.

Letendre expressly teaches, suggests, and motivates the combination. *Dec.*,¶172. Letendre teaches: "it is essential that the driver be able to limit any draw down so travel is not affected." *Letendre*, 19. Letendre then discusses "a control the driver sets according to driving needs" and provides the exemplary slider display discussed above. *Id.* Given Sutardja teaches vehicle battery charging and a user interface module on-board the vehicle to manage charging preferences, a POSITA would have been expressly motivated to include an on-board GUI with a slider by which the user indicates a desired charge level, as such is "essential…so travel is not affected." *Letendre*, 19; *Sutardja*, [0262]; *Dec.*, ¶172.

The modification would have merely required applying a known technique (using a slider to adjust charge settings on a vehicle) to a known device (GUI of an electric vehicle showing a charge bar graphic) ready for improvement to yield the predictable results of easily allowing a user to choose a desired level of charge. *Id.,* ¶176. A POSITA would have appreciated the increased ease of use and convenience of only having to slide their finger across the GUI on the input/output display to indicate the amount of charge in Sutardja's charging parameters rather than having to press the screen multiple times to enter a percentage charge, for example. *Id.* Sliders on a GUI were known to make inputting information easier for users, and

thus a POSITA would have been motivated to include a slider on the bar graphic to allow a user to easily indicate the amount of charge. *Id.*

Additionally, there would have been a motivation for providing a *unitary* element, as a POSITA would have recognized the convenience and aesthetic appeal of providing the relevant battery charge input and output portions and the slider on the GUI simultaneously, enabling the user to set the desired charge levels with a single touchscreen input. *Dec.* ¶¶173-175. Providing the first, second, and third portions together on a GUI would have been obvious to try, i.e., the most desirable option from a finite set of possible options, namely combined or separate portions of the GUI. *Id.,* ¶177. A POSITA would have recognized providing combined, "unitary" GUI elements would have desirably improved display space utilization, concisely provided a user with all relevant battery information at a single glance, and improved the user's ability to discern the difference between the battery's current amount of charge and the user-entered desired amount of charge. *Id.,* ¶¶173-175. A POSITA would have recognized that each of these motivations would have been further improved by providing the first, second, and third GUI portions superimposed, to the extent such is necessary to satisfy a "unitary" vehicle charge indicator. *Id*.

The modification would have had a REOS, given that Sutardja already teaches a user inputting charging preferences (including a desired charge level) via user

interface module 108. *Sutardja*, [0262]; *Dec.*, ¶178. Additionally, applying a slider graphic on a GUI to allow a user to adjust a parameter was well-known. *Dec.*, ¶178.

7. Claim 1[b][iv]: "displaying a charging status of the electric vehicle via the GUI; and"

The Sutardja-Donnelly combination renders Claim 1[b][iv] obvious.

a) Sutardja's Teachings

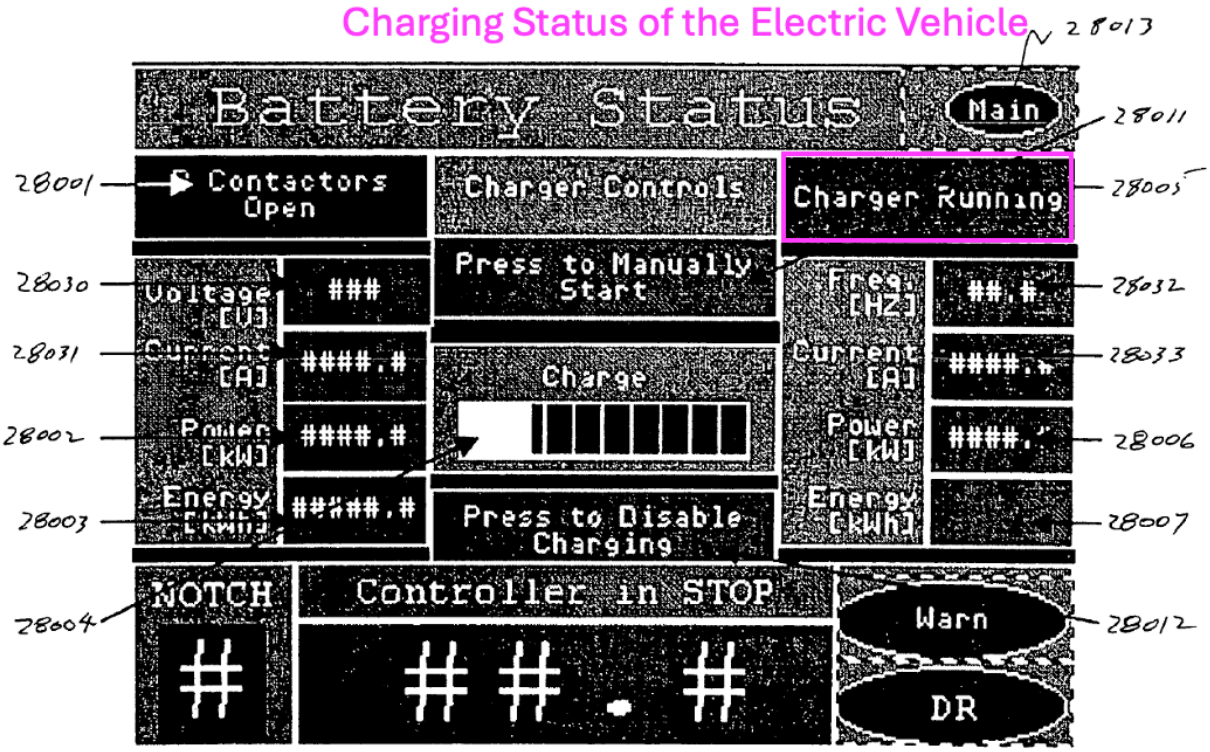
Sutardja teaches that CMM 104 includes a charge exchange module 106 that "may monitor the amount of charge in the battery 14, may communicate data regarding the amount of charge in the battery 14 to the control module 112, and may exchange charge between the battery 14 and the power receptacle 18." *Sutardja*, [0242], [0244] ("Specifically, the control module 112 may receive data relating to the amount of charge present in the battery 14 (i.e., a charge level of the battery 14) from the charge exchange module 106."), FIG. 3A. "[T]he charge exchange module 106 may comprise a charge monitoring module 150, a charging module 152, and a charge retrieval module 154." *Id.*, [0268], FIG. 7. "The charge monitoring module 150 may monitor the amount of charge in the battery 14 when the battery 14 is being charged and may inform the control module 112 when the charging is completed." *Id.,* [0268]. Specifically, "[t]he charge monitoring module 150 may inform the control module 112 when the battery 14 is charged to a predetermined level (e.g., full charge) that may be indicated in the charging parameters." *Id.,* [0270]. "Additionally, the **control module 112 may provide the data to the user via the**

user interface module 108." *Id.,* [0257]. Thus, Sutardja's control module 112 (i.e., *one or more processing devices*) is programmed to receive charging status information from the charge monitoring module 150 and is programmed to provide data to the user via the user interface module 108. *Dec.*, ¶¶180-182.

In related art, Donnelly's GUI *display[s] a charging status of the electric vehicle*.

b) Donnelly's Teachings

Donnelly's GUI includes a "Charger Status 28005" field, "which reports what the mechanical-to-electrical conversion device (e.g., charging generator) is currently doing such as, for example, mode of operation (warming up etc); current charge, load charge, cooling status[.]" *Donnelly*, 23:34-38. As shown in FIG. 28 below, the "Charger Status" field shows when the charger is running – i.e., charging the battery. *Id*., FIG. 28; *Dec.*, ¶183. Because Donnelly teaches the GUI displaying a charging status, such as "Charger Running" as shown in FIG. 28, Donnelly teaches *displaying a charging status of the electric vehicle via the GUI*:



Dec., ¶183 (citing *Donnelly*, FIG. 28).

c) Motivation to Combine

A POSITA would have found it obvious and been motivated to configure Sutardja's control module 112 (i.e., *one or more processing devices*) to display the charging status of the electric vehicle via the GUI, per Donnelly. *Dec.*, ¶184. As discussed, Sutardja's control module 112 receives data from the charge management module 150, including the amount of charge in the battery when the battery is being charged and an indication that charging is complete when the battery has been charged to the desired charge level (e.g., full charge). *Sutardja*, [0268], [0270]. Sutardja also teaches that the control module 112 provides the data to the user via the user interface module 108.

A POSITA would have understood that displaying the charging status on the GUI would have provided valuable visual feedback to the user, allowing the user to know whether the battery is charging as expected or if there is some problem preventing charging, such as the power receptacle 18 not being plugged into the supply outlet 20. *Dec.*, ¶185. A POSITA would have understood that EVs have long provided visual indications to the user when they were charging. *Id*. Thus, a POSITA would have been motivated to configure Sutardja's control module 112 to display the charging status of the electric vehicle via the GUI, per Donnelly, thus representing a combination of prior art elements according to known methods to yield predictable results. *Id.*, ¶186. Because (1) Sutardja's control module 112 receives charging status information from the charge monitoring module 150 and (2) displaying the charging status of rechargeable devices was conventional, there would have been a REOS modifying the software running on the control module 112's processor to display the charging status of the electric vehicle on the GUI. *Id*.

8. Claim 1[b][v]: "increasing, in accordance with the desired charge level, a level of charge of the battery of the electric vehicle;"

Sutardja's control module 112 (i.e., *one or more processing devices*) "control[s] the charging of the battery 14…based on the charging parameters and/or the alternate charging parameters." *Sutardja*, [0267], [0244]. "Specifically, the control module 112 may receive data from the charge exchange module 106

regarding the amount of charge in the battery 14" and "may receive charging parameters input by the user and/or alternate charging parameters transmitted by the utility company 23." *Id.* "The control module 112 may generate a charge control signal based on the charging parameters based on which the charging module 152 may charge the battery 14." *Id.*, [0269]. "Specifically, when the battery 14 is being charged, the charge monitoring module 150 may activate a converter 156 and the charging module 152 based on the charging parameters received from the control module 112." *Id*. "The converter 156 may receive input power from the power receptacle 18" and "may convert the input power to a direct current (DC) voltage." *Id.* "The charging module 152 may generate an output that is suitable to charge the battery 14." *Id*. "The charge monitoring module 150 may inform the control module 112 when the battery 14 is charged to a predetermined level (e.g., full charge) that may be indicated in the charging parameters." *Id*., [0270] "Subsequently, the charge monitoring module 150 may stop charging the battery 14 by deactivating the converter 156 and the charging module 152." *Id.*

Thus, the control module 112 is programmed to generate a charge control signal based on the charging parameters (including the desired charge level) that causes the charge exchange module 106 to *increase[], in accordance with the desired charge level, a level of charge of the battery of the electric vehicle*. *Dec.*, ¶¶187-188.

9. Claim 1[b][vi]: "wherein the desired charge level of the battery represents a specific amount of charge desired to reside in the battery after increasing the level of charge."

Sutardja's charging parameters include *a desired charge level of a battery of an electric vehicle*, which is "a predetermined level (e.g., full charge)" and therefore *represents a specific amount of charge desired to reside in the battery after increasing the level of charge*. *Sutardja*, [0270], [0051], [0119], [0262]; *Dec.*, ¶189; Claim 1[b][i].

B. Claim 2: "The electrical charging system of claim 1, wherein executing the instructions by the one or more processing devices further results in: determining, based at least on the desired charge level, a charging schedule for the electric vehicle."

Sutardja's LMM, running on computer 134 (i.e., *the instructions [executed] by the one or more processing devices*) performs the step of *determining, based at least on the desired charge level, a charging schedule for the electric vehicle*. *Dec.*, ¶191. Specifically, the LMM "**determine[s] a schedule for charging batteries** in multiple vehicles" and "generate[s] alternate charging parameters and generate[s] replies to be transmitted to multiple users." *Sutardja*, [0253], [0116] ("The load management module analyzes the N first sets of charging parameters, determines a schedule for charging the batteries of the N vehicles, and generates N replies for the N vehicles based on the schedule."). "[T]he load management module **generates the schedule based on the charge levels** and the requested charge completion times." *Id.*, [0122]. "For example, the utility company 23 may schedule charging as follows.

The utility company 23 may supply power to a first set of users from 9 pm to 10 pm, to a second set of users from 10 pm to 11 pm, etc." *Id.*, [0263]. "Subsequently, the utility company 23 may supply power to the first set of users from 3 am to 4 am, etc." *Id.* "Eventually, users requesting charge by 6 am may receive the requested charge by 6 am." *Id.* "Thus, the utility company 23 may control charging times, etc. of the batteries in multiple vehicles without loading the power distribution system." *Id*.

While Petitioner does not believe that this limitation should be interpreted as means-plus-function (*see* Section III.C.3), Sutardja nevertheless teaches it. For the reasons discussed immediately above, Sutardja's LMM computer is a processor executing computer program instructions for performing the disclosed algorithm of calculating an estimated time to achieve the desired charge (e.g., 6 am). *Sutardja*, [0253], [0116], [0122], [0263]; *Dec.*, ¶¶192-193. Sutardja also teaches that the user's charging parameters "may indicate that the utility company may choose the time to charge the batteries **when the cost is lowest**." *Sutardja*, [235]. Because the LMM uses the user's charging parameters to generate the charging schedule, the LMM also identifies when during the available charging window would be the most cost-effective to acquire the desired estimated charge. *Id.*, [0116] ("The load management module analyzes the N first sets of charging parameters, determines a schedule for charging the batteries of the N vehicles, and generates N replies for the N vehicles

based on the schedule. The network interface module transmits the N replies to the N vehicles, respectively."), [0187] ("In another feature, the load management means analyzes the N first sets of charging parameters, determines a schedule for charging of the N vehicles, and generates N replies for the N vehicles based on the schedule, respectively."), [0253] ("The LMM 134-1 may analyze the load on the distribution system based on the requested charging parameters from multiple customers. The LMM 134-1 may determine a schedule for charging batteries in multiple vehicles."); *Dec.*, ¶193.

C. Claim 3: "The electrical charging system of claim 2, wherein the increasing of the level of charge is performed in accordance with the charging schedule."

Sutardja teaches that charging the vehicle's battery *is performed in accordance with the charging schedule*. *Dec.*, ¶194. Based on the charging schedule, "[t]he utility company 23 may supply power to a first set of users from 9 pm to 10 pm, to a second set of users from 10 pm to 11 pm, etc. Subsequently, the utility company 23 may supply power to the first set of users from 3 am to 4 am, etc. Eventually, users requesting charge by 6 am may receive the requested charge by 6 am." *Sutardja*, [0263].

D. Claim 4: "The electrical charging system of claim 1, wherein the first portion operates to output the amount of charge residing in the battery, the second portion operates to output the uncharged capacity of the battery and the third portion is an input GUI element."

See Claim 1[b][iii].

E. Claim 6

1. Claim 6[Pre]: "An electrical charging system, comprising:"

See Claim 1[Pre].

2. Claim 6[a]: "one or more processing devices; and"

See Claim 1[a].

3. Claim 6[b]: "a non-transitory memory device in communication with the one or more processing devices, the non-transitory memory storing instructions that when executed by the one or more processing devices, result in:"

See Claim 1[b].

4. Claim 6[b][i]: "receiving information indicative of a desired charge level of a battery of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle"

See Claim 1[b][i].

5. Claim 6[b][ii]: "via a Graphical User Interface (GUI) forming a part of the electric vehicle and"

See Claim 1[b][ii].

6. ***Claim 6[b][iii]: "adapted to display a unitary vehicle charge indicator comprising: (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and (iii) a third portion comprising a slider by which an amount of charge may be specified;"***

See Claim 1[b][iii].

7. ***Claim 6[b][iv]: "displaying a charging status of the electric vehicle via the GUI; and"***

See Claim 1[b][iv].

8. ***Claim 6[b][v]: "increasing, in accordance with the desired charge level, a level of charge of the battery of the electric vehicle;"***

See Claim 1[b][v].

9. ***Claim 6[b][vi]: "wherein the desired charge level of the battery represents a specific amount of charge desired to reside in the battery after increasing the level of charge."***

See Claim 1[b][vi].

F. Claim 7: "The electrical charging system of claim 6, wherein executing the instructions by the one or more processing devices further results in: determining, based at least on desired charge level, a charging schedule for the electric vehicle."

See Claim 2.

G. Claim 8: "The electrical charging system of claim 7, wherein the increasing of the level of charge is performed in accordance with the charging schedule."

See Claim 3.

H. Claim 9: "The electrical charging system of claim 6, wherein the first portion is an output GUI element, the second portion is an output GUI element and the third portion is an input GUI element."

See Claim 4.

I. Claim 11

1. Claim 11[Pre]: "An electrical charging system, comprising:"

See Claim 1[Pre].

2. Claim 11[a]: "one or more processing devices; and"

See Claim 1[a].

3. Claim 11[b]: "a non-transitory memory device in communication with the one or more processing devices, the non-transitory memory storing instructions that when executed by the one or more processing devices, result in:"

See Claim 1[b].

4. Claim 11[b][i]: "receiving information indicative of a desired charge level of a battery of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle"

See Claim 1[b][i].

5. Claim 11[b][ii]: "via a Graphical User Interface (GUI)"

See Claim 1[b][ii].

6. ***Claim 11[b][iii]: "adapted to display a unitary vehicle charge indicator comprising a combination of input and output GUI elements the GUI elements comprising: (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and (iii) a third portion comprising a slider by which an amount of charge may be specified;"***

See Claim 1[b][iii].

7. ***Claim 11[b][iv]: "displaying a charging status of the electric vehicle via the GUI; and"***

See Claim 1[b][iv].

8. ***Claim 11[b][v]: "increasing, in accordance with the desired charge level, a level of charge of the battery of the electric vehicle;"***

See Claim 1[b][v].

9. ***Claim 11[b][vi]: "wherein the desired charge level of the battery represents a specific amount of charge desired to reside in the battery after increasing the level of charge."***

See Claim 1[b][vi].

J. Claim 12: "The electrical charging system of claim 11, wherein executing the instructions by the one or more processing devices further results in: determining, based at least on the desired charge level, a charging schedule for the electric vehicle."

See Claim 2.

K. Claim 13: "The electrical charging system of claim 12, wherein the increasing of the level of charge is performed in accordance with the charging schedule."

See Claim 3.

L. Claim 14: "The electrical charging system of claim 11, wherein the first portion operates to output the amount of charge residing in the battery, the second portion operates to output the uncharged capacity of the battery and the third portion is an input GUI element."

See Claim 4.

VI. GROUND 2: OBVIOUSNESS OF CLAIMS 5, 10, AND 15

A. Claim 5: "The electrical charging system of claim 1, wherein the increasing of the level of charge of the battery of the electric vehicle, comprises: transmitting a control signal to a parking space charge device that starts a charging, in accordance with the charging schedule, of the electric vehicle."[7]

The combination of Sutardja and Seelig renders Claim 5 obvious.

1. Sutardja's Teachings

Per Sutardja, "[a] vehicle 102-1 is charged at a location such as a home or work location." *Sutardja*, [0239]. "The location may include the supply outlet 20 that may receive power from the utility company 23 via the power distribution line 21." *Id*., [0240], FIG. 3A. Because home and work locations include parking areas in the form of garages, carports, driveways, and/or parking lots and because it was well-known that chargers are stationary, a POSITA would have understood that Sutardja implicitly teaches charging vehicle 102-1 in *a parking space*. *Dec.*, ¶221.

[7] Claim 5 depends from Claim 1 and includes the phrase "the charging schedule," which lacks antecedent basis. For purposes of this IPR, Petitioner interprets "the charging schedule" of Claim 5 to be "a" charging schedule.

Moreover, a POSITA would have understood that because a car that is stationary is "parked" and because the charging apparatus is in a specific location (e.g., home or work), a POSITA would have understood and/or found it obvious that the car would be stationary in a "parking space." *Id*.

Sutardja's control module 112 controls the charging of the electric vehicle's battery based on the charging schedule received from the LMM 134-1. After the control module 112 receives the user's charging parameter data, "[t]he CMM 104-1 may transmit the data received by the control module 112 to the utility company 23 via the wireless network interface module 110-1." *Sutardja*, [0244]. "The LMM 134-1 may receive the charging parameters transmitted by the CMM 104-5 and/or the user." *Id*., [0256]; [0253] ("The communication module 134-3 may receive charging parameters from CMMs and/or users of multiple vehicles. The LMM 134-1 may analyze the load on the distribution system based on the requested charging parameters from multiple customers."). The utility company "transmit[s] a reply to the user indicating whether power can be supplied as requested" and "may propose alternate charging parameters." *Id.,* [0251]. For example, the reply received from the utility company may include "a second time to begin charging that is different than the first time" where "the first time" is the requested start time included in the user's charging parameter data. *Id.*, [0011]. As discussed with regard to Claim 2, the charging schedule determined by the LMM includes time windows for each vehicle

to start and stop charging. *See* Claim 2. Thus, the reply includes the charging schedule, including the time at which the vehicle is to start charging. *Dec.*, ¶222.

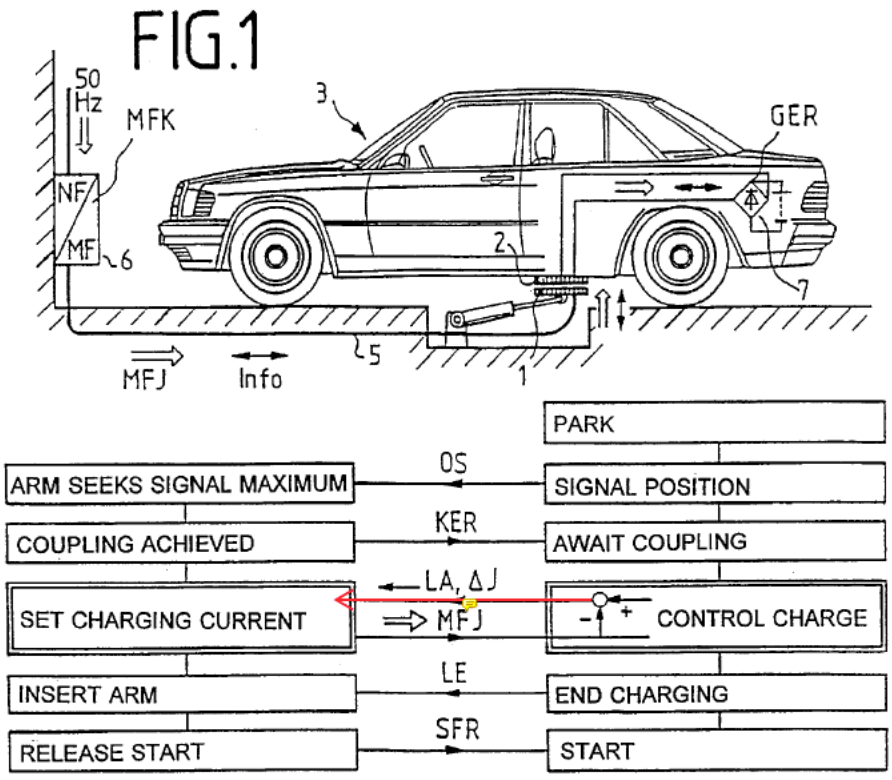
The control module 112 "generates **a charge control signal based on the reply** and the first set of charging parameters" and "[t]he charging module charges the battery of the vehicle **based on the charge control signal**." *Sutardja*, [0008]; *see also, id.,* [0045], [0267]. Thus, control module 112 generates a charge control signal based on the reply, which dictates the time to start charging. *Dec.*, ¶223. For these reasons, Sutardja teaches *wherein the increasing of the level of charge of the battery of the electric vehicle, comprises: transmitting a control signal…that starts a charging, in accordance with the charging schedule, of the electric vehicle. Dec.*, ¶¶222-223.

In Sutardja's system, the vehicle includes "a power receptacle (i.e., a plug) 18 to receive power from the supply outlet 20 via a cable and connector 19." *Sutardja*, [0006]; FIG 3A. However, a POSITA would have understood that more convenient wireless charging options were also available. *Dec.*, ¶224. In the related art, Seelig teaches a wireless inductive electric vehicle charging system. *Id.* As shown below, Seelig's inductive charging system requires *transmitting a control signal to a parking space charge device* to start charging. *Infra*.

2. Seelig's Teachings

Per Seelig, "[i]t is already known to charge the battery of electric vehicles by means of inductive charging stations (Rhein-Main-Presse, Jul. 18, 1992)." *Seelig*, 1:11-13. Seelig proposes "a method of contactless energy transmission during charging of an electric vehicle, the method being simple and convenient for the user with high operating reliability and safety in use." *Id*., 1:53-56. In Seelig's method, "the primary element 1 of an inductive transmitter[,]" which is located in a parking space, "is brought into an approach position with respect to the secondary element 2 of the transmitter, which is located on the underside of an electric car 3." *Id.*, 2:19-23, FIG. 1 (depicting car parking in a space with primary element 1). "Primary element 1 and secondary element 2 of the inductive transmitter are essentially inductive coils which are designed for an energy transmission via an air gap[.]" *Id.*, 2:60-63. After the car is parked, the primary element 1 is "brought into a predetermined position with respect to the secondary element 2 by means of a sensor-controlled motor." *Id.*, 2:35-38. "[E]lectrical energy can be transmitted from primary element 1 to secondary element 2 via an air gap of a magnitude of up to approximately 1 cm." *Id*., 2:42-44. Because primary element 1 is located in a parking space and is used to charge the electric car 3, it is *a parking space charge device*. *Dec.*, ¶226.

After primary element 1 is coupled to secondary element 2 on the vehicle, a signal "LA" is wirelessly transmitted from the electric vehicle 3 to primary element 1 to switch on a charging operation, beginning current transmission to the vehicle. *Seelig*, 2:19-45, FIG.1 (primary element 1 of a charging station separated by an "air gap" from primary element 2 located on an electric car), 6:21-38 (*pinpoint* at 6:29-32 describing transmitting control signal LA that starts a charging of the vehicle). Thus, Seelig teaches *transmitting a control signal to a parking space charge device* to start charging. *Dec.*, ¶¶227-228.



Seelig, FIG. 1.

3. Motivation to Combine

A POSITA would have found it obvious and been motivated to configure Sutardja's charge management system (CMS) 100 as a wireless charging system, as taught by Seelig. *Dec.*, ¶229. As noted by Seelig, such wireless charging stations have been known since at least the early 1990s. *Seelig*, 1:11-13. As also acknowledged by Seelig, POSITAs would have appreciated that wireless charging systems that do not require users to plug the vehicle into the power supply were known to be "simple and convenient for the user with high operating reliability and safety in use." *Seelig*, 1:53-56; *Dec.*, ¶230. For example, a POSITA would have appreciated that because the wireless charging system only requires the user to park the vehicle in a parking space that includes a charging device, there would have been no need for the user to plug the vehicle into the power supply. *Id*. A POSITA would appreciate that there would be less opportunity for human error preventing charging due to the user forgetting to plug the vehicle in. *Id.* Thus, a POSITA would have been motivated to apply Seelig's known wireless charging technique to Sutardja's CMS 100 to improve similar electric vehicle charging systems in the same way. *Id.* Because such wireless charging systems were well known for nearly two decades prior to the '788 Patent, there would have been a REOS configuring Sutardja's CMS 100 to include the necessary electrical components, such as inductive coils, a parking

space charge device, etc., to accommodate wireless charging, as taught by Seelig. *Id.*, ¶232.

As part of this modification, it would have also been obvious to incorporate Seelig's wireless charge initiation signal LA into Sutardja's charge control signaling protocol to transmit Sutardja's charge control signal generated by the control module 112 to the parking space charge device, per Seelig, that starts charging according to the charging schedule, per Sutardja. *Dec.*, ¶231. The modification combines prior art elements (wireless communication, EV charging stations) according to known methods to yield predictable results by allowing the vehicle to initiate charging at the time dictated by the charging schedule without user intervention. *Id*. Seelig expressly extols the benefits of wireless charging (which requires a wireless activation signal) as avoiding a path-impairing cable while providing "mechanical, aerodynamic and aesthetic" advantages, thus further expressly motivating the combination. *Seelig*, 1:11-50; *Dec.*, ¶229.

B. Claim 10: "The electrical charging system of claim 6, wherein the increasing of the level of charge of the battery of the electric vehicle, comprises: transmitting a control signal to a parking space charge device that starts a charging, in accordance with the charging schedule, of the electric vehicle." [8]

See Claim 5.

C. Claim 15: "The electrical charging system of claim 11, wherein the increasing of the level of charge of the battery of the electric vehicle, comprises: transmitting a control signal to a parking space charge device that starts a charging, in accordance with the charging schedule, of the electric vehicle." [9]

See Claim 5.

[8] Claim 10 depends from Claim 6 and includes the phrase "the charging schedule," which lacks antecedent basis. For purposes of this IPR, Petitioner interprets "the charging schedule" of Claim 10 to be "a" charging schedule.

[9] Claim 15 depends from Claim 11 and includes the phrase "the charging schedule," which lacks antecedent basis. For purposes of this IPR, Petitioner interprets "the charging schedule" of Claim 15 to be "a" charging schedule.

VII. GROUND 3: OBVIOUSNESS OF CLAIMS 16-17

A. Claim 16: "The electrical charging system of claim 11, wherein the GUI is forms [sic] a part of a mobile display device."[10]

The modified Sutardja includes a touchscreen display presenting a GUI. *See* Claim 1[b][ii]-[iii]. Knockeart teaches a removable personal device that may be docked on-board a vehicle and provides a touchscreen display. *Knockeart*, 2:46, Abstract, 4:32-67 (discussing removable device including an input/output interface, including a "graphical display" and "touch-screen"), FIGs. 1, 3-6 (FIGs. 5-6 disclosing communication with onboard computer), 7:49-58, FIG. 7. Knockeart discloses the removable personal device is a *mobile display device*, such as a "cellular telephone" or a PALM PDA. *Knockeart*, 12:38-41, 6:39-47; *Dec.*, ¶236 (explaining PDAs and cell phones are *mobile display devices*).

A POSITA would have been motivated and found it obvious to also display the modified Sutardja's GUI on Knockeart's removable, dockable mobile display device. *Id.*, ¶¶237-238. Using a removable device for displaying the GUI would also allow the user to view charging information when they are away from the vehicle. *Id*. For these reasons, a POSITA would have been motivated to combine prior art elements of the modified Sutardja's GUI with Knockeart's mobile display device to

[10] Claim 16 appears to have a typographical error. Petitioner interprets the phrase "the GUI is forms" as "the GUI forms[.]"

yield the predictable result of allowing the user to enter the charging parameters and check on the charging status regardless of whether the user is in the vehicle. *Id*. There would have been a REOS, as the phone already includes a touchscreen that receives "manual input[.]" *Knockeart*, 2:46-50, 4:57-59; *Dec.*, ¶239. Additionally, Sutardja describes alternative embodiments where user interface module 108 is located outside a vehicle. *Sutardja*, FIGS. 3B, 4B, 5B, [0247] ("In FIG. 3B, a CMS 100-2 may include the user interface module 108 that is arranged outside a vehicle 102-2."), [0249] ("In FIG. 4B, a CMS 1004 may include the user interface module 108 that is arranged outside a vehicle 102-4."), [0258] ("In FIG. 5B, a CMS 100-6 may include the user interface module 108 that is located outside a vehicle 102-6."). The modification, therefore, would simply require programming the processor of modified Sutardja to display the GUI on the graphical touchscreen of Knockeart's mobile device through wireless communication and/or docked connection, which is within a POSITA's expertise. *Dec.*, ¶240.

B. Claim 17: "The electrical charging system of claim 16, wherein the mobile display device is a smartphone."

For the reasons discussed above, it would have been obvious to display the modified Sutardja's GUI on Knockeart's *mobile display device*, which may be *a smartphone*. *See* Claim 16; *Dec.*, ¶¶241-242 (explaining PDAs often included audio telephone capabilities and thus were considered *smartphones*). Thus, it would have

been obvious to display the modified Sutardja's GUI on a smartphone for the same reasons. *Dec.*, ¶242.

VIII. DISCRETION UNDER § 325(D)

The Board should decline to exercise its discretion under § 325(d) because the Petitioner's prior art and arguments do not meet part one of the *Advanced Bionics* framework. None of the prior art relied on in this petition was cited or considered during prosecution of the '788 Patent, which was a first action notice of allowance. *'788 File History,* 307. Thus, part one of the framework is not met. Because part one of the framework is not satisfied, part two need not be addressed. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8, 10 (PTAB Feb. 13, 2020) (designated precedential Mar. 24, 2020). Thus, the Board should not exercise discretion to deny institution.

IX. 35 U.S.C. § 314(a) DISCRETION

The Board should not discretionarily deny the IPR. The Parties are currently involved in litigation for patents related to the '788 Patent. *See* Related Matters, below. However, the '788 Patent is not presently the subject of any patent infringement lawsuit between the Parties. *Id.* In the Litigation identified in the Related Matters, below, Patent Owner previously filed a Motion for Leave to File First Amended Complaint for Patent Infringement. (Ex. 1087, Doc. 79, including Ex. A, p. 7). In an Order dated October 31, 2024, the Court denied as moot Plaintiff's

Motion for Leave to File First Amended Complaint. (Ex. 1093, *Order*, Doc. 100). Therefore, the '788 Patent is not presently the subject of a concurrent litigation.

Additionally, the Litigation identified in the Related Matters, below, is stayed. (Ex. 1088, *Order*, Doc. 100).

Because there is no pending litigation between the Parties involving the '788 Patent, the Board should not exercise its discretion to deny this IPR.

X. CONCLUSION

Petitioner respectfully requests *inter partes* review of the Challenged Claims.

Respectfully submitted,

ERISE IP, P.A.

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COUNSEL FOR PETITIONER

XI. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1)

A. Real Party-In-Interest

Petitioner is the real party-in-interest. 37 C.F.R. § 42.8(b)(1).

B. Related Matters

The Parties are currently involved in the following Litigation: *Charge Fusion Technologies, LLC v. Tesla, Inc.*, W.D. Tex., Case No. 1:22-cv-00488. U.S. Patent Nos. 9,853,488; 10,819,135; and 10,998,753 are asserted in the Litigation and are related (i.e., in the same patent family) to the '788 Patent, which is the subject of the present IPR. In the Litigation, Plaintiff, Charge Fusion Technologies, LLC, previously filed on June 5, 2024, a Motion for Leave to File First Amended Complaint for Patent Infringement, requesting to add to the Litigation U.S. Patent Nos. 11,575,275; 11,563,338 (the subject of IPR2025-0032); 11,631,987 (the subject of IPR2025-00153); and the '788 Patent. (Ex. 1087, Doc. 79, Ex. A, p. 7). In an Order dated October 31, 2024, the Court denied as moot Plaintiff's Motion for Leave to File First Amended Complaint. (Ex. 1093, Order, Doc. 100). The '788 Patent is not presently the subject of a concurrent litigation.

Pursuant to 37 C.F.R. § 42.8(b)(2), Tesla Inc. identifies the following matters related to the '788 Patent:

Tesla, Inc. v. Charge Fusion Technologies, LLC, IPR2025-00032, regarding U.S. Patent No. 11,563,338; and

Tesla, Inc. v. Charge Fusion Technologies, LLC, IPR2025- 00153, regarding U.S. Patent No. 11,631,987.

C. Lead and Back-Up Counsel

Petitioner provides the following designation and service information for lead and back-up counsel. 37 C.F.R. §§ 42.8(b)(3) and (b)(4).

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D. 37 C.F.R. § 42.8(b)(4) – Service Information

Please address all correspondence to the lead and back-up counsel as shown above. Petitioner consents to electronic service by e-mail at the e-mail addresses provided above.

CLAIM LISTING APPENDIX
U.S. Patent No. 11,990,788 for Claims 1-17

Claim Designation	Claim Language
Claim 1[Pre]	An electrical charging system, comprising:
Claim 1[a]	one or more processing devices; and
Claim 1[b]	a non-transitory memory device in communication with the one or more processing devices, the non-transitory memory storing instructions that when executed by the one or more processing devices, result in:
Claim 1[c]	receiving information indicative of a desired charge level of a battery of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle via a Graphical User Interface (GUI) forming a part of the electric vehicle and adapted to display a unitary vehicle charge indicator comprising a combination of input and output GUI elements the GUI elements comprising:
Claim 1[d]	(i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle;
Claim 1[e]	(ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and
Claim 1[f]	(iii) a third portion comprising a slider by which an amount of charge may be specified;
Claim 1[g]	displaying a charging status of the electric vehicle via the GUI; and
Claim 1[h]	increasing, in accordance with the desired charge level, a level of charge of the battery of the electric vehicle;
Claim 1[i]	wherein the desired charge level of the battery represents a specific amount of charge desired to reside in the battery after increasing the level of charge.
Claim 2[Pre]	The electrical charging system of claim 1, wherein executing the instructions by the one or more processing devices further results in:

Claim Designation	Claim Language
Claim 2[a]	determining, based at least on the desired charge level, a charging schedule for the electric vehicle.
Claim 3	The electrical charging system of claim 2, wherein the increasing of the level of charge is performed in accordance with the charging schedule.
Claim 4	The electrical charging system of claim 1, wherein the first portion operates to output the amount of charge residing in the battery, the second portion operates to output the uncharged capacity of the battery and the third portion is an input GUI element.
Claim 5[Pre]	The electrical charging system of claim 1, wherein the increasing of the level of charge of the battery of the electric vehicle, comprises:
Claim 5[a]	transmitting a control signal to a parking space charge device that starts a charging, in accordance with the charging schedule, of the electric vehicle.
Claim 6[Pre]	An electrical charging system, comprising:
Claim 6[a]	one or more processing devices; and
Claim 6[b]	a non-transitory memory device in communication with the one or more processing devices, the non-transitory memory storing instructions that when executed by the one or more processing devices, result in:
Claim 6[c]	receiving information indicative of a desired charge level of a battery of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle via a Graphical User Interface (GUI) forming a part of the electric vehicle and adapted to display a unitary vehicle charge indicator comprising:
Claim 6[d]	(i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle;

Claim Designation	Claim Language
Claim 6[e]	(ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and
Claim 6[f]	(iii) a third portion comprising a slider by which an amount of charge may be specified;
Claim 6[g]	displaying a charging status of the electric vehicle via the GUI; and
Claim 6[h]	increasing, in accordance with the desired charge level, a level of charge of the battery of the electric vehicle;
Claim 6[i]	wherein the desired charge level of the battery represents a specific amount of charge desired to reside in the battery after increasing the level of charge.
Claim 7[Pre]	The electrical charging system of claim 6, wherein executing the instructions by the one or more processing devices further results in:
Claim 7[a]	determining, based at least on desired charge level, a charging schedule for the electric vehicle.
Claim 8	The electrical charging system of claim 7, wherein the increasing of the level of charge is performed in accordance with the charging schedule.
Claim 9	The electrical charging system of claim 6, wherein the first portion is an output GUI element, the second portion is an output GUI element and the third portion is an input GUI element.
Claim 10[Pre]	The electrical charging system of claim 6, wherein the increasing of the level of charge of the battery of the electric vehicle, comprises:
Claim 10[a]	transmitting a control signal to a parking space charge device that starts a charging, in accordance with the charging schedule, of the electric vehicle.
Claim 11[Pre]	An electrical charging system, comprising:

Claim Designation	Claim Language
Claim 11[a]	one or more processing devices; and
Claim 11[b]	a non-transitory memory device in communication with the one or more processing devices, the non-transitory memory storing instructions that when executed by the one or more processing devices, result in:
Claim 11[c]	receiving information indicative of a desired charge level of a battery of an electric vehicle wherein the desired charge level is defined by a user of the electric vehicle via a Graphical User Interface (GUI) adapted to display a unitary vehicle charge indicator comprising a combination of input and output GUI elements the GUI elements comprising:
Claim 11[d]	(i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle;
Claim 11[e]	(ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and
Claim 11[f]	(iii) a third portion comprising a slider by which an amount of charge may be specified;
Claim 11[g]	displaying a charging status of the electric vehicle via the GUI; and
Claim 11[h]	increasing, in accordance with the desired charge level, a level of charge of the battery of the electric vehicle;
Claim 11[i]	wherein the desired charge level of the battery represents a specific amount of charge desired to reside in the battery after increasing the level of charge.
Claim 12[Pre]	The electrical charging system of claim 11, wherein executing the instructions by the one or more processing devices further results in:
Claim 12[a]	determining, based at least on the desired charge level, a charging schedule for the electric vehicle.

Claim Designation	Claim Language
Claim 13	The electrical charging system of claim 12, wherein the increasing of the level of charge is performed in accordance with the charging schedule.
Claim 14	The electrical charging system of claim 11, wherein the first portion operates to output the amount of charge residing in the battery, the second portion operates to output the uncharged capacity of the battery and the third portion is an input GUI element.
Claim 15[Pre]	The electrical charging system of claim 11, wherein the increasing of the level of charge of the battery of the electric vehicle, comprises:
Claim 15[a]	transmitting a control signal to a parking space charge device that starts a charging, in accordance with the charging schedule, of the electric vehicle.
Claim 16	The electrical charging system of claim 11, wherein the GUI is forms a part of a mobile display device.
Claim 17	The electrical charging system of claim 16, wherein the mobile display device is a smartphone.

APPENDIX OF EXHIBITS

Exhibit 1001	U.S. Patent No. 11,990,788 to Ambroziak et al. ("the '788 Patent")
Exhibit 1002	U.S. Patent No. 11,990,788 File History ("the '788 File History")
Exhibit 1003	Declaration of Scott Andrews
Exhibit 1004	*Intentionally left blank*
Exhibit 1005	*Intentionally left blank*
Exhibit 1006	U.S. Patent No. 7,124,691 to Donnelly, et al. ("Donnelly")
Exhibit 1007	Letendre, S.E. and Kempton, W. *The V2G Concept: A New Model for Power?* Public Util. Fortn. February 2002, 140, pp. 16-26. ("Letendre")
Exhibit 1008	*Intentionally left blank*
Exhibit 1009	*Intentionally left blank*
Exhibit 1010	U.S. Patent No. 6,622,083 to Knockeart et al. ("Knockeart")
Exhibit 1011	U.S. Patent Publication No. 2008/0136371 to Sutardja ("Sutardja")
Exhibit 1012	Willett Kempton and Jasna Tomić. *Vehicle-to-grid power fundamentals: Calculating capacity and net revenue.* Journal of Power Sources. 2005. 144. pp. 268–279 ("Kempton 2005 – Revenue")
Exhibit 1013	Chan, *The State of the Art of Electric and Hybrid Vehicles,* February 2002, Vol. 90, No. 2, IEEE ("Chan")
Exhibit 1014	*Electric Vehicle Battery Systems,* Sandeep Dhameja, Newnes, 2002 ("Sandeep")
Exhibit 1015	U.S. Patent No. 5,573,090 to Ross ("Ross")
Exhibit 1016	Weed, R. *Electric Vehicles: Copper Applications in Electrical*. February 1998. ("Weed")
Exhibit 1017	*Rawson, Kateley,* Electric Vehicle Charging Equipment Design and Health and Safety Codes, SAE Intl., 1999 ("Rawson")
Exhibit 1018	U.S. Patent No. 7.693,609 to Kressner et al. ("Kressner")
Exhibit 1019	U.S. Patent No. 7,084,859 to Pryor ("Pryor")
Exhibit 1020	U.S. Patent Publication No. 2008/0039980 to Pollack et al. ("Pollack")

Exhibit 1021	*Installation Guide for Electric Vehicle Charging Equipment,* Massachusetts Division of Energy Resources, September 200 ("Massachusetts Division of Energy Resources")
Exhibit 1022	U.S. Patent No. 5,467,006 to Sims ("Sims")
Exhibit 1023	U.S. Provisional Application 61/134,646 ("'646 Provisional")
Exhibit 1024	U.S. Patent Publication No. 2009/0312903 to Hafner et al. ("Hafner")
Exhibit 1025	U.S. Patent No. 6,081,205 to Williams ("Williams")
Exhibit 1026	U.S. Patent No. 6,614,204 to Pellegrino et al. ("Pellegrino")
Exhibit 1027	Brooks, Gage, *Integration of Electric Drive Vehicles with the Electric Power Grid – a New Value Stream,* EVS 18 Berlin, 2001 ("Brooks")
Exhibit 1028	U.S. Patent Publication No. 2008/0312782 to Berdichevsky et al. ("Berdichevsky")
Exhibit 1029	U.S. Patent No. 5,487,002 to Diller et al. ("Diller")
Exhibit 1030	U.S. Patent No. 2,309,941 to Drummond ("Drummond")
Exhibit 1031	U.S. Patent Publication No. 2003/0230443 to Cramer et al. ("Cramer")
Exhibit 1032	Aylor et al., *A Battery State-of-Charge Indicator for Electric Wheelchairs,* IEEE Transactions on Industrial Electronics, Vol. 39, No. 5, October 1992 ("Aylor")
Exhibit 1033	Nadal, M and Birbar, F. *Development of a Hybrid Fuel Cell/Battery Powered Electric Vehicle.* Iht. J. Hydrogen Energy. 1996. Vol. 21, No. 6. pp. 491-505. ("Nadal")
Exhibit 1034	2006 Civic Hybrid Online Reference Owner's Manual, Honda ("2006 Honda Civic Manual")
Exhibit 1035	2000 Insight Online Reference Owner's Manual, Honda ("2000 Honda Insight Manual")
Exhibit 1036	Owners Manual: 2008 Tesla Roadster, Tesla ("2008 Tesla Roadster")
Exhibit 1037	*The Human-Computer Interaction Handbook: Tangible User Interfaces,* Second Edition, 2007, Hiroshi Ishii, MIT Media Laboratory, ("Ishii")
Exhibit 1038	*The Graphical User Interface: An Introduction,* Jansen, Computer Science Program University of Maryland, 1998, SIGCHI Bulletin ("Jansen")
Exhibit 1039	Johnsgard et al., *A Comparison of Graphical User Interface Widgets for Various Tasks,* Proceedings of the Human Factors

	and Ergonomics Society, 39th Annual Meeting, 1995 ("Johnsgard")
Exhibit 1040	Olsen Jr. et al., *Input/Output Linkage in a User Interface Management System,* ACM, Vol. 19, No. 3, 1985 ("Olsen")
Exhibit 1041	U.S. Patent No. 6,577,928 to Obradovich ("Obradovich")
Exhibit 1042	*Intentionally left blank*
Exhibit 1043	*Intentionally left blank*
Exhibit 1044	*Intentionally left blank*
Exhibit 1045	*Proper Handling Helps Make the Most of Li-Ion Batteries,* Maxim Integrated, Application Note 663, January 24, 2001 ("Proper Handling")
Exhibit 1046	*Proper Care Extends Li-Ion Battery Life,* Fran Hoffart, Linear Technology, April 1, 2008, https://www.electronicdesign.com/markets/mobile/article/21190344/proper-care-extends-li-ion-battery-life ("Proper Care")
Exhibit 1047	*Battery Monitoring Considerations for Hybrid Vehicles and Other Battery Systems with Dynamic Duty Loads,* Andrew Kallfelz, Battery Power Products and Technology, Vol. 10, No. 3, June 2006 ("Kallfelz")
Exhibit 1048	U.S. Patent Application Publication No. 2003/0004662 to Mitchell et al. ("Mitchell")
Exhibit 1049	U.S. Patent No. 5,698,967 to Baer et al. ("Baer")
Exhibit 1050	U.S. Patent No. 5,563,491 to Tseng ("Tseng")
Exhibit 1051	U.S. Patent No. 6,154,005 to Hyogo et al. ("Hyogo")
Exhibit 1052	*Sakamoto et al.,* Large Air-Garp Coupler for Inductive Charger, IEEE Transactions on Magnetics, Vol. 35, No. 5, September 1999 ("Matsuo")
Exhibit 1053	*Intentionally left blank*
Exhibit 1054	*Intentionally left blank*
Exhibit 1055	*Intentionally left blank*
Exhibit 1056	*Intentionally left blank*
Exhibit 1057	*Intentionally left blank*
Exhibit 1058	*Intentionally left blank*
Exhibit 1059	*Intentionally left blank*
Exhibit 1060	*An Introduction to Graphical User Interfaces and Their Use by CITIS,* Sherrik, Susan, U.S. Dept. of Commerce, 1992 ("Sherrick")
Exhibit 1061	U.S. Patent No. 5,555,502 to Opel ("Opel")

Exhibit 1062	*All Volkswagens Built after 2008 to get touchscreen system,* Rory Jurnecka, MT, November 12, 2007 ("Jurnecka")
Exhibit 1063	*Intentionally left blank*
Exhibit 1064	*Intentionally left blank*
Exhibit 1065	U.S. Patent No. 8.405,618 to Colgate et al. ("Colgate")
Exhibit 1066	*A Guide to Understanding Battery Specifications,* MIT Electric Vehicle Team, December 2008 ("Electric Vehicle Team")
Exhibit 1067	U.S. Patent No. 7,904,219 to Lowrey et al. ("Lowrey")
Exhibit 1068	*Intentionally left blank*
Exhibit 1069	*Intentionally left blank*
Exhibit 1070	*Intentionally left blank*
Exhibit 1071	U.S. Patent Application Publication No. 2005/0278079 to Maguire ("Maguire")
Exhibit 1072	*Intentionally left blank*
Exhibit 1073	Kempton et al., *Electric Vehicles as a New Power Source for Electric Utilities,* Transpn Res., Vol. 2, No. 3, Elsevier, 1997 ("Kempton")
Exhibit 1074	*Webster's New World Telecom Dictionary,* Ray Horak, Wiley Publishing, 2008 ("Webster's New World Telecom Dictionary")
Exhibit 1075	Eick, SG. *Data Visualization Sliders*, ACM UIST, November 2004, ("Eick")
Exhibit 1076	U.S. Patent No. 5,615,347 to Davis et al. ("Davis")
Exhibit 1077	Patent Owner's Preliminary Response IPR2022-01217
Exhibit 1078	U.S. Patent No. 5,654,621 to Seelig ("Seelig")
Exhibit 1079	*Intentionally left blank*
Exhibit 1080	*Pervasive Computing: The Smart Phone – Customizing User Interaction in Smart Phones,* Korpipää et al., IEEE CS, 2006 ("Pervasive Computing: the Smart Phone")
Exhibit 1081	*Spotlight: The Rise of the Smart Phone,* Pei Zheng et al., IEEE Computer Society, Vol. 7, No. 3, March 2006 ("Zheng")
Exhibit 1082	*Intentionally left blank*
Exhibit 1083	*Intentionally left blank*
Exhibit 1084	*Intentionally left blank*
Exhibit 1085	*Intentionally left blank*
Exhibit 1086	Declaration of June Ann Munford ("*Munford Dec.")*
Exhibit 1087	Charge Fusion Technologies, LLC v. Tesla, Inc., 1:22-cv-00488, No. 79 Plaintiff Charge Fusion Technologies, LLC's

	Motion For Leave to Amend Complaint (W.D.Tex. Jun. 5, 2024)
Exhibit 1088	Charge Fusion Technologies, LLC v. Tesla, Inc., 1:22-cv-00488, No. 74 Order to Stay (W.D.Tex. Feb. 23, 2023)
Exhibit 1089	*Intentionally left blank*
Exhibit 1090	*Happy Birthday, Palm Pilot,* Gary Krakow, March 22, 2006, ("Krakow")
Exhibit 1091	*Your Palm Treo 700p Smartphone User Guide,* Palm, 2006 ("PALM Treo 700P Manual")
Exhibit 1092	U.S. Patent No. 5,596,261 to Sunyama ("Sunyama")
Exhibit 1093	Charge Fusion Technologies, LLC v. Tesla, Inc. 1:22-cv-00488, No. 100 Order Denying Plaintiff's Opposed Motion for Leave to File First Amended Complaint (W.D.Tex. Oct. 31, 2024)
Exhibit 1094	Microsoft Press, Microsoft Computer Dictionary (5th ed. 2002) ("Microsoft Computer Dictionary")
Exhibit 1095	Steven Leibson, *Customizable Processors and Processor Customization*, *in* Processor Design: System-on-Chip Computing for ASICs and FPGAs 149 (Jari Nurmi ed., 2007) ("Leibson")

CERTIFICATION OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. § 42.24 that the foregoing Petition for *Inter Partes* Review, excluding any table of contents, mandatory notices under 37 C.F.R. § 42.8, certificates of service or word count, or appendix of exhibits, contains 13,327 words according to the word-processing program used to prepare this document (Microsoft Word).

Dated: November 8, 2024

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CERTIFICATE OF SERVICE ON PATENT OWNER
UNDER 37 C.F.R. § 42.105

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b), the undersigned certifies that on November 8, 2024, a complete and entire copy of this Petition for *Inter Partes* Review and Exhibits were provided via Federal Express to the Patent Owner by serving the correspondence address of record for the '788 Patent:

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