

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

GRAPHITE CHARGING COMPANY, LLC,
Patent Owner

Case: IPR2024-00387

U.S. Patent No. 8,103,391

EXPERT DECLARATION OF DR. KIRK W. CAMERON
IN SUPPORT OF PATENT OWNER'S RESPONSE

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I. INTRODUCTION

1. My name is Dr. Kirk W. Cameron and I reside in Alexandria, Virginia. I have been retained as a technical expert by counsel for Patent Owner Graphite Charging Company, LLC (“Graphite Charging” or “Patent Owner”) to provide expert opinion testimony in the above-captioned matter.

2. I have been asked to render opinions on Petitioner’s unpatentability arguments regarding U.S. Patent No. 8,103,391 (“the ’391 Patent”) that have been identified in the Petition. Specifically, I have been asked to consider whether certain references disclose or suggest the features recited in claims 1–20 of the ’391 patent.

3. This report contains statements of my opinions formed to date regarding these references and the ’391 Patent and the bases and reasons for those opinions. I may offer additional opinions based on further review of materials in this case, including opinions and/or testimony of other expert witnesses.

4. Based upon the materials that I have considered, and the arguments made by Petitioner and Dr. MacCarley, as explained below it is my opinion that Petitioner has failed to meet its burden to show that any challenged claim of the ’391 Patent is unpatentable.

II. QUALIFICATIONS

5. This is a summary of my background and qualifications. I set forth my background in more detail in my Curriculum Vitae (“CV”)

6. I graduated from the University of Florida with a Bachelor of Science degree in Mathematics in 1994. Subsequently, I attended Louisiana State University, where I earned a Doctor of Philosophy in Computer Science in 2000.

7. After earning my Ph.D., I taught Computer Science at the University of South Carolina for four years before moving to my current position at the Virginia Polytechnic Institute & State University (“Virginia Tech”) in 2005. At Virginia Tech, I am a tenured Professor of Computer Science as well as the inaugural faculty lead and Associate Vice President for Academic Affairs at Virginia Tech’s Innovation Campus in Alexandria, Virginia. My research focuses on issues related to improving power and performance efficiency in high performance computing (HPC) systems and applications.

8. From 2012-2022, I was Director of the stack@cs Center for Computer Systems (ranked #26 by US News in 2022). I was the inaugural Associate Department Head for Research and Engagement from 2018-2022. I was Associate Department Head and Graduate Program Director from 2014-2017. I held a Distinguished Visiting Fellowship at Queen’s University, Belfast and I was a

distinguished visitor to the U.K. Royal Academy of Engineering during the 2017-2018 academic year.

9. I am a Fellow of IEEE based on my contributions to measurement and management of energy in high-performance computing systems. The IEEE Grade of Fellow is conferred on members with extraordinary records of professional technical accomplishments. The total number of fellows selected world-wide in any one year does not exceed one-tenth of one percent of the total voting Institute membership.

10. I am a Distinguished Member of the ACM. Since 2015, I have served as an associate editor for the Journal of Parallel and Distributed Computing and I am currently the Associate Editor in Chief for IEEE Transactions on Parallel and Distributed Computing.

11. My work was initially funded by the prestigious National Science Foundation CAREER Award in 2004. The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. As a result of this investment, my research findings pioneered the creation of energy measurement

and management technologies that, among other things, influenced the creation of the Energy Star program for compute servers.

12. I've been awarded over \$15M from external funding sources. These investments in my work resulted in over 100 publications in highly selective professional journals and conferences. Moreover, the work led to the issuance of U.S. Patent No. 8,918,657 ("the '657 patent"), entitled "Systems, Devices, and/or Methods for Managing Energy Usage," on which I am listed as a co-inventor.

13. The '657 patent formed the foundational technology used in the venture-backed startup company, MiserWare, that I co-founded in 2006. This patent describes power and energy management techniques that control power and energy use of various devices in deployments. The grano.la software was one commercial embodiment, a decision engine that measures and manages power and energy while guaranteeing performance. The grano.la software has been downloaded by about half a million users in more than 160 countries.

14. I also created the PowerPack power measurement software and hardware framework that provides scientifically sound fine-grain AC and DC power measurements of computer systems and their components. The PowerPack methodology influenced the design of the methodologies used today in the DOE Energy Star program for servers. Section 104 of the Energy Policy Act of 2005

requires federal government agencies to purchase ENERGY STAR-qualified systems when procuring compute servers. Though the exact figure is undisclosed for security and operational reasons, the number of U.S. government-owned compute servers is in the hundreds of thousands.

15. I am the recipient of numerous national and international awards for my work in power measurement and management. In addition to the National Science Foundation Career Award, in 2004 I was also awarded the prestigious Department of Energy Early Career Award. I was also awarded IBM and AMD Faculty Awards for my work with industry. For my corporate leadership as CEO and CTO of MiserWare, I was named Innovator of the Week by Bloomberg Businessweek Magazine.

16. My pioneering work led to an invitation to lead the NSF Technical Report “NSF Report on the Science of Power Management.” This report resulted in several programs that provided millions in funding to energy efficiency work in NSF programs. My work consistently appears in major news media and has appeared in venues as varied as SXSW and the Smithsonian National Museum of American History in Washington, D.C.

17. I have published chapters in nine different textbooks. I have also published over 40 refereed journal publications and over 60 referred conference

papers, a more complete list of which is included in my CV. In addition to my publications, I have given numerous tutorials, talks, presentations, and lectures, in both academic and corporate settings, on electrical energy management.

18. I regularly supervise B.S., M.S., and Ph.D. students that upon graduation work in top tech companies. I teach classes at the undergraduate and graduate levels at Virginia Tech, where I ran the graduate program for a number of years. I regularly teach courses on computer systems and networking, energy efficiency, computer architecture, and parallel computation at the introductory and advanced levels.

III. PRIOR TESTIMONY

19. I have provided technical consulting to several clients in the electrical energy management field in regards to litigation focused on the tools, technologies, decision engines, and various other techniques for in-band and out-of-band energy measurement and management of electrical devices at the systems level. These cases were dismissed or settled before trial.

20. A list of all such cases in which I have consulted can be found in my CV.

IV. COMPENSATION

21. I am being compensated for my services in this proceeding. This

compensation is not contingent upon my performance, the outcome of this case, or any issues involved in or related to this case. I have no financial interest in this matter.

V. MATERIALS CONSIDERED

22. My opinions are based on my experience in this field, and are necessarily formed by my own experiences, materials I have read over the years, and discussions I have had with colleagues during my career. I have also considered the understanding of a person of ordinary skill (“POSITA”) around the time of the invention of the ’391 Patent. In addition, I have reviewed and considered the following materials in forming my opinion:

23. The ’391 Patent (EX-1001);
24. U.S. Patent No. 5,596,258 to Kimura et al. (“Kimura”) (EX-100)
25. U.S. Patent No. 5,650,710 to Hotta (“Hotta”) (EX-1003)
26. U.S. Patent No. 5,659,240 to King (“King”) (EX-1004)
27. U.S. Patent No. 5,696,367 to Keith (“Keith”) (EX-1005)
28. U.S. Patent No. 5,548,200 to Nor et al. (“Nor”) (EX-100)
29. File History of the ’391 Patent (EX-1007);
- U.S. Patent No. 6,614,204 to Pellegrino et al. (“Pellegrino”) (EX-1008)
30. SAE Standard J1772 (Revised Nov. 2001) (EX-1011)

31. October 17, 2024 Deposition Transcript of C. Arthur MacCarley,
Ph.D. (EX-2007)

VI. UNDERSTANDING OF THE LAW

32. I am not an attorney. For the purposes of this declaration, Patent Owner's counsel has informed me about certain aspects of the law that are relevant to my opinions. I have applied those legal principles in arriving at my conclusions expressed in this declaration.

A. Claim Construction

33. I understand that the first step in performing a validity analysis of the patent claims is to interpret the meaning and scope of the claims by construing the terms and phrases found in those claims. I understand that a determination of the meaning and scope of the claims is a matter of law.

34. I have been informed that to determine the meaning of the claims, courts consider the intrinsic evidence, which includes the patent's claims, written description, prosecution history, materials incorporated by reference in the patent, and prior art cited in the patent or its prosecution history. Courts give claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the content of the entire patent.

35. I have been informed that a patentee may also define his or her own

terms to disavow claim scope. Normally, embodiments and examples appearing in the specification will not generally be read into the claims. However, the intrinsic record may resolve ambiguous claims terms where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone. A term's context in the claims can also be helpful. Differences among the claim terms can also assist in understanding a term's meaning.

36. I have been informed that extrinsic evidence can also be useful in determining the meaning of claims, however, it is less significant than the intrinsic record. Technical dictionaries may be useful to show the way one skilled in the art might use claim terms, but technical dictionaries may provide definitions that are too broad or may not be indicative of how the term is used in the patent.

37. I understand that the claim terms of a patent are to be construed from the point of view of a hypothetical person of ordinary skill in the art (POSITA) in the time frame of the patent's priority date. At times I may refer to a person of skill in the art as simply "a skilled person".

B. Level of Ordinary Skill

38. For the purpose of assessing the level of ordinary skill of POSITA, I have considered the field of the invention, the prior art relevant to that field, and

the level of education and expertise of active workers in the field.

39. I understand that Petitioner has taken the position that a POSITA at the time of the invention of the '391 Patent would have had a bachelor's degree in computer science or electrical engineering, along with at least two to three years of experience working on software and/or hardware used to manage charging processes for electric vehicles, and that additional education could substitute for professional experience and vice versa. Additionally, it is my understanding Petitioner has taken the position that a POSITA would have been familiar with standards and regulations relevant to charging of electrical vehicles (including J1772, EX1011), as well as the principles and technologies that the '391 Patent identifies as part of the general knowledge.

40. Based on my review of the '391 Patent, and the references relied on by Petitioner, I believe that Petitioner's definition of a POSITA is too narrow. While I agree that a POSITA would have had a bachelor's degree in computer science or electrical engineering, along with at least two to three years of experience, and I also agree that additional education could substitute for professional experience and vice versa, I disagree that the experience need be limited to working on software and/or hardware used to manage charging processes for electric vehicles. In my opinion, since the '391 Patent is focused on

data processing concepts such as execution engines, interrupt monitors, and data services for managing an energy transaction, at least two to three years of experience working on data processing systems in the field of energy management would have been sufficient. My opinion is supported by the '391 Patent, which describes the invention as being “related generally to an improved *data processing system*, and in particular, to a method and apparatus for *managing* electric vehicle charging transactions.” (EX1001 at 1:8-11 (emphasis added); *see also* 2:38-48, 3:62-65 (referring to data processing environments in which embodiments may be implemented); 5:16-18 (referring to a data processing system in which illustrative embodiments may be implemented). Indeed, the '391 Patent makes it clear that the invention is not directed to electric vehicles or charging stations themselves. (*Id.* at 4:24-26, 37-39.)

41. For similar reasons, it is my opinion that a POSITA would not require knowledge of standards and regulations relevant to charging of electrical vehicles (including J1772, EX-1011). My opinion is further reinforced by the fact that standards and regulations such as J1772 are not mentioned anywhere in the '391 patent.

42. Should the Board adopt Petitioner's level of ordinary skill of a POSITA, I meet that definition of a POSITA based upon my education and

experience.

C. Legal Standards for Prior Art

43. I understand that a patent or other publication must first qualify as prior art before it can be used to invalidate a patent claim.

44. I understand that a U.S. or foreign patent qualifies as prior art to an asserted patent if the date of issuance of the patent is prior to the invention of the asserted patent. I further understand that a printed publication, such as an article published in a magazine or trade publication, qualifies as prior art to an asserted patent if the date of publication is prior to the invention of the asserted patent.

45. I understand that a U.S. or foreign patent also qualifies as prior art to an asserted patent if the date of issuance of the patent is more than one year before the filing date of the asserted patent. I further understand that a printed publication, such as an article published in a magazine or trade publication, constitute prior art to an asserted patent if the publication occurs more than one year before the filing date of the asserted patent.

46. I understand that a U.S. patent qualifies as prior art to the asserted patent if the application for that patent was filed in the United States before the invention of the asserted patent.

D. Legal Standards for Anticipation

47. I have been informed by counsel and understand that to anticipate a patent claim, all of the requirements of that claim must be shown to be present in a single previous device or method that was known of, used, or described in a single previous printed publication or patent. Anticipation should be assessed on a claim-by-claim basis. I also understand that anticipation can occur when an undisclosed limitation is literally missing but is present because the prior art must necessarily function in accordance with, or include, the undisclosed limitation.

48. I have further been informed that only a single reference should be relied upon to anticipate a claim unless any further references are cited solely to:

- a. prove that the primary reference contains an “enabled disclosure;”
- b. explain the meaning of a term used in the primary reference; or
- c. show that a characteristic not disclosed in the reference is inherent.

49. I understand that to anticipate a claim, the prior art does not need to use the same words as the claim, but all the requirements of the claim must have been disclosed, either stated expressly or implied to a person having ordinary skill in the art in the technology of the invention.

50. I understand that for a reference to anticipate a patent claim, that

reference must also enable one of ordinary skill in the art to make and use the full scope of the claimed invention without undue experimentation.

51. I understand that documents and materials that qualify as prior art can be used to invalidate a patent claim via anticipation or obviousness.

52. I understand that, once the claims of a patent have been properly construed, the second step in determining anticipation of a patent claim requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

53. I understand that a prior art reference “anticipates” an asserted claim, and thus renders the claim invalid, if all elements of the claim are disclosed in that prior art reference, either explicitly or inherently (i.e., necessarily present).

54. I understand that anticipation in an *inter partes* review must be shown by a preponderance of the evidence, which is a higher standard than the reasonable likelihood required to institute an *inter partes* review.

E. Legal Standard for Obviousness

55. I have been informed by counsel and understand that even if a patent is not anticipated, it is still invalid if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person of ordinary skill in the

art.

56. I understand that a person of ordinary skill in the art provides a reference point from which the prior art and claimed invention should be viewed. This reference point prevents one from using his (or her) own insight or hindsight in deciding whether a claim is obvious.

57. I also understand that an obviousness determination includes the consideration of various factors such as:

- a. the scope and content of the prior art,
- b. the differences between the prior art and the asserted claims,
- c. the level of ordinary skill in the pertinent art, and
- d. the existence of secondary considerations such as commercial success, long-felt but unresolved needs, failure of others, etc.

58. I understand that an obviousness evaluation can be based on a combination of multiple prior art references. I understand that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the nexus linking two or more prior art references is just common sense. I further understand that obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references may be supplied by the direction of the

marketplace.

59. I understand that if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

60. I also understand that practical and common-sense considerations should guide a proper obviousness analysis, because familiar items may have obvious uses beyond their primary purposes. I further understand that a person of ordinary skill in the art looking to overcome a problem will often be able to fit together the teachings of multiple publications. I understand that obviousness analysis therefore considers the inferences and creative steps that a person of ordinary skill in the art would employ under the circumstances.

61. I understand that a particular combination may be proven obvious merely by showing that it was obvious to try the combination. For example, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp because the result is likely the product not of innovation but of ordinary skill and common sense.

62. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, the patent claim is likely obvious.

63. It is further my understanding that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee. Accordingly, I understand that any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

64. I understand that a claim can be obvious through consideration of a single reference, without the need to combine references, if the elements of the claim that are not found explicitly or inherently in the reference can be supplied by the common sense of one of skill in the art.

65. Further, I understand that for an obviousness challenge based on a single reference in view of the knowledge and skill of a POSITA, there must be a motivation to make the combination and a reasonable expectation that such a combination would be successful, otherwise a skilled artisan would not arrive at

the claimed combination. In other words, when a gap in a single prior art reference requires filling with, for example, the POSITA's knowledge, there must be a further showing that the POSITA would have arrived at the claimed invention.

66. I understand that contemporaneous and independent invention by others is another consideration supporting an obviousness determination.

67. In summation, my understanding is that prior art teachings are properly combined where a person of ordinary skill in the art having the understanding and knowledge reflected in the prior art and motivated by the general problem facing the inventor, would have been led to make the combination of elements recited in the claims. Under this analysis, the prior art references themselves, or any need or problem known in the field of endeavor at the time of the invention, can provide a reason for combining the elements of multiple prior art references in the claimed manner.

68. I understand that obviousness in an *inter partes* review must be shown by a preponderance of the evidence, which is a higher standard than the reasonable likelihood standard for instituting *inter partes* review.

VII. CLAIM CONSTRUCTION

A. Data Services Interruption

69. The patentees acted as their own lexicographers in defining the term

“data services interruption” recited in claims 1, 6, 8, 13, 15, and 20 of the ’391 patent. (*E.g.*, Ex. 1001 at 16:56.) Specifically, the patentees disclosed in the specification that a data services interruption:

is a set of one or more interruptions caused by the inability for information to be exchanged with data services sources. Data service sources are sources of data, such as, for example, energy data services 308 in FIG. 3. Data services interruption 506 may be caused by power outages, broken transmission lines, or any other problems preventing a data service from exchanging information with other components of an electric vehicle transaction infrastructure.

(Ex. 1001 at 13:38-46 (emphasis added).)¹ Further, the specification stresses that:

Energy data services 308 are a set of one or more ***third party data sources*** providing information relevant to the energy transaction. Energy data services 308 may include, without limitation, weather information sources, traffic information sources, map and travel information sources, charging station price information sources, or any other third party information sources.

(*Id.* at 8: 38-44.)

70. Accordingly, the term “data services interruption” should be construed as “a set of one or more interruptions caused by the inability for information to be exchanged with a set of one or more third party data sources providing information relevant to the energy transaction,” where the term “third party” means “an entity or person that is not a party to the electric vehicle charging

¹ Unless specified otherwise, all emphasis is added throughout this Brief.

transaction.” (*See id.* 7:41-47.) Examples of data sources include, without limitation, weather information sources, traffic information sources, map and travel information sources, charging station price information sources, or any other third party information sources. (*Id.* at 8: 40-44.)

71.By defining the term “data services interruption” in this way, the inventors disavowed claims covering intra-system communications abnormalities, such as communication failures between the battery and the charging station. (*See Pet.* at 28.) Petitioner’s expert Dr. MacCarley failed to consider the definition in the ’391 patent and instead devised his own (wrong) definitions—

- “the plain and ordinary interpretation of that would be some disruption of normal data **communication from one entity to another or to multiple other targets.**” (Ex. 2007 at 34:21-25.)
- “There is a data services interruption, which would be monitoring the operational parameter—the operational state of data communication either between the **two units, the execution engine and the interrupt monitor**, or external infrastructure events. They allow in the text.” (*Id.* at 27:23–28:4.)
- “broader class of data services interruption” (*id.* at 70:5-6.)

72.Dr. MacCarley’s definitions are wrong because it is he—and not the ’391 patent—who considers data services interruptions a “broader class” encompassing “**multiple . . . targets.**” And the relevant communication cannot be between the energy transaction execution engine (ETEE) and energy transaction interrupt monitor (ETIM) because both are intra-system units and not third-party data

sources. Accordingly, Dr. MacCarley’s testimony on this term should be given no weight.

73.PO’s proposed construction is also consistent with the Detailed Description of the Invention of the ’391Patent, in which Data services interruption is described in terms of interruptions of third party communications. (Ex. 1001 at 13:42-43; see also, e.g., *id.* at 8:40-44, 2:5-14, 10:35-38, 10:51–11:17, 13:37-46, 14:41-56; *id.* figs. 4-7.)

B. “Manual Override Interruption”

74.The patentees acted as their own lexicographers in defining the term “manual override interruption” recited in claims 2, 9, and 16 of the ’391 patent. The specification discloses that:

Manual override interruption 422 is ***an instruction*** that causes energy transaction execution engine 416 to terminate charging process 404. User 420 may generate manual override interruption 422 by interacting with a user interface located at the charging station or on the electric vehicle. In addition, user 420 may generate manual override interruption 422 at a remote location by implanting a user interface presented on a remote computing device. For example, user 420 may utilize a cell phone or computer for accessing a user interface for generating manual override interruption 422.

(Ex. 1001 at 12:26-36.) “User 420 may terminate charging process 404 by generating manual override interruption 422.” (*Id.* at 12: 24-26.)

The specification also discloses in Figure 7 that a received manual override notification may be identified as an interruption (steps 72 and 704):

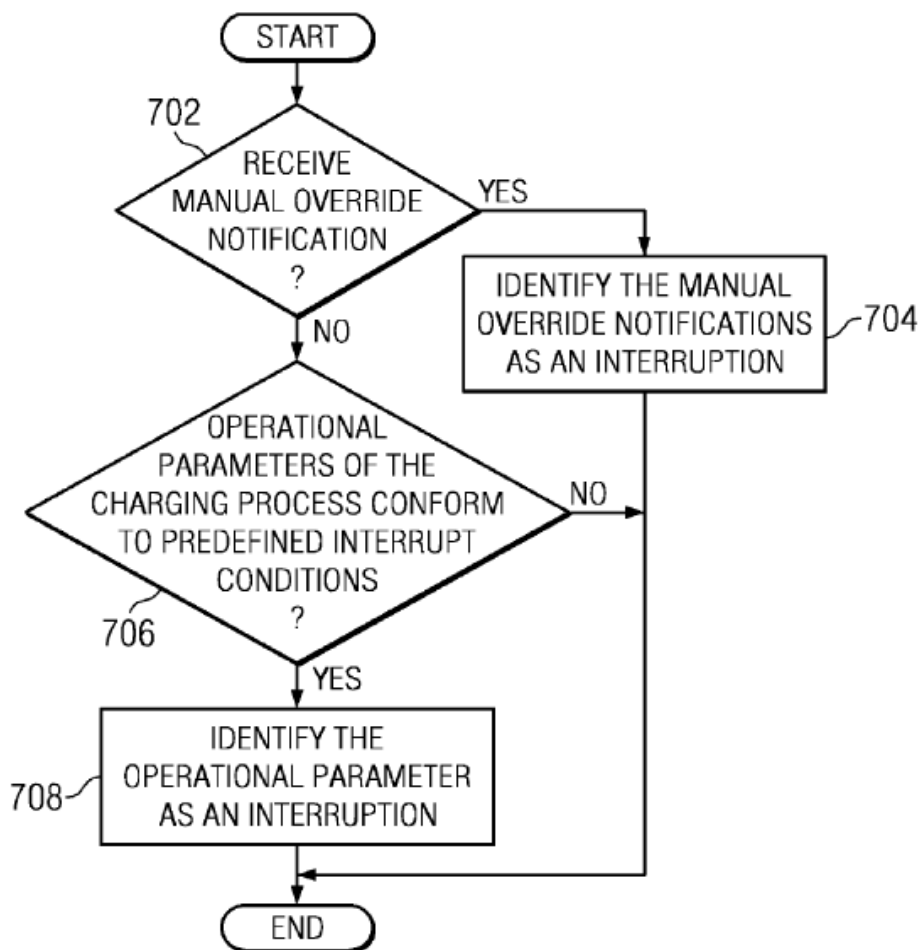


FIG. 7

(Id. fig.7.)

75.A POSITA would understand “instruction” as that term is used in the ’391 patent to mean an encoding of a series of operational steps specifying the details to be executed according to those operational steps. Thus, an instruction is a digital

operation that sends a series of signals and goes beyond the mechanical operation of pressing a button on a keyboard.

76. Accordingly, the term “manual override interruption” should be construed as “an instruction that causes energy transaction execution engine to terminate the charging process, which a user may generate during the flow of electricity by interacting with a user interface,” where “instruction” means “an encoding of a series of operational steps specifying the details to be executed according to those operational steps.”

77. By defining the term in this way, the patentees disavowed claims covering mere opening and closing of a switch. Dr. MacCarley’s opinions on construction of the “manual override interruption” should be given no weight because he defined it as “a human being or *some external, decision-making entity* providing an input to the system that would lead to the interruption, the termination, of the charging process.” (Ex. 2007 43:11-16.) His definition is inappropriately broad, and should be accorded little weight, because it does not require generating an instruction and conflates input from an external decision-making entity with user-generated input.

78. On the other hand, PO’s proposed construction is consistent with the Detailed Description of the Invention of the ’391 patent. (Ex. 1001 at 12:26-45; *id.* figs. 4-7.)

C. “Preference Interruption”

79. The patentees acted as their own lexicographers in defining the term “preference interruption” recited in claims 1, 5, 8, 12, 15, and 20 of the ’391 patent. The specification discloses that:

Preferences interruption 504 is a set of one or more interruptions that are caused from a violation of a ***user-specified*** preference. The user-specified preference may be, for example, a preference specified by an owner or operator of an electric vehicle or a utility provider. Thus, a user may specify a preference for a threshold cost for charging an electric vehicle. If the cost of charging the electric vehicle during a charging process exceeds the user cost preference, then an energy transaction interrupt monitor identifies the cost as preference interruption 504. Other parties may also specify preferences, the violation of which results in identification of preference interruption 504. Preferences for the user or third parties may be set in an energy transaction plan or stored in a data storage device accessible to the energy transaction interrupt monitor.

(Ex. 1001 at 13:22-36.) Accordingly, the term “preference interruption” should be construed as “a set of one or more interruptions that are caused from a violation of a user-specified preference.”

80. By defining the term “preference interruption” in this way, the inventors disavowed claims covering, among other things, factory presets, which are not user-specified. (See Pet. at 27; Ex. 1001 at 6:62–7:2.) Petitioner’s expert Dr. MacCarley failed to consider the definition in the ’391 patent and instead devised his own (wrong) definitions—

There is a preference interruption, which is somewhat broadly defined **as an externally settable parameter** either by the user or **by some external parameter setting input** that has been violated or is altered or for whatever other reason needs to be monitored and could potentially indicate that termination of charging is appropriate.

(Ex. 2007 at 28:9-16.)

[T]o answer your question, preference interruption would be a **violation of either some threshold or some state**, both of those being compared with an operational parameter input that, if that difference occurs—if, say, a threshold is exceeded or a state is violated, put into something other than what was preferred when the preference was set up, that would constitute an event worthy of generating an interruption of charging.

(*Id.* at 33:17–34:3.) Dr. MacCarley’s definition is wrong, and should be accorded little weight, at least because it is too broad in that it covers factory presets, which are not user-specified, and is not limited to violations of the preference.

81.PO’s proposed construction is also consistent with the Detailed Description of the Invention of the ’391 patent, which explains that in one exemplary embodiment, a user may specify a preference for a threshold cost for charging an electric vehicle. If the cost of charging the electric Vehicle during a charging process *exceeds* the user cost preference, then an energy transaction interrupt monitor identifies the cost as preference interruption 504.

(Ex. 1001 at 13:28-31; *see also, e.g., id.* at 2:5-14, 10:51–11:17, 13:21-36, 14:41-56; *id.* figs. 4-7.)

VIII. OVERVIEW OF THE ’391 PATENT AND THE CITED ART

A. The ’391 Patent

82. The '391 Patent, entitled "System for Detecting Interrupt Conditions During an Electric Vehicle Charging Process," has a priority date of August 19, 2008, and relates to a data processing system and method for managing a charging process of an electric vehicle (EV). (EX-1001 at 1:8-11.)

83. EVs contain electric storage mechanisms, such as batteries, that store electricity for when power is needed. (*Id.* at 1:27-29.) In order for an EV to continue operating, the storage mechanism requires charging to replenish the depleted electric charge. (*Id.* at 1:29-31.) One way to provide charging is through an "off-vehicle" charging station that provides an external source of electricity. *Id.* at 1:40-44).

84. At the time, EV manufacturers and electric utility companies had only planned and provided infrastructure for the most rudimentary charging scenarios, such as merely plugging the electric vehicle into a common electric outlet that was owned by the owner and operator of the electric vehicle. (*Id.* at 6:60-65.) However, the inventors recognized that EV charging would frequently be conducted under much broader and more complex sets of circumstances, such as might occur when charging an EV at an off-vehicle charging station owned by somebody other than the vehicle owner, and under such circumstances the charging transactions by which EVs obtained electricity from such an off-vehicle charging station "requires

a much more complete, flexible, and interoperable system governing all aspects of the charging transaction.” (*Id.* at 6:65 - 7:16.)

85. The inventors divided the charging transaction into three aspects or phases: the pre-charge phase, the charge phase, and the post-charge phase. (*Id.* at 7:17 - 7:19.) In the pre-charge phase, “all parties are presented with conditions governing the charging transaction.” (*Id.* at 7:19 - 7:21.) In the charge phase, “[e]lectricity flows to the EV and payment is made.” (*Id.* at 7:21-22²). Additionally, during the charge phase, one or more operational parameters that conform to predefined interrupt conditions are monitored and, if one or more interrupt conditions are identified, then the charging process is terminated. (*Id.* at 10:8-12, 14:1-5).

86. Interruptions may include a device capability interruption, a preference interruption, or a data services interruption. (*Id.* at 11:12-17.) Device capabilities interruptions originate from component of the electric vehicle energy transaction infrastructure, (*Id.* at 13:10-20), preference interruptions are caused by

² While the specification says “post-charge” phase here, a POSITA would understand from the context, and other parts of the specification (e.g., EX-1001 at 8:60-9:32), that the inventors meant “charge” phase.

violation of a user-specified preference, (*Id.* at 13:21-36), and data services interruptions are caused by the inability for information to be exchanged with third party data services sources, (*Id.* at 13:37-46, 8:38-44). Additionally, a user may terminate the charging process by generating a manual override interruption, which is an instruction generated by the user with a user interface. (*Id.* at 12:24-36.) In the post-charge phase, “an analysis is performed to provide incentives and induce specific behaviors on the part of any party involved in the transaction.” (*Id.* at 7:22-25.)

87. Figure 3 of the '391 Patent (reproduced below) shows an embodiment of an electric vehicle energy transaction infrastructure for managing all phases of the charging transaction—i.e., the pre-charge phase, the charge phase, and the post-charge phase. (*Id.* at 7:30-34.) Components of the electric vehicle energy transaction infrastructure, such as the energy transaction execution engine, the energy transaction interrupt monitor, and the integration and service bus (which allows components of the data processing system to communicate and transfer data), may be implemented on a data processing system. (*Id.* at 7:34-40, 9:61-64.) The data processing system may be a network data processing system (e.g., as depicted in Figure 1 of the '391 Patent) with one or more servers and one or more clients connected to a network (such as the Internet), (*Id.* at 4:3-23, 5:1-15), or the

data processing system may be a computer, such as a server or client depicted in Figure 1 of the '391 Patent, (*Id.* at 5:16-24). Operations of the energy transaction interrupt monitor are illustrated in the flowcharts shown in Figures 6 and 7. (*Id.* at 13:47-51, 14:17-21.) Each block or combination of blocks in the flowcharts can be implemented by computer program instructions (i.e., program code). (*Id.* at 3:33-37.) A data processing system suitable for storing and/or executing program code will include at least one processor coupled to memory elements through a system bus. (*Id.* at 16:13-16.)

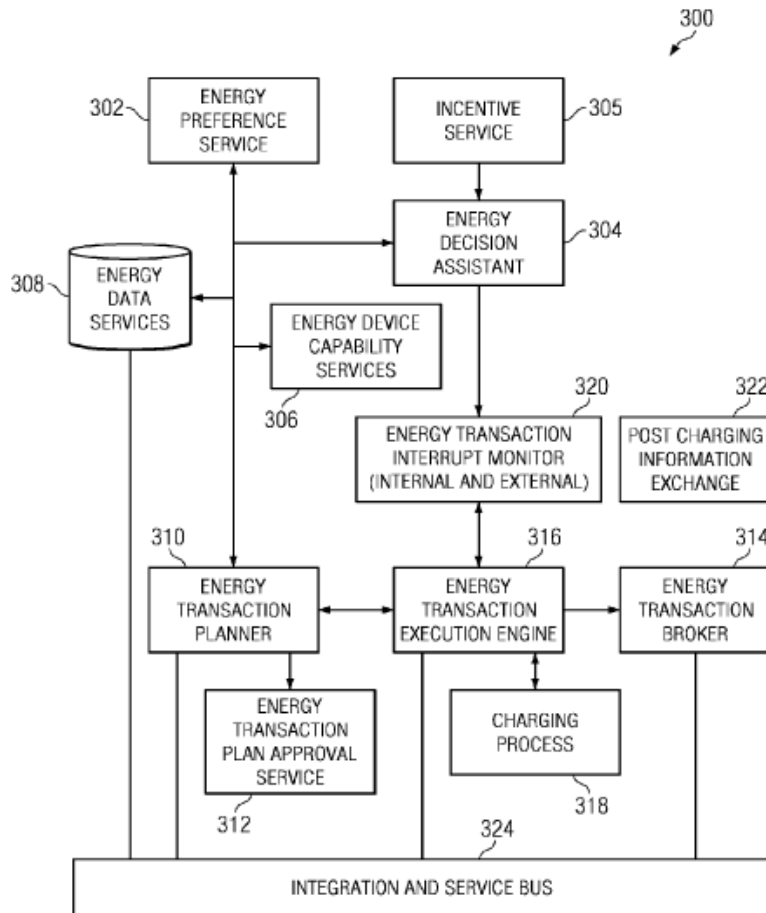


FIG. 3

88. If one of more of the components are located remotely, they may transfer data using a wired network connection or a wireless network connection such as a cell-phone network, satellite, two-way radio, WiFi networks, or any other type of wireless network. (*Id.* at 10:1-7.)

89. Components of an illustrative data processing system are shown in Figure 4 of the '391 patent (reproduced below). (*Id.* at 10:51-54.) Data processing system 400 includes transaction interrupt monitor 402 that monitors a

charging process 404 for interruptions 406 after receiving a request to start monitoring a charging process. (*Id.* at 10:51-11:9; 13:52-53; Figure 6.) As noted previously, interruptions 406 may include a device capability interruption, a preference interruption, or a data services interruption, or any combination thereof. (*Id.* at 10:35-40.) Energy transaction interrupt monitor 402 identifies interruptions 406 from operational parameters 408 by identifying the operational parameters from operational parameters 408 that conform to predefined interrupt conditions 412. (*Id.* at 11:39-44.) If an interruption is identified, then the process sends a response to the energy transaction execution engine to terminate the charging process. (*Id.* at 14:1-5).

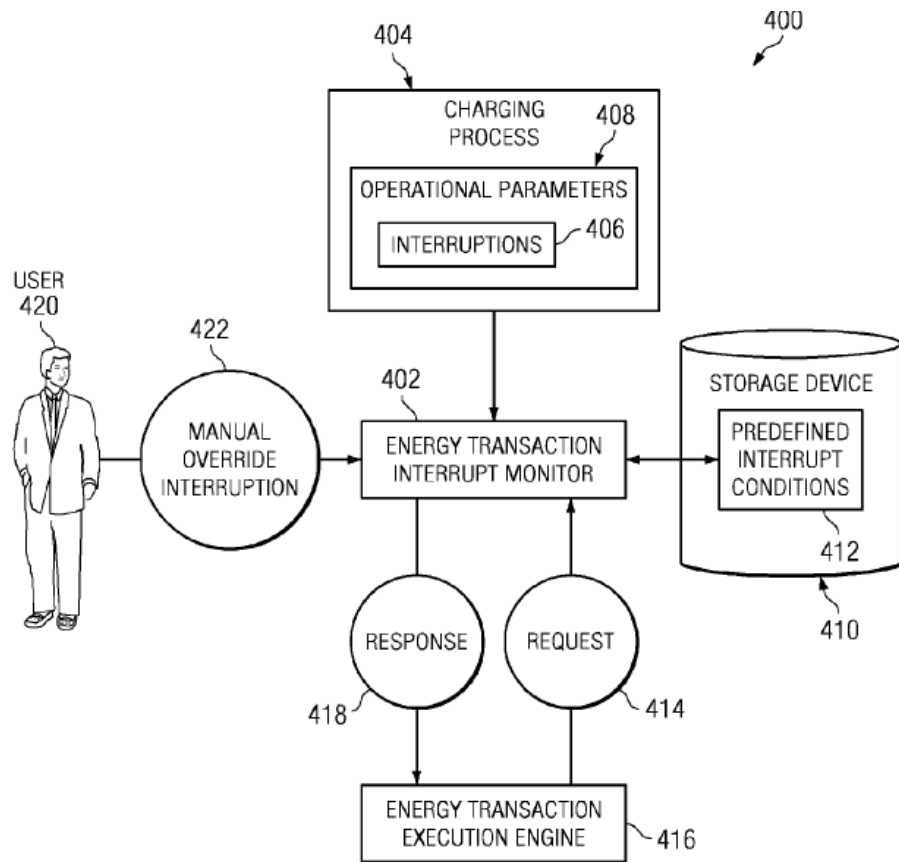


FIG. 4

90. Figure 6 of the '391 Patent (reproduced below) is a flowchart showing a process for managing a charging process of an EV according to an illustrative embodiment. (*Id.* at 13:47-49.)

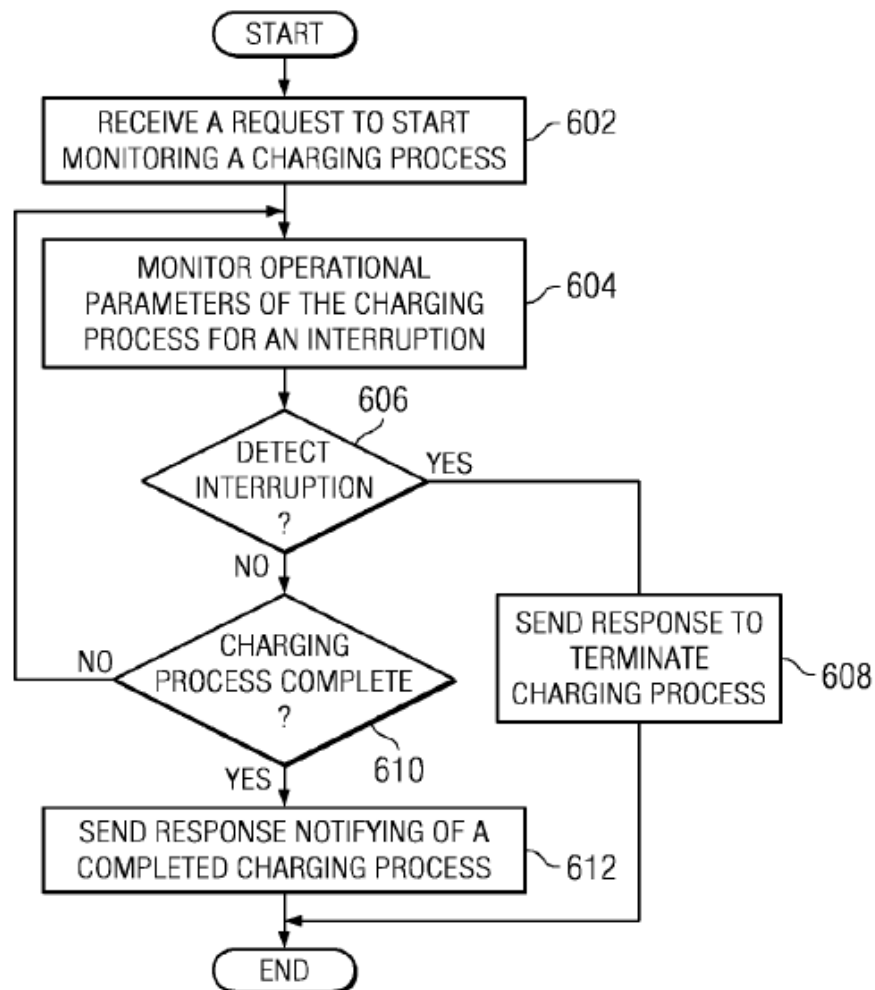


FIG. 6

91. As noted previously, when a request to start monitoring a charging process is received, operational parameters of the charging process are monitored for an interruption. If an interrupt condition is detected, the process sends a response to terminate the charging process. For example, if pricing for energy were to exceed a predefined threshold in violation of a user-selected preference, the monitor detects this interrupt condition and initiates appropriate actions to

terminate the electric power flow to the electric vehicle. (*Id.* at 9:15-20.)

Alternatively, power could be supplied to the grid during times of high prices from stored energy within the vehicle. (*Id.* at 4:48-57.) Furthermore, termination of the charging process because of detecting interruptions may insure that the charging process proceeds according to the terms and conditions that were established by parties to the charging process. (*Id.* at 14:62-65.)

IX. OPINION

A. THE CITED ART DOES NOT ANTICIPATE OR RENDER OBVIOUS THE CHALLENGED CLAIMS

1. Ground 1: Kimura Does Not Render Obvious Claims 1, 4-8, 11-15, and 18-20

2. Claim 1^{[11](#)}

92.Claim 1 recites, in relevant parts of elements 1[a] and 1[d], respectively,

“responsive to receiving, from an energy transaction execution engine, ***a request signaling a start*** of the charging process . . . ,” and “responsive to detecting the one or more interruptions, sending ***a response*** to the energy transaction execution engine ***to terminate*** the charging process.”

93.Both the “request signaling a start” and “response . . . to terminate” recited in claim 1 must be messages. The specification explains, among other things, that

1. “Request 414 is a message signaling the start of charging process 404.” (Ex. 1001 at 12:3-4.)
2. “Request 414 informs energy transaction interrupt monitor 402 that charging process 404 has begun.” (*Id.* at 12:48-49.)

3. “Response 418 is a message that may instruct energy transaction execution engine 416 to terminate charging process 404.” (*Id.* at 12:12-14.)

94. Petitioner failed to show that Kimura renders claim 1 obvious because Kimura does not teach or suggest these limitations. Instead, Kimura discloses use of output start charge signals/input start charge signals (Pet. at 13 (citing Ex. 1002 figs. 10A & 12)) and output charge inhibit signal (Pet. at 32 (citing Ex 1002 at 11:30-33).) In a data processing system, a message is a unit of data or information sent from one device to another that includes a header and a body. Use of signals is characteristic of rudimentary energy transactions which are disparaged in the '391 patent (*e.g.*, Ex. 1001 at 6:65–7:2) and is not suitable for more complex, flexible, and interoperable systems and methods disclosed in the '391 patent:

The illustrative embodiments recognize that the charging transactions by which electric vehicles obtain electricity from an off-vehicle charging station to charge the electric vehicle requires a much more complete, flexible, and interoperable system governing all aspects of the charging transaction.

(*Id.* at 7:12-16.) Petitioner has not provided any evidence to suggest it would have been obvious to use messages instead of signals in Kimura. Therefore, Kimura does not render claim 1 obvious.

4. Claim 4

95.Claim 4 depends from claim 1. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 4 is not rendered obvious by Kimura for at least all of the reasons discussed above with regard to claim 1 in Section VI.A *supra*.

5. Claim 5

96.Claim 5 recites, in relevant part “wherein the one or more interruptions is the preference interruption, and the preference interruption is detected from a violation of a preference selected by a participant to the charging process.” Petitioner argues that Kimura renders claim 5 obvious because it discloses voltage reaching a predetermined target value. (Pet. at 38.)

97.Petitioner fails to meet his burden as to claim 5. As explained above, the term “preference interruption” means “a set of one or more interruptions that are caused from a violation of a user-specified preference.” (*Supra* Part V.C.) Furthermore, claim 5 recites that the preference must be selected by a participant to the charging process. The terms “party” and “participant” are used interchangeably in the ’391 patent. (Ex. 1001 at 14:64-65 (“the terms and conditions that were established by

parties to the charging process.”); *id.* at 7:41-53 (“parties of the transaction”).)

The parties may include “the owner of the electric vehicle to be charged, the operator of the electric vehicle, the owner of the charging station, and an electric utility company providing electricity to an electric power grid associated with the charging station.” (*Id.* at 7:43-49.) Further, under the ’391 patent, the parties must agree to conditions relevant to their role in the transaction prior to the charge commencing, “[*d*uring the pre-charge phase.” (*Id.* at 7:49-53 & 7:39.)

In Kimura, the voltage threshold on which Petitioner relies must be preset at the factory because it is saved in EEPROM memory and there is no teaching or suggestion of a user interface that would permit alteration of the preset:

it is necessary to stop charging when a target value of the terminal voltage during the charging operation is set according to the type of the battery and the terminal voltage reaches this target value.

A current instruction value *I* and the ***voltage target value V*** in the constant current charge mode ***are previously stored in an EEPROM (Electrically Erasable Programmable Read Only Memory)*** (not shown) of the battery controller 14 according to the type of the battery 11 to be installed in the electric vehicle 10.

(Ex. 1002 at 5:24-34.) There is no indication in Kimura that the factory setting the preset is a user or a participant as that term is used in the ‘391 patent. Also, because there is no user-interface or other programming means available to the user, the pre-installed voltage target values stored in the EEPROM cannot be changed by the user and are therefore cannot be user-specified preferences. At the same time, because a factory preset is a given, the actual participants cannot meaningfully agree to it. (See *id.* 7:49-53 & 7:39.)

6. **Claim 6**

98.Claim 6 recites: “The computer implemented method of claim 1, wherein the one or more interruptions is the data services interruption, and the data services interruption originates from a failure in data transmission.” (Ex. 1001 at 17:12-16.) As explained above, the term “data services interruption” should be construed to mean, among other things, an interruption caused by the inability for information to be exchanged with a set of one or more **third** party data sources. (*Supra* Part V.A; Ex. 1001 at 13:38-46; *id.* at 8: 38-44.)

99.Kimura cannot render claim 6 obvious because nowhere does it teach or suggest a data services interruption caused by the inability of information exchange with **third** party data sources. Petitioner asserts a sole argument that a data services interruption in Kimura “occurs when the charger controller 24 fails to communicate with the battery controller 14 within a predetermined amount of time

(S47-Yes and S49, orange). Ex-1002, 10:41-44.” (Pet. at 40.) However, Kimura’s charger controller and battery controller are not part of third party structures / services—Kimura explains that the “charger controller 24” and the “battery controller 14” are part of “a preferred embodiment of a charging apparatus for an electric vehicle” depicted in Kimura’s Figure 1. (Ex. 1002 at 3:6-7; *see also id.* at 3:7-48.)

(*Id.* fig.1.) Additionally, Kimura discloses that control lines 33 through 36 are control lines to transmit various control signals between the battery controller 14 of the electric vehicle 10 and the controller 24 of the charger 20, without any involvement of third parties. (*Id.* at 3:49-52.)

Furthermore, Kimura’s charger controller and battery controller are directly connected via a physical cable. (*Id.* at 3:30-33; *id.* at 3:9-11.) One of Kimura’s control lines 33 is exclusively used to transmit a charge start signal and a stop signal from the charger 20 to the electric vehicle 20; another control line 34 is exclusively used to transmit a charge enable signal and an inhibit signal from the electric vehicle 10 to the charger 20). Accordingly, Petitioner failed to show obviousness of claim 6.

100. Petitioner’s claim 6 argument is based on the opinions of its expert Dr. MacCarley. (See Pet. at 40-41 (citing Ex. 1009, ¶¶ 104-106).) However, Dr.

MacCarley apparently was unaware of how the patentees defined a data services interruption in the '391 patent and opined that it is “some disruption of normal data communication from one entity to another or to multiple other targets.” (EX2007 at 34:22-25.) Therefore, his opinions on this issue should be accorded little weight.

7. Claim 7

101. Claim 7 recites, in relevant part, “wherein the one or more interruptions are detected by identifying an operational parameter from the set of operational parameters that conform to the set of predefined interrupt conditions.” Petitioner failed to meet its burden as to claim 7 because it failed to show “detecting by identifying an operational parameter from the set of operational parameters” in Kimura.

102. A POSITA would understand claim 7 to mean that an operational parameter from the set of operational parameters that conform to the set of predefined interrupt conditions is identified before each new charging transaction. A POSITA would further understand that the '391 patent teaches more flexible and interoperable systems and methods, divided into three phases: pre-charge, charge, and post-charge. After a previous charging transaction is completed, in the pre-charge phase of a new charging transaction, a user may change an interrupt condition involving one or more operational parameters.

103. The '391 patent's specification also supports this understanding when it discloses that

The illustrative embodiments recognize that the charging transactions by which electric vehicles obtain electricity from an off-vehicle charging station to charge the electric vehicle ***requires a much more complete, flexible, and interoperable system*** governing all aspects of the charging transaction. Electric vehicle charging transactions can be divided into the pre-charge phase, the charge phase, and the post-charge phase. ***During the pre-charge phase of decision enablement, all parties are presented with the conditions governing the charging transaction.*** Electricity flows to the electric vehicle and payment is made during the post-charge phase. Finally, during the post-charge phase of the transaction, an analysis is performed to provide incentives and induce specific behaviors on the part of any party involved in the transaction.

(Ex. 1001 at 7:12-25.) The conditions governing the transaction include predefined interrupt conditions, which include rules involving operational parameters. The operational parameters in the predefined interrupt conditions are the set of

operational parameters from which the method identifies operational parameters to monitor.

104. Petitioner argues only that Kimura meets the limitations of this claim because it discloses that “the battery controller 14 detects that the voltage of the battery 11 (operational parameter) conforms to a predetermined voltage threshold (predefined interrupt).” (Pet. at 42.) However, Petitioner does not explain how Kimura’s battery controller “detect[s] by identifying” voltage as an operational parameter from a set of operational parameters conforming to predefined interrupt conditions. On the contrary, Petitioner cites to no disclosure in Kimura where an operational parameter is identified from a set of operational parameters—it simply alleges that it is.

105. Furthermore, a predetermined voltage threshold is a factory preset that cannot be changed in the pre-charge phase of a charging transaction, as required in the ’391 patent.

During the pre-charge phase, all parties of the transaction are presented with the conditions governing the charging transaction. The parties may include, without limitation, the owner of the electric vehicle to be charged, the operator of the electric vehicle, the owner of the charging station, and an electric utility company providing electricity

to an electric power grid associated with the charging station. Parties agree to conditions relevant to their role in the transaction prior to the charge commencing.

(*Id.* at 7:41-49.)

8. **Claim 8**

106. Claim 8 recites, in relevant part, elements substantially similar to those in elements 1[a] and 1[d]. Therefore, Petitioner’s challenge fails for the same reasons as with claim 1. (*Supra* Part VI.A.1.)

9. **Claim 11**

107. Claim 11 depends from independent claim 8. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 11 is not rendered obvious by Kimura for at least all of the reasons discussed above with regard to claim 8 in Part VI.A.6 *supra*.

10. **Claim 12**

108. Petitioner does not provide separate arguments for claim 12. (Pet. at 46.) Because claim 12 recites, in relevant part “wherein the one or more interruptions is the ***preference interruption***, and the preference interruption is detected from a violation of a preference ***selected by a participant to the charging process***[,]” Kimura does not render it obvious for the same reasons as with claim 5. (*Supra* Part VI.A.3.)

11. **Claim 13**

109. Claim 13 recites: “The computer program product of claim 8, wherein the one or more interruptions is the data services interruption, and the data services interruption originates from a failure in data transmission.” (Ex. 1001 at 18:1-4.) With claim 13, Petitioner merely argues that “Claims 11-14 are analogous to Claims 4-7, so Claims 11-14 are rendered obvious by Kimura for analogous reasons” (Pet. at 46.) Accordingly, Petitioner failed to show obviousness of claim 13 at least for the same reason as with claim 6—namely, that Kimura does not teach or suggest a data services interruption caused by the inability for information to be exchanged with a set of one or more **third** party data sources. (*Supra* Parts V.A & VI.A.4.)

12. **Claim 14**

110. Petitioner does not advance any separate substantive arguments for claim 14 (Pet. at 46), thus its challenge fails at least for the same reasons as with claim 7. (*Supra* Part VI.A.5.)

13. **Claim 15**

111. Claim 15 recites, in relevant part, elements substantially similar to those in elements 1[a] and 1[d]. Therefore, Petitioner’s challenge fails for the same reasons as with claim 1. (*Supra* Part VI.A.1.)

14. **Claims 18**

112. Claim 18 depends from independent claim 15. A dependent claim contains

all of the limitations of the claim or claims from which it depends. Therefore, claim 18 is not rendered obvious by Kimura for at least all of the reasons discussed above with regard to claim 15 in Part VI.A.11 *supra*.

15. Claim 19

113. Petitioner does not advance any separate substantive arguments for claim 14 (Pet. at 49), thus its challenge fails at least for the same reasons as with claim 7. (*Supra* Part VI.A.5.)

16. Claim 20

114. Claim 20 recites, in relevant part, elements substantially similar to those in elements 1[a] and 1[d]. Therefore, Petitioner's challenge fails for the same reasons as with claim 1. (*Supra* Part VI.A.1.)

[\[1\]](#) Contrary to the Board's view, PO does not concede that claim 1 or any other challenged claims are representative. (ID at 22.)

3. Ground 2: Kimura in View of Hotta Does Not Render Obvious Claims 2, 5, 9, 12, and 16

4. Claim 2

115. Claim 2 recites:

The computer implemented method of claim 1, wherein the one or more interruptions is a manual override interruption, and wherein the computer implemented method further comprises:

responsive to receiving, from a user, the manual override interruption, terminating the charging process.

(Ex. 1001 at 16:60-65.) As discussed above, the term “manual override interruption” should be construed as “an instruction that causes [ETEE] to terminate charging process, which a user may generate by interacting with a user interface.” (*Supra* Part V.B.)

116. Petitioner argues that a combination of Kimura and Hotta renders claim 2 obvious. (Pet. at 54-57.) As an initial matter, Petitioner provides substantive arguments only in relation with Hotta. (*Id.* at 54-56.) For Kimura, it provides nothing more than a conclusory and unsubstantiated argument that “pressing Kimura’s main switch that functions as taught for Hotta’s stop command key” (*id.* at 57), thus this argument should be disregarded.

117. Petitioner failed to show that Hotta teaches or suggests this limitation for three reasons. **First**, Hotta does not teach a manual interruption that is an instruction. Rather, it teaches manually pressing the charging stop command key:

“The storage battery starts being charged when the charging start command key is ***manually pressed***, and the charging of the storage battery is stopped when the charging stop command key is manually pressed.” (Ex. 1003 at 1:22-26.) No evidence has been presented that pressing the key equates to an instruction as claimed. Thus, Petitioner’s argument based on the charging stop command key (Pet. at 55) fails.

118. ***Second***, Figures 11-12 and 15-16 of Hotta, on which Petitioner relies (Pet. at 55-57) two-stage charging subroutines different from both the ’391 patent and Kimura:

FIGS. 9 through 12 show a subroutine of a sequence for a two-stage constant-current/constant-current charging mode in which the subroutine of the sequence for setting a charging start time corresponds to a two-stage constant-current/constant-current charging mode. ***FIGS. 13 through 16*** show a two-stage charging mode with a constant current at a first stage and a constant voltage at a second stage, in which the subroutine of the sequence for setting a charging start time corresponds to a two-stage constant-current/constant-voltage charging mode.

(Ex. 1003 at 13:38-47; *see also id.* 3:12-17.) Despite of these fundamental differences, Petitioner failed to explain how and why a POSITA would combine Kimura and Hotta at least with respect to claim 2, thus it failed to show that a POSTA would be motivated to combine Kimura and Hotta or would have a reasonable expectation of success.

119. **Third**, Dr. MacCarley’s opinions regarding claim 2 should be given no weight. To begin, Dr. MacCarley defined “manual override interruption” as “a human being or ***some external, decision-making entity*** providing an input to the system that would lead to the interruption, the termination, of the charging process.” (Ex. 2007 43:11-16.) This contradicts both the express language of claim 2 reciting, in relevant part, “receiving, ***from a user***, the manual override interruption”; and the patentees’ definition.

120. Additionally, Dr. MacCarley’s opinions on SAE J1772 (Ex. 1009, ¶154) should be disregarded because they were excluded from the Petition, and because arguments incorporated by reference into the Petition are not allowed. See 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”).

5. Claim 5

121. Claim 5 recites, in relevant part “wherein the one or more interruptions is the preference interruption, and the preference interruption is detected from a violation

of a preference selected by a participant to the charging process.” Petitioner argues that Hotta teaches claim 5 because it “regards a charger 2 (purple) configured to ensure that the charging of an electric vehicle is completed by ‘[an] indicated scheduled boarding time.’” (Pet. at 57.) According to Petitioner, Hotta’s boarding-time-selection functionality allows the user to indicate preferences with respect hereto. (*Id.* at 58.)

122. Petitioner fails to meet its burden as to claim 5 for two reasons. **First**, claim 5 depends from claim 1, and thus incorporates all of its limitations, including that the interruption be detected during the flow of electricity. In Hotta, the scheduled time for boarding and using the vehicle are input before the charging begins, *i.e.*, **not** during the flow of electricity. As Hotta explains, the disclosed apparatus includes, among other things, a means for inputting the boarding time and charging start time calculating means for calculating a charging start time to finish the charging of the storage battery at the indicated scheduled boarding time based on the indicated scheduled boarding time and the calculated necessary charging period, the arrangement being such that the storage battery starts being charged with the predetermined charging current from the calculated charging start time.

(Ex. 1003 at 2:10-21.)

123. **Second**, Hotta teaches meeting the preferences instead of failure to do so. Even if the battery cannot be fully charged to meet the boarding time, the controller starts charging the battery:

If $(T_{c1} + T_{c2}) > T_n$. . . a message indicating that the storage battery 22 cannot be fully charged is displayed on the display unit 55 in a step S31. The controller 21 sets the charging start time T_s to the present time ($T_s = \text{the present time}$) in a step S32. Thereafter, the controller 21 executes the charge holding mode “a” and then starts charging the storage battery 22.

(Ex. 1003 at 8:23-38.) In other words, failure to meet the boarding time does not result in the termination of the charging process. Thus, the combination of Kimura and Hotta would not render claim 5 unpatentable.

6. Claim 9

124. Claim 9 recites, in relevant part, “wherein the one or more interruptions is a manual override interruption, and wherein the computer program product further comprises: fourth program instructions for terminating the charging process in response to receiving, from a user, the manual override interruption.” Petitioner does not make separate arguments for this claim (Pet. at 59), thus it fails to show

obviousness at least for the same reasons as with claim 2. (*Supra* Part VI.B.1.)

7. Claim 12

125. Petitioner does not provide separate arguments for claim 12. (Pet. at 59.)

Because claim 12 recites, in relevant part “wherein the one or more interruptions is the ***preference interruption***, and the preference interruption is detected from a violation of a preference ***selected by a participant to the charging process***[,]”

Kimura-Hotta does not render it obvious at least for the same reasons as with claim 5. (*Supra* Part VI.B.2.)

8. Claim 16

126. Claim 16 recites: “The apparatus of claim 15, wherein the one or more interruptions is a manual override interruption, and wherein the processing unit further executes the computer usable program code to terminate the charging process in response to receiving, from a user, the manual override interruption.”

Petitioner does not make separate arguments for this claim (Pet. at 59), thus it fails to show obviousness at least for the same reasons as with claim 2. (*Supra* Part VI.B.1.)

9. Ground 3: Kimura in View of King Does Not Render Obvious Claims 3, 10, and 17

127. For all claims in Ground 3 (claims 3, 10, and 17), Petitioner argues that Kimura-King teaches “storing the set of operational parameters in a storage

device” because King discloses storing parameters, such as battery temperature profile, ampere-hours of charge, battery charge profile, and charger status. (Pet. at 61-63.)

128. This argument fails because in King, those parameters have nothing to do with monitoring for and detecting interruptions. Rather, they are used to calculate the amount of recharge the battery requires:

Operation of charger 24 is controlled by controller 36 in response to the measured parameters (current, voltage and battery temperature) and the stored data in memory 34. Once controller 36 has calculated the net ampere-hour discharge using the above equations, the amount of recharge current can be determined from the following relationships.

(Ex. 1004 at 5:49-54.) Indeed, the purpose of King is to prevent overcharging of old batteries:

The intelligent battery charger of the invention provides compensation to prevent overcharging of aged batteries. In addition, the computed state of charge, as shown by indicator 32 on the vehicle instrument panel, is compensated for the battery’s reduced capacity as

a result of battery age, operation at low battery temperatures, and excessive discharge rates.

(*Id.* at 5:42-48.) Thus, the proposed combination would not meet the limitations of claims 3, 10, and 17, and Petitioner’s Ground 3 fails.

10. Ground 4: Keith Does Not Anticipate Claims 1, 2, 4-9, 11-16, and 18-20

11. Claim 1

129. As discussed in Ground 1, the recited “request” and “response” in elements 1[a] and 1[d] are messages and not merely signals, that are characteristic of rudimentary charging transactions that the ’391 patent disparages. (See Part VI.A.1; Ex. 1001 at 6:65–7:2; Ex. 1001 at 7:12-16.)

130. Keith cannot anticipate claim 1 at least because Keith discloses use of signals (keys) instead of a “request,” as Petitioner admits. (Pet. at 65-66.) For example, Keith explains

The charge station computer (FIG. 13) then reaches a step 387 which ***sends a five second warning to the vehicle charge computer, key h,*** which causes the vehicle program (FIG. 14) to advance from test 386 to a pair of steps 388 where the display informs the operator that the

communication phase is ending and the charge phase is going to begin, and then sends a confirming break, key j, in a step 389, and then goes into a one second wait at a step 390.

(Ex. 1005 at 20:15-23.)

131. Petitioner asserts that Keith discloses a “response” because the vehicle physically, mechanically, de-energizes the vehicle contact relay. (Pet. at 78.) As noted previously, in a data processing system, a message is a unit of data or information sent from one device to another that includes a header and a body. De-energizing a relay is not a message, either. Thus, Keith does not anticipate claim 1.

12. Claim 2

132. Claim 2 recites:

The computer implemented method of claim 1, wherein the one or more interruptions is a manual override interruption, and wherein the computer implemented method further comprises:

responsive to receiving, from a user, the manual override interruption, terminating the charging process.

(Ex. 1001 at 16:60-65.) As discussed above, the term “manual override interruption” should be construed as “an instruction that causes [ETEE] to terminate charging process, which a user may generate by interacting with a user interface.” *Supra* Part V.B.

133. Petitioner argues that Keith anticipates claim 2 because it purportedly discloses that “a manual override interruption occurs when ‘the operator moves a charge[/]run switch 77 into the open position.’” (Pet. at 80.) Moving a charge/run switch into the open position under Keith cannot anticipate claim 2 at least for four reasons.

134. **First**, physically moving a charge/run switch as taught by Keith is not the same as generating an instruction as claimed. As an initial matter, Petitioner refers to an operator **moving** charge/run switch into the open position under Keith. (*Id.* at 80.) Moving a switch into the open/close position is a physical action different from generating an instruction. The passage on which Petitioner relies states in relevant part: “Assuming that the diagnostics are successful, the vehicle operator can indicate that a battery charge is to be acquired by closing a charge/run switch 77, which may be a discrete switch or may simply be a suitable keyboard input” (Ex. 1005 at 6:3-7.) Keith’s charge/run switch in the open position is shown in Figure 1.

(Ex. 1005 fig.1.)

135. Discrete settings are settings that are either “on” or “off,” “true” or “false.”

A discrete switch is a switch with only discrete and not continuous settings.

Closing the discrete switch in Keith is akin to turning on a simple light switch—if a user wants to acquire charge, nothing more than manually moving the switch into the “on” position is required.

136. Further, Keith’s mechanical “discrete switch,” as shown in Keith’s Figure 1, cannot be an instruction. A POSITA would understand “instruction,” as that term is understood in the ’391 patent to mean “an encoding of a series of operational steps specifying the details to be executed according to those operational steps.” (Ex. 1001 at 15:13-16 (“[E]ach block in the flowchart or block diagrams may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified logical function(s).”).) A discrete manual switch is not the same as encoding instructions.

137. **Second**, Keith’s “suitable keyboard input through the cockpit keyboard and display system 75” is not an instruction, either. (See Ex. 1005 at 6:6-7.) Again, “an encoding of a series of operational steps specifying the details to be executed according to those operational steps.” And a POSITA would understand that an instruction goes beyond the mechanical operation of pressing a button on a

keyboard. Because the keyboard/display in Keith may be used as a discrete switch, a POSITA would understand that any input from the keyboard would be interpreted as that of a discrete switch sending discrete signals—for example, hitting a keyboard once to signal for the charge to proceed:

So, in summary, the focus in Keith (Ex. 1005 at 6:3-8) is on a signal that triggers a charge if diagnostics (interpreted by the user) indicate the need for acquiring one. A discrete switch is provided as an example, and a keyboard input that sends a discrete signal to proceed is provided as a second example. In both cases, the user's required manual involvement triggers a discrete signal to proceed with the charge at the user's discretion.

Therefore, because the keyboard input is an equivalent of turning the charge/run switch on/off, a POSITA would understand that an operator is inputting one of two available choices (on/off) and not generating instructions for the vehicle charge computer to interpret.

138. **Third**, Keith does not disclose that transferring a charge/run switch into the open position **causes ETEE** to terminate charging process. Under Keith, when “the operator transfers the charge run switch 77 into the open position,” this action—and not the ETEE—stops the charge. (Ex. 1005 at 8:30-31.)

139. To the extent Petitioner takes the position that moving the charge/run switch causes a computer to terminate the charging process, that computer cannot be the ETEE, either, because the charge/run switch in Keith is coupled with the vehicle charge computer 72, which serves as the ETIM. (Ex. 1005 fig.1.) The station charge computer 34 is not coupled with/connected to the charge/run switch. (Ex. 1005 fig.1.) Keith illustrates this point by disclosing that, when an operator moves the charge/run switch to the close position, this causes follow-up actions in the vehicle charge computer (ETIM) and not the station charge computer (ETEE):

Ultimately, when the operator decides that a charge is in order, closure of the charge/run switch 77 (FIG. 1) will cause an affirmative result of step 178 which causes the vehicle charge computer 72 to advance to a payment/battery initialization routine.

(Ex. 1005 at 10:53-57.)

140. **Fourth**, Keith does not go through the same process of identifying the manual override notification as an interruption and comparing it against predefined interrupt conditions (steps 72 and 704) as required in the '391 patent: (Id. fig.7.) As the '391 patent's specification explains,

the process begins by making the determination as to whether an operational parameter of the charging process conforms to predefined interrupt conditions (step 702). The predefined interrupt conditions are predefined interrupt conditions, such as predefined interrupt conditions 412 in FIG. 4. If the process makes the determination that an operational parameter of the charging process conforms to predefined interrupt conditions, then the process identifies the operational parameter as an interruption (step 704).

(*Id.* at 14:22-30.) The same steps of monitoring and detecting are recited in claim 1 of the '391 patent from which claim 2 depends. These are absent from Keith. Thus, Keith's disclosure of a user moving a charge/run switch into the open position is not enough for anticipation. *Net MoneyIN*, 545 F.3d at 1371.

141. Petitioner's arguments to the contrary fail for three reasons. **First**, Petitioner argues that "[i]n Keith, a manual override interruption occurs when 'the operator moves a charge[/]run switch 77 into the open position[.]'" (Pet. at 80.) As explained above, physical movement of a charge/run switch into the open position under Keith is different from an generating an instruction that causes ETEE to terminate the charging process.

142. The first (of two) passage from Keith on which Petitioner relies support PO's position or are inapposite. The first passage—"The charge will continue until something goes awry, the credit established by the counting cash receiver 105 is exhausted, or the operator transfers the charge run switch 77 into the open position" (Ex. 1005 at 8:29-32)—shows that the operator's action terminates the charge instead of causing the ETEE to terminate the charging process. The second passage from Keith that Petitioner cites merely states how the vehicle is receiving charging power over physical connections. (*See* Pet. at 80 (citing Ex. 1005 at 8:1-6).)

143. **Second**, Petitioner argues that Keith anticipates claim 2 because "Keith, just like the '391 Patent (Ex-1001, 12:26-31), also explains that its charge/run switch 77 can be part of a user interface. Ex-1005 at 6:6-8[.]" (Pet. at 81.) To begin, the cited portion of the '391 patent's disclosure explains that a user may generate a manual override interruption by interacting with a user interface (Ex. 1001 at 12:36-31) and is devoid of any mention of the charge/run switch. And the cited portion of Keith's disclosure explains:

Assuming that the diagnostics are successful, the vehicle operator can indicate that a battery charge is to be acquired by closing a charge/run switch 77, which may be a discrete switch, or may simply

be a suitable keyboard input through the cockpit keyboard and display system 75. It is response to the closing of the charge/run switch 77 (or equivalent) that causes **the computer 72** to provide signals on lines 78 and 79 **to cause the infrared transmitter 39 and laser diode 51 to emanate radiation**, as described hereinbefore.

(Ex. 1005 at 6:3-13.) This disclosure does not support Petitioner’s position at least because it (1) speaks of what happens after the closing of the charge/run switch and **not** after its opening; and (2) discloses that the closing of that switch causes the infrared transmitter and laser diode mounted on the vehicle to emanate radiation to communicate with the vehicle height detector, which has nothing to do with terminating the charging process (Ex. 1005 at 5:30-39).

144. **Third**, opinions of Petitioner’s expert Dr. MacCarley should be given no weight in connection with claim 2 because Dr. MacCarley defined “manual override interruption” as “a human being or **some external, decision-making entity** providing an input to the system that would lead to the interruption, the termination, of the charging process.” (Ex. 2007 43:11-16.) This contradicts

17.the language of claim 2 reciting, in relevant part, “receiving, **from a user**, the manual override interruption”;

18.the patentees’ definition, and

19.Petitioner’s position that the manual override interruption is received from
a “vehicle owner/operator” (Pet. at 82).

20. **Claim 4**

145. Claim 4 depends from independent claim 1. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 4 is not anticipated by Keith for at least all of the reasons discussed above with regard to claim 1 in Part VI.D.1 *supra*.

21. **Claim 5**

146. Claim 5 recites, in relevant part, “wherein the one or more interruptions is the preference interruption, and the preference interruption is detected from a **violation** of a preference selected by a participant to the charging process.”

Petitioner asserts only that Keith anticipates claim 5 because “[o]ne preference interruption in Keith involves exhaustion of the cash deposited by the user for charging. Ex-1005, 22:27-28. This is a preference selected by a participant to the charging process.” (Pet. at 84.)

147. Petitioner’s argument fails because even assuming that charging the battery until the cash deposit is exhausted is a preference, stopping the charging process when the cash deposit is exhausted **meets** that preference instead of violating it. Additionally, by Petitioner’s logic, a violation of the preference to charge the

battery until the deposit is exhausted may mean that the charging process would stop prematurely, costing a pecuniary loss to the user “because the machine won’t give a refund.” (Ex. 1005 at 17:64). But the only remedy for stopping the charging process prematurely would be terminating the charging process. That simply cannot be the case.

22. **Claim 6**

148. As explained above, the term “data services interruption” in claim 6 should be construed to mean, among other things, an interruption caused by the inability for information to be exchanged with a set of one or more **third** party data sources. (*Supra* Part V.A; Ex. 1001 at 13:38-46 & 8: 38-44.) Keith does not anticipate claim 6 because it does not teach or suggest an interruption caused by the inability for information to be exchanged with a set of one or more third party data sources.

149. Petitioner only argues that Keith meets claim 6’s limitations because it discloses that over-the-limit voltage may be detected,

followed by a sequence of display steps 444-446 (green) at the vehicle leading to a request for data from a user (i.e., whether or not to override) and a response-waiting period of 10 seconds at step 447 (blue). Ex-1005, 23:16-39. If no response is received after 10 seconds (***an interruption in data services from the user failing to respond in time***),

then the logic proceeds to 449 (red) and the charging process is terminated.

(Pet. at 85.)

(Pet. at 86 (excerpting a portion of Ex. 1005 fig. 16) (color added by Petitioner).) A user, however, is not a third-party data source, which under the '391 patent include, for example, weather information sources, traffic information sources, map and travel information sources, charging station price information Sources, or any other third party information sources. (*Id.* at 8: 38-44.)

150. Additionally, under element 1[d] of the '391 patent, this purported interruption should result in the energy transaction interrupt monitor sending a response to the energy transaction execution engine, and then the energy transaction execution engine should terminate the charging process. (*E.g.*, Ex. 1001 at 12:56-59.) In contrast, in Keith, after displaying the override question and receiving no response, the vehicle charge computer—corresponding to the energy transaction interrupt monitor and not energy transaction execution engine, as required by element 1[d]—deenergizes the vehicle main contact relay 94. (Ex. 1005 at 23:30-31; *id.* fig. 16 (displaying vehicle-side steps).) Thus, the wrong element terminates the charging process in this purported data services interruption

under Keith.

151. Lastly, Keith calls the user/operator response in the situation above “the override.” (Ex. 1005 at 23:41; *id.* fig. 16 (step 446 “Display: Override”).) PO does not concede that Keith discloses manual override interruptions claimed in the ’391 patent (it does not, as explained in relation to claim 2, *see supra* Part VI.D.2), but notes that the ’391 patent recites manual override interruptions in claim 2, 9, and 16. Petitioner’s equating manual override interruptions with the data services interruptions would largely render claims 2, 9, and 16 of the ’391 patent superfluous, which is contrary to the doctrine of claim differentiation. *See Versa Corp. v. Ag-Bag Int’l Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004) (“The doctrine of claim differentiation ‘creates a presumption that each claim in a patent has a different scope.’ The difference in meaning and scope between claims is presumed to be significant ‘to the extent that the absence of such difference in meaning and scope would make a claim superfluous.’”) (internal quotation marks and citations omitted).

23. Claim 7

152. Claim 7 recites, in relevant part, “wherein the one or more interruptions are detected by identifying an operational parameter from the set of operational parameters that conform to the set of predefined interrupt conditions.” Petitioner failed to meet its burden as to claim 7 because it failed to show “detecting by

identifying an operational parameter from the set of operational parameters” in Keith.

153. As explained in Ground 1 (*supra* Part VI.A.5), a POSITA would understand claim 7 to mean that an operational parameter from the set of operational parameters that conform to the set of predefined interrupt conditions ***is identified before each new charging transaction, during the pre-charge phase.*** (Ex. 1001 at 7:12-25.) The conditions governing each transaction include predefined interrupt conditions, which include rules involving operational parameters. The operational parameters in the predefined interrupt conditions are the set of operational parameters from which the claimed invention identifies operational parameters to monitor.

154. Petitioner argues only that Keith anticipates claim 7 because it discloses “determin[ing] if the current provided by the line current measuring circuit 129 ... exceeds a current limit which is established by manufacturer’s data.” (Pet. at 87.) However, Petitioner does not explain whether the current limit is an operational parameter identified from a set of operational parameters that conform to a set of predefined interrupt conditions. Furthermore, a current limit preestablished by manufacturer’s data cannot be changed in the pre-charge phase of a charging transaction, as required in the ’391 patent. (Ex. 1001 at 7:41-49.)

24. **Claim 8**

155. Claim 8 recites, in relevant part, elements substantially similar to those in elements 1[a] and 1[d]. Therefore, Petitioner’s challenge fails for the same reasons as with claim 1. (*Supra* Part VI.D.1.)

25. **Claim 9**

156. Claim 9 recites, in relevant part “wherein the one or more interruptions is a manual override interruption, and wherein the computer program product further comprises: fourth program instructions for terminating the charging process in response to receiving, from a user, the manual override interruption.” Petitioner does not advance any substantive arguments regarding claim 9, therefore it failed to show that Keith anticipates this claim for at least the same reasons as with claim 2. (*See supra* Part VI.D.2.)

26. **Claim 11**

157. Claim 11 depends from independent claim 8. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 11 is not anticipated by Keith for at least all of the reasons discussed above with regard to claim 8 in Part VI.D.7 *supra*.

27. **Claim 12**

158. Petitioner does not provide separate arguments for claim 12. (Pet. at 90.) Because claim 12 recites, in relevant part “wherein the one or more interruptions is the ***preference interruption***, and the preference interruption is detected from a

violation of a preference ***selected by a participant to the charging process***[,]”

Keith does not anticipate it for the same reasons as with claim 5. (*Supra* Part VI.D.5.)

28. Claim 13

159. With claim 13, Petitioner merely argues that “Claims 9 and 11-14 are otherwise analogous to Claims 2 and 4-7, respectively, so these claims are anticipated for reasons analogous to those. . . .” (Pet. at 90.) Accordingly, Petitioner failed to show obviousness of claim 13 at least for the same reason as with claim 6—namely, that Kimura does not teach or suggest a data services interruption caused by the inability for information to be exchanged with a set of one or more ***third*** party data sources. (*Supra* Parts V.A & VI.D.5.)

29. Claim 14

160. Petitioner does not advance any separate substantive arguments for claim 14 (Pet. at 90), thus its challenge fails at least for the same reasons as with claim 7. (*Supra* Part VI.D.6.)

30. Claim 15

161. Claim 15 recites, in relevant part, elements substantially similar to those in elements 1[a] and 1[d]. Therefore, Petitioner’s challenge fails for the same reasons as with claim 1. (*Supra* Part VI.D.1.)

31. Claim 16

162. Petitioner does not advance any substantive arguments regarding claim 16,

therefore it failed to show that Keith anticipates this claim for at least the same reasons as with claim 2. (*See supra* Part VI.D.2.)

32. Claim 18

163. Claim 18 depends from independent claim 15. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 18 is not anticipated by Keith for at least all of the reasons discussed above with regard to claim 15 in Part VI.D.13 *supra*.

33. Claim 19

164. Petitioner does not advance any separate substantive arguments for claim 14 (Pet. at 93), thus its challenge fails at least for the same reasons as with claim 7. (*Supra* Part VI.D.6.)

34. Claim 20

165. Claim 20 recites, in relevant part, elements substantially similar to those in elements 1[a] and 1[d]. Therefore, Petitioner's challenge fails for the same reasons as with claim 1. (*Supra* Part VI.D.1.)

13. Ground 5: Keith Does Not Render Obvious Claims 3, and 8-19

14. Motivation to Combine Keith with POSITA's Knowledge

166. Petitioner does not even attempt to show that a POSITA would be motivated to combine the teachings of Keith with its knowledge in the art or that a POSITA would have a reasonable expectation of success. (*See* Pet. at 95.) Notably, Dr. MacCarley conceded at his deposition that he did not provide a separate

obviousness analysis (which should have included a POSITA's motivation to combine and likelihood of success) because he did not think he was required to do so:

Q. Okay. So, Dr. MacCarley, are—are there any elements of Independent Claim 1 that are not disclosed in Keith but would have been obvious in your opinion?

A. Well, let me answer that two ways. It's my contention that Claim 1 is anticipated by Keith, which I think technically means that nothing needed to be obvious if it was already anticipated. That's a stronger criteria.

...

A. ... So as you asked the question, did I feel anything—did I feel the need to use obviousness to connect the dots on any of these? No.

(Ex. 2007 at 71:23–72:19.)

This alone is enough to dismiss Petitioner's Ground 5.

15. Claim 3

167. Petitioner argues that Keith discloses storing cost and kilowatt hours and that it would have been obvious to store the purported operational parameters in a storage device. (Pet. at 95-97.) Petitioner's argument that Keith renders claim 3

obvious fail for three reasons.

168. **First**, kilowatt hours and cost are not operational parameters, and Petitioner admits as much—“Keith does not appear to disclose using these two parameters at the vehicle charge computer 72 for interruption detection” (Pet. at 96.)

169. **Second**, storing kilowatt hours and cost in Keith have nothing to do with monitoring for and detecting interruptions. Rather, they are calculated and stored to prevent overpayment by the customer:

The calculation of kilowatt hours employs straightforward sampling of volts and amps on a cyclic basis, and utilizing a constant related to cycle time to multiply into volt-amp-hours. The cost is simple multiplication of rate; either absolute or selected by real time from a table. Then, a test 435 ***determines if the amount of cash which has been deposited is exhausted.***

(Ex. 1005 at 22:22-28; *see also id.* at 17:61-64 (“calculate a maximum fee that the operator should insert in order to avoid overpaying. This is to prevent paying for more power than the vehicle can use: the machine won’t give a refund.”).)

170. **Third**, Petitioner argues that Keith discusses displaying current and voltage, and that a POSITA would understand that a display requires storage of those

parameters. (Pet. at 96-97.) This argument is contradicted by Keith’s disclosures because it expressly and consistently indicates when a measurement is stored or merely displayed. Regarding kilowatt hours and cost, calculating, storing, and displaying is disclosed. (*See, e.g., id.* at 23:60-61 (“calculates and stores the kilowatt hours and cost so far”); *id.* at 22:25-29 (“The cost is simple multiplication of rate; either absolute or selected by real time from a table. Then, a test 435 determines if the amount of cash which has been deposited is exhausted.”).) Petitioner cannot point out to a similar disclosure with current or voltage. (*See id.* at 21:58-63 (“If there is so low a current as to indicate a bad connection, an affirmative result of test 421 will reach a step 424 in which the external display 85 provides an indication to the operator that there is a bad connection between the vehicle and the station and that the operator should try the process all over again.”); *id.* at 22:5-8 (If there is excessive current, an affirmative result of the test 426 will reach a step 428 which causes the external display 85 (FIG. 1) to provide an indication to the operator that there is excess current[.]”).)

16. Claim 8

171. Claim 8 recites, in relevant part, elements substantially similar to those in elements 1[a] and 1[d]. Therefore, Petitioner’s challenge fails for the same reasons as with claim 1. (*Supra* Part VI.D.1.)

17. Claim 9

172. Petitioner did not advance any substantive arguments that claim Keith renders claim 9 obvious and relied instead on its anticipation assertions. (Pet. at 98.) Thus, it failed as to claim 9 for the same reasons as in Ground 4. (*See supra* Part VI.D.8.)

18. Claim 10

173. Petitioner did not advance any substantive arguments that claim Keith renders claim 10 obvious and relied instead on its anticipation assertions. (Pet. at 98.) Thus, it failed as to claim 10 for the same reasons as with claim 3. (*See supra* Part VI.E.2.)

19. Claim 11

174. Claim 11 depends from independent claim 8. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 11 is not rendered obvious by Keith for at least all of the reasons discussed above with regard to claim 8 in Part VI.E.3 *supra*.

20. Claim 12

175. Petitioner did not advance any substantive arguments that claim Keith renders claim 12 obvious and relied instead on its anticipation assertions. (Pet. at 98.) Thus, it failed as to claim 9 for the same reasons as in Ground 4.

21. Claim 13

176. In addition to failure to show that a POSITA would have a motivation to combine Keith and with his background knowledge and a reasonable likelihood of

success, Petitioner failed to make any separate arguments regarding obviousness of claim 13 in view of Keith. (*See* Pet. 98; *see also* Paper 13 at 3.) Instead, Petitioner argued that Keith renders this claim obvious because it allegedly anticipates it. (*Id.* at 98.) Accordingly, Petitioner's argument additionally fails for the same reason as Keith's anticipation arguments for claims 6 and 13. (*See supra* Parts VI.D.5 & D.10.)

22. Claim 14

177. Petitioner does not advance any separate substantive arguments for claim 14 (Pet. at 98), thus its challenge fails at least for the same reasons as with claim 7 in Ground 4. (*Supra* Part VI.D.6.)

23. Claim 15

178. Claim 15 recites, in relevant part, elements substantially similar to those in elements 1[a] and 1[d]. Therefore, Petitioner's challenge fails for the same reasons as with claim 1 in Ground 4. (*Supra* Part VI.D.1.)

24. Claim 16

179. Petitioner did not advance any substantive arguments that claim Keith renders claim 16 obvious and relied instead on its anticipation assertions. (Pet. at 99.) Thus, it failed as to claim 9 for the same reasons as in Ground 4. (*See supra* Part VI.D.8.)

25. Claims 17

180. Petitioner did not advance any substantive arguments that claim Keith

renders claim 17 obvious and relied instead on its anticipation assertions. (Pet. at 99.) Thus, it failed as to claim 3 for the same reasons as with claim 3 and Ground 4. (See *supra* Part VI.E.2.)

26. Claim 18

181. Claim 18 depends from independent claim 15. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 18 is not anticipated by Keith for at least all of the reasons discussed above with regard to claim 15 in Part VI.E.10 *supra*.

27. Claim 19

182. Petitioner does not advance any separate substantive arguments for claim 14 (Pet. at 99), thus its challenge fails at least for the same reasons as with claim 7 in Ground 4. (*Supra* Part VI.D.6.)

F. Ground 6: Keith in View of Nor Does Not Render Claims 6 or 13 Obvious

1. Claim 6

183. As explained above, the term “data services interruption” should be construed to mean, among other things, an interruption caused by the inability for information to be exchanged with a set of one or more ***third*** party data sources. (*Supra* Part V.A; Ex. 1001 at 13:38-46; *id.* at 8: 38-44.) A Keith-Nor combination cannot render claim 6 obvious because nowhere does it teach or suggest a data services interruption caused by the inability of information exchange with ***third***

party data sources.

184. For claim 6, Petitioner relies only on Nor and asserts a single argument that Nor renders obvious the additional limitations of claim 6 because it discloses “a data services interruption occurs when the battery charge controller 86 (pink) of the electric vehicle 80 (turquoise) fails to communicate with the charging station 82 (purple). Ex-1006, 4:52-63.” (Pet. at 101.)

(Pet. at 101 (citing Ex. 1006 fig. 2 (color added by Petitioner).)

185. However, Nor does not teach or suggest communications/ failure to communicate with third parties service . Rather, it concerns communications between the vehicle side and the charging station and speaks only of “**communication means** that are capable of transferring **data concerning the state of charge** of the battery being charged **between the battery and the charging station**[,]” *i.e.*, without involvement of third parties. (See Ex. 1006 at 2:53-55.) The excerpt from Nor cited by Petitioner discloses “a monitoring system which monitors the data communication link **between the electric battery** being charged **and the power station**, and the charge controllers may be established in such a manner that they continuously monitor and exchange signals periodically” (*Id.* at 4:52-63.)

As discussed in Ground I, Dr. MacCarley's opinions regarding data services interruptions should be given no weight because he was not aware that the patentees furnished their own definition of this term in the '391 patent's specification. (Ex. 2007 at 34:22-25); *supra* Part VI.A.)

35. Claim 13

186. Petitioner makes an attorney argument that Keith-Nor renders claim 13 because it is similar to claim 6 and because Keith anticipates claim 8. (Pet. at 103.) To the extent PO is required to address this unsubstantiated assertion, it fails for the same reason as Petitioner's claim 6 argument *supra* Part VI.F.1.

X. CONCLUSIONS

187. I reserve the right to revise, supplement, and/or amend my opinions in this declaration based on future positions taken by Petitioner and/or their experts, additional documents, testimony, or other information provided by Petitioner or its witnesses, any orders from the Court, or as I may otherwise find necessary and to offer rebuttal analyses and/or opinions to any such positions of the Petitioner.

188. I expect to continue to develop my opinions discussed in this report. I also reserve the right to supplement my opinions based on information obtained from additional discovery or from Petitioner's experts, as indicated above.

189. When called upon to do so, I will offer testimony at trial or otherwise

regarding these opinions and will offer rebuttal testimony as appropriate throughout the remainder of this proceeding.

190. I currently hold the opinions expressed in this declaration, but my analysis may continue, and I may acquire additional information and/or attain supplemental insights that may result in added observations.

191. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that any such willful false statements may jeopardize the validity of the patent at issue in this proceeding.

Dated: November 8, 2024

A handwritten signature in black ink, appearing to read "K. W. Cameron", written over a horizontal line.

Dr. Kirk W. Cameron