

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

MOTOROLA SOLUTIONS, INC.,

Petitioner

v.

APPLIED CAPITAL, INC.,

Patent Owner

Case Nos. IPR2023-00418 and IPR2023-00419

Patent Nos. 8,378,817 and 9,728,082

DECLARATION OF JUN ZHENG, PH.D.

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LIST OF MATERIALS CONSIDERED

EX. NO.	Description
1001, 1003	U.S. Patent No. 8,378,817 and its Prosecution History (IPR2023-00418)
1001, 1003	U.S. Patent No. 9,728,082 and its Prosecution History (IPR2023-00419)
1004	Provisional SN 61/147,948, filed January 28, 2009
1005	Provisional SN 61/228,044, filed July 23, 3009
1007	U.S. Patent No. 8,191,005 to John Joseph Baier et al. (“ <i>Baier</i> ”)
1008	U.S. Patent Publication No. 2005/0108364 to David M. Callaghan et al. (“ <i>Callaghan</i> ”)
1009	U.S. Patent Publication No. 2002/0161885 to Sloan K. Childers et al. (“ <i>Childers</i> ”)
1010	U.S. Patent Publication No. 2002/0143934 to Geoffrey T. Barker et al. (“ <i>Barker</i> ”)
1002	Declaration of Nathaniel Polish submitted on or about December 30, 2022 in Motorola Solutions, Inc.’s petition for <i>Inter Partes</i> Review. (IPR2023-00418)
1002	Declaration of Nathaniel Polish submitted on or about December 30, 2022 in Motorola Solutions, Inc.’s petition for <i>Inter Partes</i> Review. (IPR2023-00419)
	Vector graphic file formats, in Perl Graphics Programming by Shawn Wallace, O’Reilly Media, Sept. 2012. https://www.oreilly.com/library/view/perl-graphicsprogramming/9781449358280/ch01s04.html
	Vector & raster graphics in offset printing, Dec. 6, 2013, https://olypress.com/vector-vs-rastergraphics-in-printing/
Paper 1	The Motorola Solutions, Inc. petition for Inter Partes Review and its Exhibits - IPR2023-00418
Paper 1	The Motorola Solutions, Inc. petition for Inter Partes Review and its Exhibits - IPR2023-00419
	U.S. Patent Publication No. 2002/0143934 Prosecution History
	What are vector graphics? https://vectr.com/tutorials/what-are-vector-graphics/
	SVG Intro, https://www.w3schools.com/graphics/svg_intro.asp

2003	Memorandum and Order, <i>Applied Capital, Inc. v. ADT Corp.</i> , No. 1:16-CV-00815, 2019 WL 3719099 (D.N.M. Aug. 7, 2019) (“ Patentability Order ”)
2004	Memorandum and Order on Claim Construction, <i>Applied Capital, Inc. v. ADT Corp.</i> , No. 1:16-CV-00815, 2019 WL 3782321 (D.N.M. Aug. 12, 2019) (“ Markman Order ”)
2005	Notice of Allowability, File History of U.S. Patent No. 8,378,817 (App. No. 12/695,373), Mail Date Dec. 11, 2012 (“ Notice of Allowability ”)
2006	DECISION Denying Institution of <i>Inter Partes</i> Review, <i>ADT LLC and The ADT Corp. v. Applied Capital, Inc.</i> , IPR2017-01825, Paper 7 (PTAB Jan. 1, 2018) (“ Institution Denial ”)
2007	DECISION Denying Petitioner’s Request for Rehearing, <i>ADT LLC and The ADT Corp. v. Applied Capital, Inc.</i> , IPR2017-01825, Paper 9 (PTAB Mar. 15, 2018) (“ Rehearing Denial ”)
2008	W3C et al. “Scalable Vector Graphics (SVG) 1.1 Specification” Nov. 15, 2002, in File History of U.S. Patent Publication No. 2005/0108364 to David M. Callaghan et al. (“ SVG Spec ”)
2009	Appellants’ Appeal Brief, File History of U.S. Patent Publication No. 2002/0143934 (App. No. 09/825,506) to Geoffrey T. Barker et al., Dated Dec. 9, 2008 (“ Barker Appeal Brief ”)

I, Jun Zheng, Ph.D., declare as follows:

I. INTRODUCTION

1. I am over eighteen years of age, and I am competent to testify as to the matters set forth herein if I am called upon to do so. I have been engaged by Applied Capital, Inc. (“Applied Capital”) to provide expert testimony in the above-captioned *Inter Partes* Review (“IPR”) matters. I am being compensated on an hourly basis for my opinions, and my opinions do not depend on or are in any way contingent upon the outcome of this proceeding.

2. With respect to this Declaration in particular, I was asked to offer my opinions on certain technical matters related to U.S. Patent Nos. 8,378,817 (“’817 patent”) and 9,728,082 (“’082 patent”) and Motorola Solutions, Inc.’s (“Motorola”) separate petitions for *Inter Partes* Review of the ’817 and ’082 patents (“the Challenged Patents”) in the above-captioned matters. Because of the similarity of references and prior art, and for the convenience of the Board, I have provided a single declaration for both IPRs (IPR2023-00418 and IPR2023-00419). In preparing my declaration and rendering my opinions, I have reviewed the materials listed in the List of Materials Considered and relied upon my many years of knowledge and experience in the field of computer engineering and information technology as outlined below.

3. There are two independent reasons I believe that the Board can agree that an *Inter Partes* Review should not be instituted for the Challenged Patents. Primarily, it is my opinion that the prior art referenced in the *Inter Partes* Review petition and the declaration of Dr. Nathaniel Polish fails to support that the prior art teaches or suggests all the elements of the invention claimed by Applied Capital as Patent Owner of the Challenged Patents. Secondly, it is also my opinion that Dr. Polish's opinions, when arriving at the four grounds of invalidity outlined in paragraph 6 of his declaration, are hindsight based given the statement in paragraph 3 of his declaration ("I have been asked to review the Challenged Patent and its prosecution history, to provide an understanding of the technology relevant to the Challenged Patent, and to review certain prior art references.") and on how he applied the art. This opinion is based on my understanding that a person of ordinary skill in the art ("POSITA") would not enjoy the benefit of being provided select references and challenged patent claims to use as a road map in developing an invention like those covered by the claim limitations in the challenged patent, and further that, the focus should be on what a POSITA is motivated to do by the prior art rather than on what the POSITA can do with select prior art which, in this case, would have been provided to the hypothetical POSITA envisioned by Dr. Polish before January 28, 2009.

II. EXPERIENCE AND QUALIFICATIONS

4. I am currently a Professor of Computer Science and Engineering at New Mexico Institute of Mining and Technology (“New Mexico Tech”). I obtained a faculty position at New Mexico Tech in 2008 and became the Associate Chair of the Department of Computer Science and Engineering in 2018. Prior to my time at New Mexico Tech, I taught at Queens College of the City University of New York from 2005 to 2008.

5. I received a B.S. and an M.S. in Electrical Engineering from Chongqing University in China in 1993 and 1996, respectively. I also received an M.S.E. in Biomedical Engineering from Wright State University in 2001 and a Ph.D. in Computer Engineering from the University of Nevada, Las Vegas in 2005.

6. Since 2007, I have been an editor of the International Journal of Smart Home (IJSH). I am also an associate editor of the Institution of Engineering and Technology (IET) Electronics Letters, an internationally renowned, peer-reviewed rapid communication journal, and an associate editor of Network Protocols and Algorithms, an online international journal, peer-reviewed and published by Macrothink Institute that publishes papers focused on network protocols, communication systems, algorithms for communications, and any type of protocol and algorithm to communicate network devices in a computer network.

7. I have edited two books on wireless security. I have published over one hundred peer-reviewed journal and conference publications on a wide range of topics.

8. My research has been supported by federal funding agencies such as NSF (National Science Foundation), DOE (Department of Energy), and DHS (Department of Homeland Security).

9. I am very familiar with the technologies at issue in this matter. I have interacted with and taught several individuals in the field of the Challenged Patent. I was also the expert in the lawsuit identified in Paragraph 78 of Dr. Polish's declaration that was filed by the Patent Owner against The ADT Corporation and ADT LLC, Civil Action No. 1:16-cv-00815 (hereinafter, "ADT Matter") in the District Court for the District of New Mexico on August 12, 2019, regarding infringement of the Challenged Patents.

10. Based on my education and relevant experience, I am an expert in the relevant field of the Challenged Patents and the issues raised by Petitioner. I am familiar with how a POSITA would have understood and used the teachings and terminology found in prior art being used against the Challenged Patent before the time of its filing.

11. A more complete list of my qualifications is set forth in my curriculum

vitae, a copy of which is attached to Applied Capital's response to the petition as EX2002.

III. LEVEL OF ORDINARY SKILL IN THE ART

12. I understand that the hypothetical POSITA is a legal construct, created by Congress to provide a standard of patentability. This ordinary artisan is presumed to have the skill and experience of an ordinary worker in the field and is deemed to have knowledge of all pertinent prior art for that field. I understand factors such as the education of those working in the field, the difficulty of the technology, the problems encountered in the field, and the rate of innovation in the field can be helpful in establishing the level of skill in the art. Here, I note that the Challenged Patents relate to security systems and, in particular, to systems and methods that enable remote premises monitoring using a graphical information presentation approach that involves superimposed visual indicators, hierarchically organized images, and vector-based graphical images.

13. In my opinion, an ordinary artisan by January 28, 2009, would have at least (a) a bachelor's degree in computer science or computer engineering or a related discipline coupled with at least two years of computer programming experience; at least (b) four years of computer programming experience in languages such as Java, C++, C#, Python, PHP, JavaScript, Ruby, etc.; and/or (c) equivalent

work experience in computer-aided graphical design. Additional education in the fields of electrical engineering or computer science such as a masters or doctorate degree may serve as a substitute for experience in the field. A person with less education but more relevant practical experience may also meet this standard. The prior art also evidences the level of skill in the art.

IV. GENERAL STANDARDS

14. I understand that a preliminary response is preliminary. My thoughts are likewise preliminary. I have touched on certain broader scope issues, and my thoughts herein should in no way be taken as exhaustive. I reserve the right to supplement my analysis to provide further detail on claim language, additional claims, and the declaration of Dr. Polish.

A. Claim Construction

15. I understand that the first step in determining whether a patent claim would have been anticipated or obvious is to ascertain how a POSITA would have understood the claim terms.

16. I am aware that a patent may include two types of claims: independent claims and dependent claims. I understand that an independent claim stands alone and includes only the limitations it recites and that a dependent claim can depend on an independent claim, or it can further depend on another dependent claim. I further

understand that a dependent claim includes all the limitations that it recites, in addition to all the limitations recited in the claim(s) from which it depends.

17. It is also my understanding that in proceedings before the USPTO, claim terms of a patent are given the meaning the terms would have to a POSITA, in view of the description provided in the patent itself and the patent's file history.

18. I understand that in construing a claim term, a POSITA looks primarily to the intrinsic patent evidence including the words of the claims themselves, the remainder of the patent, and the patent's prosecution history. I understand that extrinsic evidence, which is evidence external to the patent and the prosecution history, may also be useful in interpreting patent claims.

19. It is my understanding that words or terms should be given their ordinary and accepted meaning unless it appears that the inventors were using them to mean something else and that it is important to consider the claims, the patent specification, and the prosecution history in making this determination. Additionally, the patent and its prosecution history must be consulted to confirm whether the patentee has acted as its own lexicographer (i.e., provided its own special meaning to any disputed terms), or intentionally disclaimed, disavowed, or surrendered any claim scope.

B. Enablement

20. It is my understanding that an enabling disclosure is a patent specification that allows a POSITA to make the invention without undue experimentation. Although anticipation typically involves the analysis of a single prior art reference, I understand that additional references may be used to show that the primary reference has enabling disclosure, to explain the meaning of a term used in the primary reference, and/or to show that a characteristic is inherent in the primary reference.

C. Anticipation

21. It is my understanding that the claims of a patent are anticipated by a prior art reference if each and every element of the claim is found either explicitly or inherently in a single prior art reference. That is, the prior art reference must contain all the claim elements as disclosed and arranged in the claim. I understand that the prior art reference must disclose the claim elements in sufficient detail such that a POSITA, looking at the reference, could make and use the claimed invention. I understand that inherency requires a showing that the missing descriptive matter in the claim is necessarily or implicitly present in the allegedly anticipating reference, and that it would have been so recognized by a POSITA. Inherency may not be established by probabilities or possibilities.

D. Obviousness

22. I understand that the prior art may render a patent claim “obvious.” I understand that under the doctrine of obviousness, a claim may be invalid if the differences between the invention 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 POSITA to which the subject matter pertains. I also understand that a POSITA is not an automaton but is a person having ordinary creativity.

23. I understand that two or more prior art references (e.g., prior art articles, patents, or publications) that each disclose fewer than all elements of a patent claim may nevertheless be combined to render a patent claim obvious if the combination of the prior art collectively discloses all elements of the claim and a POSITA at the time would have been motivated by teachings or suggestions in the prior art to combine the prior art in such a way.

24. I further understand that one or more prior art references, articles, patents, or publications that disclose fewer than all of the elements of a patent claim may render a patent claim obvious if including the missing element would have been obvious to a POSITA (e.g., the missing element represents only an insubstantial difference over the prior art or a reconfiguration of a known system). For example, I understand that a claim may be deemed invalid for obviousness in light of a single

prior art reference, without the need to combine references, if the elements of the claim that are not found in the reference can be supplied by the knowledge or common sense of a POSITA.

25. I understand that for a patent to be obvious over certain prior art references, there must be a reason, suggestion, or motivation in the prior art that would lead a POSITA to combine the references, and that would also suggest a reasonable likelihood of success.

26. I also understand that when prior art teaches away from combining prior art references, the discovery of a successful way to combine them is less likely to be obvious. Prior art teaches away from an invention when a person of ordinary skill would be discouraged or diverted from following the path leading to the invention because of the prior art.

27. I understand that in order to rely on inherency in an obviousness analysis for establishing the existence of a claim limitation in the prior art, the missing descriptive material must necessarily be present in the prior art and not merely probably or possibly present.

28. I also understand that a person of ordinary skill would not be motivated to combine art that is not in the same field of endeavor unless the art is reasonably pertinent to the particular problem with which the inventor is involved.

E. Impermissible Hindsight

29. I also understand that the determination of obviousness must be done based on the knowledge possessed by a POSITA at the time when the invention was made. Thus, it is not permissible to use hindsight after viewing the claimed invention to determine questions of obviousness or to rely at all on the teachings of the claimed invention in determining whether a POSITA would find the invention obvious. For example, impermissible hindsight is used when determining that a patent claim is invalid based on prior knowledge of the claims in a challenged patent. Impermissible hindsight is further exercised when a person is making such a determination after being supplied select references together with a patent and its prosecution history.

30. Given the risk that impermissible hindsight might be applied in a patentability or invalidity analysis, I also understand that when considering whether patent claims are obvious or anticipated, the focus should be on what a POSITA is motivated, taught, or suggested to do by the prior art to arrive at the claimed subject matter rather than on what the POSITA can do with the prior art.

F. Prosecution History

31. I understand that patent prosecution is the process of drafting, filing, and negotiating with the U.S Patent and Trademark Office to obtain patent protection and rights for an invention.

32. I acknowledge the prosecution history of the '817 patent indicates that rejection of all originally filed claims was overcome with the amendment of claim 1 to include features previously found in claims 4-7 of its pending application. This amendment added the requirement that the retrieving of images comprised retrieving, based on device identifier and condition, “images comprising all of the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images.”

33. I also acknowledge that claim 1 is the only independent claim in the '817 patent. Therefore, claims 2-16 also require the added requirement for retrieving images from claim 1 (i.e., retrieving, based on device identifier and condition, superimposed visual indicators, hierarchically organized images, and vector-based graphical images) given their dependence on claim 1.

34. I acknowledge that the '082 patent was a continuation of the '817 patent and was presented with two independent claims, 1 and 17, which also included language similar to the same features moved from claims 4-7 of the '817 patent into independent claim 1. Claims 1 and 17 of the '082 patent include language that claims retrieving, based on device identifier and condition, “images comprising all of the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based

graphical images.” Claims 2-16 of the ’082 patent depend on claim 1 and require this added requirement from claim 1 given their dependence on claim 1.

V. THE ’817 AND ’082 PATENTS

35. U.S. Patent No. 8,378,817 shares a common specification with U.S. Patent No. 9,728,082 which is also being challenged in a related *Inter Partes* Review.

36. The Challenged Patents describe a premises monitoring system that notifies users of an event (i.e., device identifier and device condition) on the premises by sending them a collection of superimposed visual indicators, hierarchically organized images, and vector-based graphical images based on the events (i.e., device identifier and device condition). This package of information can then be rendered at the user's device to provide an interactive map-based graphic user interface (“GUI”) that represents the event and information about and related to it using graphical icons and indicators arranged on a map, as well as images accessible through such icons and graphics. [*see e.g.* EX1001 at Claim 1, 3:59-6:3]. The earliest priority date of both patents is established by a provisional patent application, Ser. No. 61/147,948, filed on January 28, 2009 [EX1004].

37. Both patents, as claimed, address the need that existed in 2009 for a premises monitoring system that could receive signals containing a device identifier and a device condition from remote alarm monitoring systems, retrieve enhanced

information based on the device identifier and the device condition, determine one or more communication methods and communication destinations based on the device identifier and the device condition, and dispatch the enhanced information to the one or more communication destinations using the one or more communication methods, wherein the retrieved enhanced information includes retrieving images based on the device identifier and the device condition that further includes all of the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images.

38. Claim 1 is the only independent claim in the '817 patent. Claims 2-16 depend on Claim 1. Claim 1 is written as follows:

A method comprising:

receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems;

retrieving enhanced information based on the device identifier and the device condition;

determining one or more communication methods and communication destinations based on the device identifier and the device condition; and

dispatching the enhanced information to the one or more communication destinations using the one or more communication methods; and

wherein the retrieving enhanced information based on the device identifier and the device condition comprises *retrieving images based on the device identifier and the device condition, the images comprising all of the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images.*

39. Claims 1 and 17 are the only independent claim in the '082 patent.

Claims 2-16 depend on Claim 1. Claim 1 is written as follows:

A method comprising:

a non-volatile and non-transient computer-readable medium comprising machine-executable code comprising:

code receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems;

code retrieving enhanced information based on the device identifier and the device condition;

code determining one or more communication methods and communication destinations based on the device identifier and the device condition; and

code dispatching the enhanced information to the one or more communication destinations using the one or more communication methods; and

wherein the retrieving enhanced information based on the device identifier and the device condition comprises *retrieving images based on the device identifier and the device condition, the images comprising all of the members selected from the group consisting of Super imposed visual indicators, hierarchically organized graphical images, and vector-based graphical images.*

40. Claim 17 is written as follows:

A computerized system comprising a central monitoring system receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems, *retrieving enhanced information based on the device identifier and the device condition*, determining one or more communication methods and communication destinations based on the device identifier and the device condition, and dispatching the enhanced information to the one or more communication destinations using the one or more communication methods, *wherein the enhanced information based on the device identifier and the device condition comprises images based on the device identifier and the device condition, the images comprising all of the members selected from the group consisting of Superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images.*

VI. VECTOR-BASED IMAGES AND RASTER IMAGES

41. A raster image is made of a 2-D matrix or grid of square pixels. A raster image is characterized by the width and height of the image as pixels and the number of bits per pixel. Raster images are resolution-dependent. The resolution is typically described as ppi (number of pixels per inch of an image) or dpi (number of dots per inch of an image). Raster-only image formats must store information for every pixel of the graphic. [EX1008 at ¶ 7, 30; EX2008 at 33-34]. Examples of raster image formats are JPG, GIF, PNG, BMP, etc.

42. Vector-based images are images that are defined by mathematical

equations. Vector image data is stored as discrete geometric locations (x, y values) known as vertices that define the shape of geometric objects such as lines and curves. The organization of the vertices determines the type of vector that we are working with—point, line, or polygon. Each point is defined by a single x, y coordinate. There can be many points in a vector point file. For example, a simple vector triangle consists of three points in a plane that are connected to each other. [EX2008 at 168-221 (defining syntax for vector data paths and basic shapes)].

43. Vector image formats store vectors—i.e., instructions that define geometry features (points, lines, polygons)—but do not store information for every pixel of the graphic. [EX2008 at 33-34]. Examples of vector-based image formats are SVG (Scalable Vector Graphics), EPS (Encapsulated PostScript), DXF (AutoCAD drawing exchange format), AI (Adobe Illustrator Artwork), etc.

44. Depending on one's application, vector-based images may have advantages over raster images, and vice versa. Some advantages of vector-based images include that (1) vector-based images are resolution-independent; and (2) data storage can be very efficient compared to raster only images. Some downsides of vector-based images include: (1) loss of detail compared to raster images because vector only image formats do not store information for every pixel of the graphic.; (2) less color depth compared to raster images because raster images are made up of

pixels, they are able to use more bits for a pixel for portraying better color depth; and (3) can be slow in rendering compared to raster images because calculations involving multiple vector layers need to do math on the geometry.

45. Two major differences between vector-based images and raster images are related to resolution and file size. First, vector-based images can be scaled to any size without sacrificing image quality because the instructions allow for drawing at the pixel resolution of the rendering engine instead of just taking the pixels and doubling or tripling the number. Thus, in a system where images will be rendered on a wide range of display devices, the resolutions of the display devices do not affect image quality. On the other hand, a raster image created at a fixed size (fixed number of pixels) cannot be scaled up without loss of image quality. Second, vector-based images can maintain image quality while still maintaining a small file size, which enables low-cost data transmission. This is especially important when wireless communication is used in the system and one wants to keep packet size at a minimum. In contrast, non-vector-based images are large to store and large to transmit. Due to the nature of a raster file and its fixed grid of values, to achieve better image quality for raster images, one must use a higher resolution (i.e., more pixels). This process results in a larger file size.

VII. THE ALLEGED PRIOR ART REFERENCES

A. Barker (U.S. Patent Publication No. 2002/0143934)

46. Published on Oct. 3, 2002, Barker teaches a “system and method of implementing a configurable security monitoring system for a plurality of remote monitoring sites.” [EX1010 at Abstract]. Barker’s system collects monitoring device data and rules associated with that data. [EX1010 at Abstract]. When the data indicates to the server that a defined rule or threshold has been violated, the event violation is logged; depending on the event, an owner or authority may be called or paged or an intrusion response such as an audible alarm or the spraying of dye may be instigated. [EX1010 at ¶ 54-55]. The system also allows an administrator to review the event log through a table display to see historical activity on the premises. [EX1010 at ¶ 68-69, Figs. 9-10].

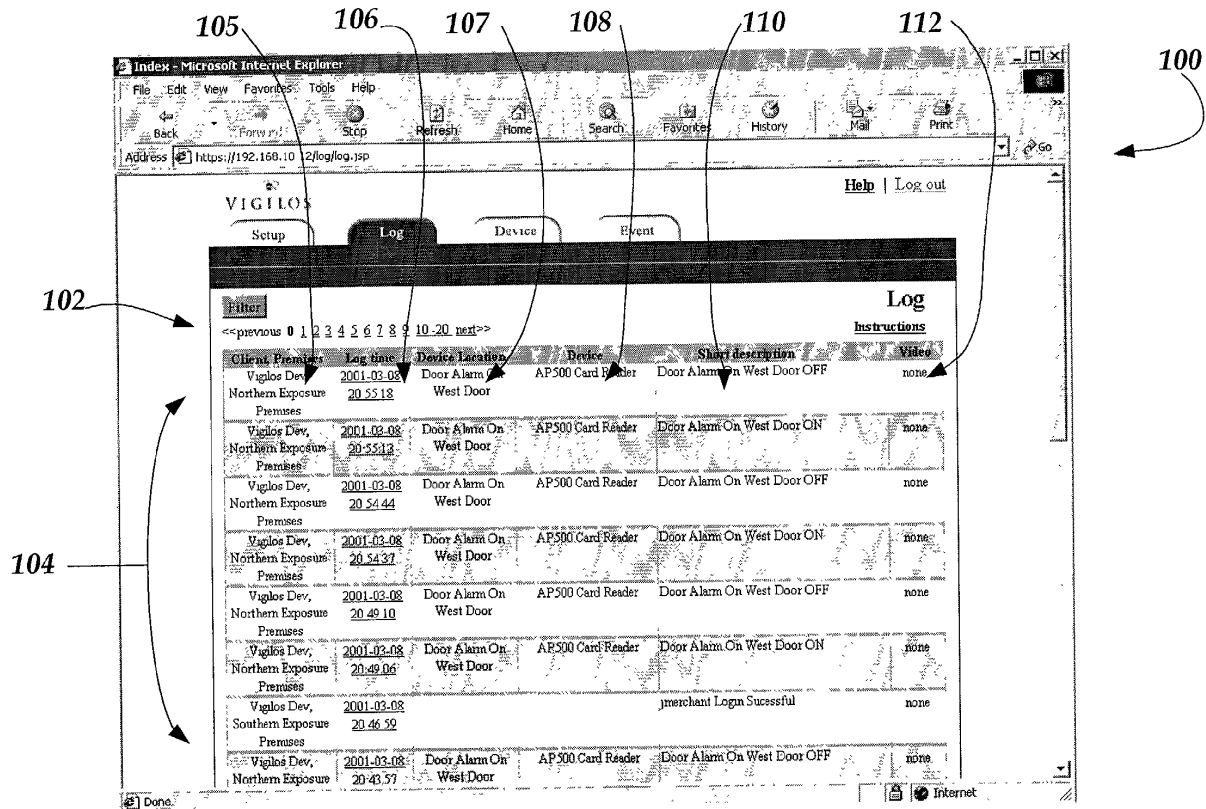


Fig.9.

47. In other words, Barker's system can monitor events in a way that triggers the calling of authorities or the initiation of audible alarms, and it further allows an administrator to review a log of the events that have occurred over time using a table view. Barker does not disclose using icons or any other kind of image to represent data. Barker does not disclose retrieving, based on a device identifier and device condition, superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images. Nor does Barker disclose

dispatching any such set of images to a communication device, using a communication destination, based on the device identifier and device condition.

48. In fact, Barker does not involve the transmission of image data of any kind. Instead, Barker teaches a complete solution to the wireless collection and displaying of monitoring device and rule information in an entirely text-based format. [EX1010 at ¶ 68-69, Figs. 9-10].

49. In its prosecution history, Barker specifically distinguishes itself from Horon (U.S. Patent No. 6,229,429) in that Horon “graphically represent[s] the location of various devices within a location” whereas Barker simply “monitors . . . the underlying activity the devices are installed to perform.” [EX2009 at 19-20].

B. Childers (U.S. Patent Publication No. 2002/0161885)

50. Published on October 31, 2002, Childers discloses a system for displaying data (e.g., location, status, configuration) associated with groups of appliances in a network using any of (A) a table view [EX1009 Figs. 13a, 13b, 13c]; (B) a graph view [EX1009 Fig. 14]; or (C) a map view [EX1009 Figs. 8a-8d]. The table view of Childers is described in paragraphs 201 to 202 of Childers and illustrated in figures 13a, 13b, and 13c, which are reproduced below.

	LOCATION	VALUE #1	VALUE #2	VALUE #3	STATUS
NETWORK APPLIANCE #1	A	AA	BA	CA	OFF
NETWORK APPLIANCE #1	A	AB	BB	CB	ON
NETWORK APPLIANCE #1	B	AC	BC	CC	ON
NETWORK APPLIANCE #1	B	AD	BD	CD	ON
NETWORK APPLIANCE #1	C	AE	BE	CE	ON

FIG. 13A

	LOCATION	VALUE #1	VALUE #2	VALUE #3	STATUS
NETWORK APPLIANCE #1	A	AA	BA	CA	ON
NETWORK APPLIANCE #1	A	AD	BB	CB	ON
NETWORK APPLIANCE #1	B	AC	BC	CC	ON
NETWORK APPLIANCE #1	B	AD	BD	CF	ON
NETWORK APPLIANCE #1	C	AE	BE	CE	OFF

FIG. 13B

	LOCATION	MODEL	VALUE #1	VALUE #2	STATUS
NETWORK APPLIANCE #1	A	100	AA	BA	OFF
NETWORK APPLIANCE #1	A	100	AB	BB	ON
NETWORK APPLIANCE #1	B	300	AC	BC	ON
NETWORK APPLIANCE #1	B	400	AD	BD	ON
NETWORK APPLIANCE #1	C	200	AE	BE	ON

FIG. 13C

[EX1009 Figs. 13a, 13b, 13c]

51. Fig. 14 of Childers (reproduced below) shows how data associated with network appliances over time may be plotted on an axis and displayed in a graph view. [EX1009 at ¶ 203, Fig. 14]. In Fig. 14, Childers shows a plot of sensor values of various appliances in the network against time. For example, the solid line in Fig. 14 corresponds to values of “Appliance 1, Sensor 2” over time. As shown, the value of Sensor 2 for Appliance 1 stays the same for a period, then goes up, then stays constant for a period, etc.

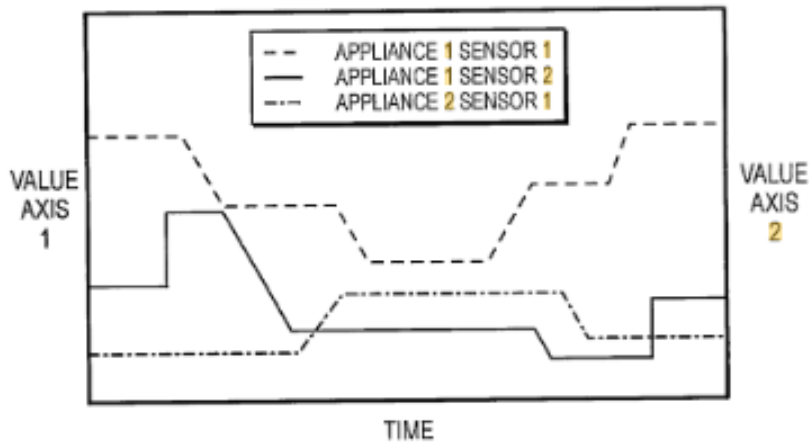


FIG. 14

[EX1009 Fig. 14]

52. Childers discloses that the graphs as seen in Fig. 14 are saved in raster data image formats such as “a JPEG, GIF, or BMP file” or “comma delimited text” that stores data in the form of a dot-matrix structure. [EX1009 at ¶¶ 203, 205, Fig. 14].

The graphs may be depicted based on a time range and a set of particular sensor readings. Allowing more than one appliance to be graphed at a time allows users to physically view the patterns of environmental changes as well as compare one area of a location against another. The graphs themselves may be organized by day, week, month, or for the entire time range provided. These graphs may then be saved as in a graphic format, such as, a JPEG, GIF, or BMP file, among others, for email and/or reports, or can be exported as comma-delimited text to another utility of the users choosing.

[EX1009 at ¶ 205].

53. As a third viewing alternative, Childers discloses that data associated

with a group of appliances in a network may be displayed in a map view using icons representing the data. These icons may be superimposed on a background, which may be a graphic, image, map, or plot, among others. [EX1009 at ¶¶ 100, 116, 130, 131, 132, 133, Figs. 8a-8d]. An example of the map view is shown in Fig. 8C, reproduced below.

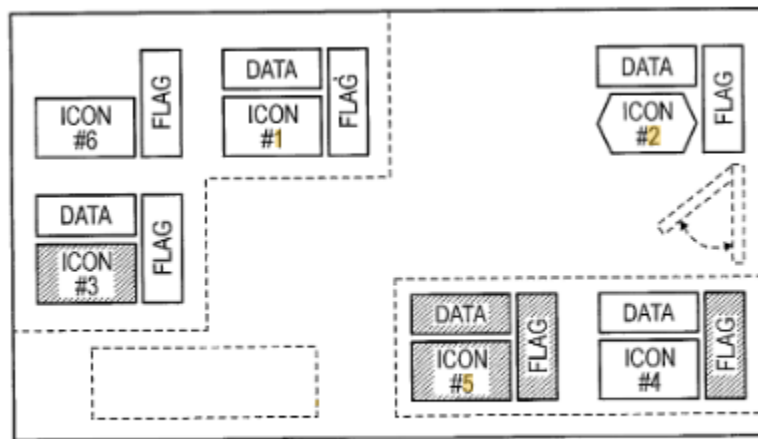


FIG. 8C

[EX1009 Fig. 8c]

54. As with other graphical image data (e.g., Fig. 14), Childers discloses that the icons are also provided in raster data image formats such as “GIF, BMP, JPEG, etc.” [EX1009 at ¶ 133].

The icons and object displayed on the map view may include both active network devices and passive devices. The ability to add and manipulate the passive devices along with the active network devices may allow the user to accurately represent the physical environment of his equipment rooms, for example. Other exemplary implementations may allow the end-user to **import**

graphical images in a variety of formats (GIF, BMP, JPG, etc.) to use as icons customized for their specific equipment (both active and passive).

[EX1009 at ¶ 133, emphasis added].

55. In other words, Childers discloses visualizing appliances in a network using a table view or otherwise using raster data graphical images with or without the addition of raster data icons. [EX1009 at ¶ 133]. While Childers states that a background image could depict a graph such as a “vector plot” or “contour plot,” [EX1009 at ¶ 116], such graphs are not vector-based graphical images, as will be explained in more detail below. Instead, Childers describes saving graphs as raster data images. Thus, Childers does not disclose retrieving, based on a device identifier and device condition, superimposed visual indicators, hierarchically organized images, and vector-based graphical images.

56. Nor does Childers disclose dispatching any such set of images to a communication device, using a communication destination, based on the device identifier and device condition. Childers does not show determining one or more communication methods and communication destinations based on the device identifier and the device condition.

57. Indeed, Dr. Polish admits Childers does not teach the use of device condition or identifier in deciding what data to retrieve/transmit, who to send it to,

or when to notify a user of certain information. [EX1002 at ¶ 183].

C. Callaghan (U.S. Patent Publication No. 2005/0108364)

58. Published on May 19, 2005, the invention in Callaghan relates “particularly to systems and methods that provide remote visualization of an industrial device via scalable vector graphics.” [EX1008 at ¶ 2].

59. The invention relies on the availability of an “SVG plugin” and is based around using executable scalable vector graphics (SVG) XML markup language files to render user interfaces for networked industrial devices. [EX1008 at ¶ 9].

The present invention relates to systems and methods that provide a simple remote Web-based interface to networked industrial devices. The novel interface is based on a scalable vector graphics (SVG) XML markup language, which is supported by many known Web browsers (e.g., via an SVG plug-in).

60. Callaghan teaches that SVG vector image files provide for rendering, via basic drawing commands, “resolution independent” images that can include searchable graphics and other user interface components. [EX1008 at ¶ 9].

In addition, SVG XML markup language provides for **rendering (via basic ASCII drawing commands) resolution independent images** that can include searchable graphics, text, labels, descriptions, etc., and links to other information; thus, employing SVG XML markup language can mitigate the need to download images and files with graphics and execute associated applications.

61. Callaghan teaches that these SVG XML markup language files remove the need to use proprietary software or special rendering engines to provide interactive user interfaces. [EX1008 at ¶ 9].

Thus, the systems and methods of the present invention mitigate the need for proprietary software and/or hardware, specialized rendering engines and/or peripheral utilities such as Java applets and applications The foregoing enables a user to represent a portion of a device, for example a device's faceplate, in an XML markup language file pursuant the SVG syntax, wherein a Web browser and/or an open source software package such as Adobe, Macromedia, etc. can be utilized to draw the portion of the device within a viewing window of the Web browser and/or an open source software package. In addition, the user can interact with the graphical representation to change values that effect device operation and/or monitor a device's performance.

[EX1008 at ¶ 9].

62. Fig. 5 (reproduced below) shows the system operation, includes the steps of generating an SVG XML File for a device, loading the file with the device, remotely obtaining the SVG XML File, and then executing it.

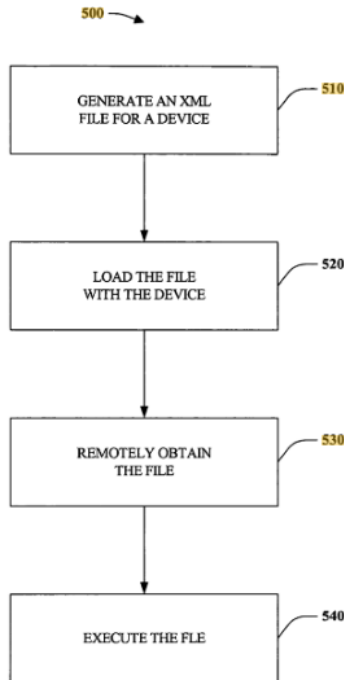


FIG. 5

[EX1008 Fig. 5]

63. SVG files are executable instructions a device can use to render vector-based graphical images. [EX1008 at ¶10]. In this way, SVG files can be distinguished from raster image files (JPEG, BMP, etc.) in that SVG files provide detailed instructions for drawing vector lines as opposed to the fixed grids of values that make up raster images.

64. Callaghan itself distinguishes SVG files that provide for rendering “resolution independent” images from raster image formats such as JPEG and BMP that provide for “resolution dependent” images. [EX1008 at ¶ 7]. Contrary to references like Baier that are built around the use of pixel-mapping and raster images,

Callaghan teaches away from the use of resolution-dependent image formats in favor of SVG images. [EX1008 at ¶¶ 7, 30, 43].

By way of example, to render a Web page with graphics conventional systems typically download and render one or more image files (e.g., GIF, TIF, BMP, JPEG, etc.); download and execute one or more Java applets and/or applications in connection with the Web browser; and/or download formatted information (e.g., PDF, word processing, etc.) that is displayed within one or more applications invoked within the Web browser. Downloading and utilizing such files and applications can consume bandwidth, processing cycles, time and memory and adds overhead. In addition, **downloaded images generally are resolution dependent** such that a specified image size is maintained rather than scaling the image to conform to an area of a viewing window; and thus, such images reduce Web page presentation flexibility. Moreover, the content within such image files typically cannot be searched or include active inks (e.g., hyperlinks) to other web sources.

[EX1008 at ¶ 7, emphasis added].

65. Callaghan does not show retrieving, based on the device identifier and device condition, superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images. Nor does Callaghan show dispatching a retrieved set of images to a communication destination, using a communication method, based on any device identifier and device condition. Indeed, Callaghan is simply about using scalable vector graphics to render the face plate for a particular

device by the user of the client device requesting the face plate file from the device itself. [EX1008 at ¶ 10].

D. Baier (US Patent No. 8,191,005)

66. Published on April 12, 2009, Baier discloses a system for visualizing an industrial environment where “sparse images” relating to an industrial automation environment are “pixel-mapped to high resolution counterparts” that are stored at a remote location. [EX1007 at 15:58-16:2]. The system “regulates image resolution a function of zooming in or out of a display area or panning across a display area.” [EX1007 at 15:45-47]. The user is presented with a sparse image after searching for it. [EX1007 at 16:41-54].

FIG. 18 depicts an embodiment of system 1600 that includes a search component. A user can type in a query for an image (e.g., motor number 7685) and image of the requested item will be found. In addition to a sparse image representation being found, supplemental data can be identified a priori that may be useful for streaming to the user.

[EX1007 at 16:41-54].

67. Then, “as an area on a client device is zoomed in on, data from the remote location is streamed to the client device as a function of the level of zoom, and region being magnified.” [EX1007 at 16:2-5]. “Accordingly, as a user zooms in on a particular region of the image, instead of the image becoming grainy, or blurry,

the image maintains or increases resolution as a result of image data being streamed to the user to supplement the region of interest with more image data.” [EX1007 at 16:5-10].

68. Baier’s resolution regulation system includes at least “reference component” 1602, “resolution component” 1604, and “visualization component” 106. [EX1007 at 16:11-27]. Reference component 1602 determines the user’s point of reference in an image. Resolution component 1604 receives reference information from reference component 1602, such that “as a user is changing point of reference within an image or display area, the resolution component can determine [the] amount of additional image data required to supplement the image data currently available in order to augment, preserve, or increase resolution of the area of interest.” [EX1007 at 16:11-27].

69. The system may include a context component that purportedly facilitates “user context” (e.g. “user state, goals, intent, etc.”) to help the resolution component identify subsets of additional data to request that will enhance user visualization experience. [EX1007 16:28-31]. Additional image data is then provided by the remote data store that stores the high-resolution versions of the image data. [EX1007 at 16:15-24]. The visualization component can then “supplement[] the existing image data with additional image data to create a rich

view that dynamically preserves resolution of an image as a user zooms in on an area of interest.” [EX1007 at 16:24-27].

70. The operation of Baier’s resolution regulating system is described as follows and diagramed in Figures 19 and 20.

“FIG. 19 is a flow diagram describing a high-level methodology in connection an embodiment. At 1902, determination or inference is made regarding reference of operator view of image data in an industrial automation environment. An initially viewed image is identified, coordinates with respect to level of zoom, area being viewed, pixel mapping to respective coordinates of view are determined. As a user changes focus of attention (e.g., zooms in, zooms, pans . . .), level of zoom and pan are analyzed at 1904, and at 1906 data is streamed to the user as a function of zoom or pan level that enhancing a visualization experience. For example, additional image data can be streamed to augment, preserve, or increase resolution of an area of interest. Likewise, tertiary information can be made available (e.g., as a user zooms in on a gasket, documents related to the gasket or links to associated information can be made available). Thus, image data is not only pixel-mapped to corresponding image data bit it can also be contextually mapped to information or sources of information relevant to the image data.

[EX1007 at 16:55-17:6]

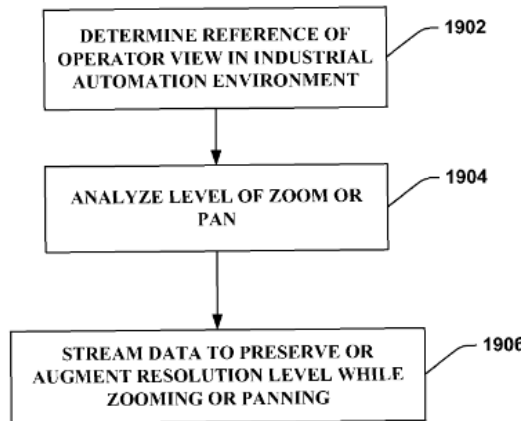


FIG. 19

[EX1007 Fig. 19]

71. In other words, Baier discloses a system for viewing an industrial environment through a resolution dependent “sparse image” that is then updated with additional pixels stored in a high-resolution version of the area based on the user’s location within the sparse image. [EX1007 at 16:41-54]. If the system infers that other information relating to the user’s role or intent is useful, that information may be presented simultaneously with the additional pixel data. Baier does not mention vector based graphical images, but only pixels. Baier does not discuss retrieving graphical information based on a device identifier and device conduction, but instead retrieves information based on a user’s location in the sparse image. Thus,

Baier does not disclose retrieving, based on the device identifier and device condition, “superimposed visual indicators, vector-based graphical images, and hierarchically organized images.” Nor does Baier disclose dispatching any such set of images to a communication device, using a communication destination, based on the device identifier and device condition.

72. Several of Baier’s features and limitations are built around the idea of preserving image resolution through the use of pixel mapping. For example, Baier teaches a “Visualization System(s) and Method(s) for Preserving or Augmenting Resolution and Data Associated with Zooming or Panning in an Industrial Automation Environment.” [EX1007 at 15:42-44, Fig. 16]. This system involves searching for a particular image (e.g., an image of an automobile motor) and receiving a sparse image of the search object. [EX1007 at 16:41-54]. Should the user choose to “zoom in” on the image for more detail, the system replaces the sparse image with a separate, larger, more detailed image of the same object to maintain resolution. [EX1007 at 16:41-54].

VIII. [RE: GROUNDS 1, 2, AND 3] BAIER NEITHER ANTICIPATES ANY OF CLAIMS 1–16 (’817 PATENT) OR CLAIMS 1–17 (’082 PATENT) NOR RENDERS ANY SUCH CLAIM OBVIOUS ALONE OR IN VIEW OF CALLAGHAN

73. I disagree with Dr. Polish’s opinion in Paragraphs 100 through 138 of

his declaration that Baier alone either anticipates or renders obvious claims 1–16 ('817 patent) and 1–17 ('082 patent) of the Challenged Patents. I also disagree with Dr. Polish's opinion in Paragraphs 139 through 180 of his declarations [EX1002 in each IPR]] that Baier [EX1007] in view of Callaghan (U.S. Patent Publication No. 2005/0108364, EX1008) renders claims 1–16 ('817 patent) and claims 1–17 ('082 patent) of the challenged patents obvious.

74. Baier fails to disclose all elements of the at issue claims, including the retrieving, determining, and dispatching limitations. All three independent claims (i.e., '817 patent claim 1 and '082 patent claims 1 and 17) require “retrieving,” “based on the device identifier and the device condition” of a remotely monitored device, “images comprising all [of] the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images.” Each independent claim also requires “dispatching” this retrieved image collection to a communication destination, using a communication method, after determining the destination and method “based on the device identifier and the device condition” of the remotely monitored device.

75. The combination of Baier and Callaghan collectively **does not** disclose the retrieving, determining, and dispatching limitations and thus **does not** disclose all elements of the claims. Further, a POSITA would not have been motivated to

combine Baier with Callaghan or any other teaching knowledge of using vector graphics to render graphical user interfaces.

A. Baier Fails To Disclose All Limitations.

76. As I have set forth above, Baier [EX1007] fails to disclose the retrieving, determining, and dispatching limitations of the independent claims at issue. Baier teaches a resolution dependent visualization system for an industrial environment that maps pixels in sparse images to remotely stored high resolution images which are then streamed to the client based on the set of sparse image pixels within the user's focus (level of zoom or pan position). [EX1007 at 16:41-54; *see also* 15:42-18:30]. If the system infers that other information relating to the user's role or intent is useful, that information may be presented simultaneously with the additional pixel data.

77. Baier does not mention vector-based graphical images, but only pixels. Indeed, Baier references mapping and comparing pixels at least fourteen separate times. [e.g., EX1007 at 15:62-16:1, 16:55-65, 17:3-6, 17:11-17]. Baier does not discuss retrieving graphical information based on a device identifier and device condition, but instead retrieves additional pixels from a remote server based on a user's point of reference in the sparse image.

78. As Baier focuses on retrieving pixel mapped images based on the pixels

the user is focusing on in a sparse image, Baier fails to disclose (1) retrieving, based on the device identifier and device condition, “images comprising all [of] the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images”; and (2) “dispatching” this retrieved collection of image types to a communication destination using a communication method after “determining” the destination and method “based on the device identifier and the device condition.”

79. The claim in paragraph 133 of Dr. Polish’s declaration that “Baier discloses ‘vector-based graphical images’” is nonsensical and wrong. The images Dr. Polish points to [EX1002 at ¶ 138] are still raster images. A POSITA would understand this because Baier is still concerned here with pixel-mapping the detailed image to the sparse image. [EX1007 at 17:22-40]. The ability to display a second resolution dependent image (Fig. 22) based on a client-side user’s position or level of zoom in a first resolution dependent image (Fig. 21) does not somehow turn two resolution dependent images into resolution-independent vector-based graphical images.

B. Baier and Callaghan Fail To Collectively Disclose All Limitations.

80. Callaghan [EX1008] also fails to disclose the retrieving, determining, and dispatching limitations. Callaghan teaches creating a scalable vector graphics

(SVG) XML markup language file representing a user interface for an industrial device, storing the SVG file on that device, sending the SVG file to a client that asks for it, and then executing the file on the client to provide “resolution independent” graphical user interface for the device. [EX1008 at Abstract, ¶¶ 9, 24, 29, 43]. But Callaghan does not disclose retrieving the SVG file “based on the device identifier **and device condition.**” Nor does Callaghan disclose “dispatching” the SVG file to a communication destination using a communication method after “determining” the destination and method “based on the device identifier **and the device condition.**” Dr. Polish does not claim otherwise.

81. Because Baier and Callaghan do not collectively disclose all elements of these claims, their combination cannot render the claims obvious.

C. A POSITA Would Not Be Motivated To Combine Baier With Vector Graphics Knowledge Or With Callaghan.

82. Further, a POSITA would not have been motivated to combine Baier with Callaghan or any other teaching knowledge of using vector graphics to render graphical user interfaces. Baier’s resolution management system teaches streaming pixels—not vectors—from high resolution images stored on a remote server when a user clicks in a certain area of a sparse image. [EX1007 at 15:42-18:30 (describing “Visualization System(s) and Method(s) for Preserving or Augmenting Resolution

and Data Associated with Zooming or Panning in an Industrial Automation Environment”)]. Moreover, Baier discloses determining the pixels that need to be sent to a client device based on the client device user’s level of zoom and point of reference in a sparse image, not based on any identifier or condition of a device in the industrial system. [EX1007 at 30:40-54, 31:36-52; EX1002 at ¶ 121].

83. Seeing a system designed in this way, a POSITA would be discouraged from retrieving or otherwise using vector-based images which do not store data for each pixel. Likewise, a POSITA would be discouraged from retrieving such information based on the device identifier and device condition of a device being monitored when Baier teaches obtaining information based on the user’s level of zoom or position within a sparse image displayed to the user.

84. A POSITA would also be discouraged from using any of concepts taught in Callaghan, let alone combining Baier with Callaghan’s system because Baier and Callaghan teach polar opposite systems. Again, Baier teaches a resolution dependent visualization system for an industrial environment that maps pixels in sparse images to remotely stored high resolution images which are then streamed to the client based on the set of sparse image pixels within the user’s focus (level of zoom or pan position). But Callaghan teaches creating a scalable vector graphics (SVG) XML markup language file representing a user interface for an industrial

device, storing the SVG file on that device, sending the SVG file to a client that asks for it, and then executing the file on the client to provide “resolution independent” graphical user interface.

85. Using the SVG files of Callaghan in Baier’s system is not a simple substitution as claimed in Dr. Polish’s declaration. [EX1002 at ¶ 144]. As shown above, major features of Baier were designed around the use of pixel-based images. Baier involves providing a library of images for a particular object and providing separate images at various levels of zoom and detail based on user input. [EX1007 at 15:42-16:54]. In this way, it provides the “illusion” of zooming in and out on a particular image by replacing the current image with another that is pixel-mapped to the area of zoom. Baier thus has no true ability to zoom in or out of a single image; not only does Baier’s solution obviate the need for vector graphics, but such a zoom solution would need to be removed from Baier for vector graphics to work at all. The use of vector-based graphical images in Baier’s system would require a fundamental redesign of Baier, and these core features and other components would need to be modified or removed. For example, resolution component 1604 would not be needed any more and the determination of the resolution of transmitted images would need to be modified. Based on these reasons, the combination of Baier and Callaghan is not obvious and predictable to a POSITA.

D. Grounds 1, 2, And 3 Are Unsupported.

86. For the reasons set forth above, Grounds 1, 2, and 3 asserted by Petitioner are not supported. In my opinion, the Challenged Claims are not anticipated or obvious in view of Baier because Baier's point of novelty is pixel mapping—i.e. retrieving pixels—not vectors—from a high-resolution raster image stored on a remote server based on the client-side user's level of zoom or pan (position) in a sparse image—not based on a device identifier and device condition of a remotely monitored device. A POSITA would not be motivated to change Baier's design to retrieve vector-based graphical images that do not contain the pixels needed to augment the user's point of view. But Callaghan teaches creating a scalable vector graphics (SVG) XML markup language file representing a user interface for an industrial device, storing the SVG file on that device, sending the SVG file to a client that asks for it, and then executing the file on the client to provide “resolution independent” graphical user interface. The interface does not contain the pixels needed to augment Baier's resolution regulating system. Thus, a POSITA would not have been motivated to combine Baier with Callaghan. Thus, Grounds 1, 2, and 3 asserted by Petitioner are not supported. The Board should reject the institution of an *Inter Partes* Review for each of the Challenged Patents.

IX. [RE: GROUND 4] CHILDERS COMBINED WITH BARKER DOES NOT RENDER CLAIMS 1–16 (’817 PATENT) OR CLAIMS 1–17 (’082 PATENT) OBVIOUS

87. I disagree with Dr. Polish’s opinions in his declarations regarding Ground 4 that Childers in view of Barker renders claims 1–16 (’817 patent) and claims 1–17 (’082 patent) of the Challenged Patents obvious. The combination of Barker and Childers collectively **does not** disclose the retrieving, determining, and dispatching limitations and thus **does not** disclose all elements of the claim. Further, a POSITA would not have been motivated to combine Barker with Childers. Thus, the combination of these references fails to establish obviousness.

A. Barker and Childers Collectively Fail To Disclose All Elements

88. As I have set forth above, Barker [EX1010] fails to disclose the retrieving, determining, and dispatching limitations of the independent claims at issue. Barker teaches a system that monitors the underlying activity of remote devices, checks to see if certain event conditions are met, and, if so, displays this information to a user in a tabular, text-based event log. [EX1010 at Abstract, ¶ 68-69, Figs. 9-10; EX1002 at ¶ 107]. As shown in Figure 9, Barker uses a tabular presentation model to present a user with a log of events over time.

89. Barker does not involve the transmission of image data of any kind. Nor does it disclose using icons or any other kind of image to represent data, but only

text. In fact, in its prosecution history, Barker specifically distinguishes itself from systems that “graphically represent[s] the location of various devices within a location” whereas Barker simply “monitors . . . the underlying activity the devices are installed to perform.” [EX1010 at 154-155].

90. As Barker either initiations phone call or audible alarms or makes an event log viewable in a table, Barker fails to disclose (1) retrieving, based on the device identifier and device condition, “images comprising all [of] the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images”; and (2) “dispatching” this retrieved collection of image types to a communication destination using a communication method after “determining” the destination and method “based on the device identifier and the device condition.” Dr. Polish never contends otherwise.

91. Childers [EX1009] also fails to disclose the retrieving, determining, and dispatching limitations. Childers teaches a system for displaying data (e.g., location, status, configuration) associated with groups of appliances in a network using any of (a) a table view [EX1009 Figs. 13a, 13b, 13c]; (B) a graph view [EX1009 Fig. 14]; or (C) a map view [EX1009 Figs. 8a-8d]. But Childers is not a notification system, and Childers does not teach the use of device condition or

identifier in deciding what data to retrieve/transmit, who to send it to, or when to notify a user of certain information. [EX1002 at ¶ 183].

92. Further, with regard to both background images (like graphs) and icons, Childers teaches raster data image formats such as “a JPEG, GIF, or BMP file” or “comma delimited text” that stores data in the form of a dot-matrix structure. [EX1009 at ¶¶ 133, 203, 205]. A POSITA would know that GIF, BMP, JPG are all raster image formats.

93. While Childers states that a background image could depict a graph such a “vector plot” or “contour plot,” [EX1002 at ¶ 116], such graphs are not vector-based graphical images. Dr. Polish’s claim [EX1002 at ¶ 214/215] that “a vector plot refers to a representation of an image using vectors, such as vector graphics stored in various known file formats, including, for example, an SVG file” is false. As Dr. Polish well knows, a POSITA would understand the phrase “vector plot” as referring to a kind of graph (just like the phrase “contour plot”) and that the phrase says nothing about the data format of the image. Indeed, Dr. Polish and petitioner refer to Fig. 2 in a 1972 patent from Leon Stanger that shows a graph that plots a voltage waveform. [EX1023]. The Stanger patent clearly uses the terms “plot” and “graph” interchangeably referring to Fig. 2 as a “vector plot” and “vector graph.” [EX1023 at 1:51-59].

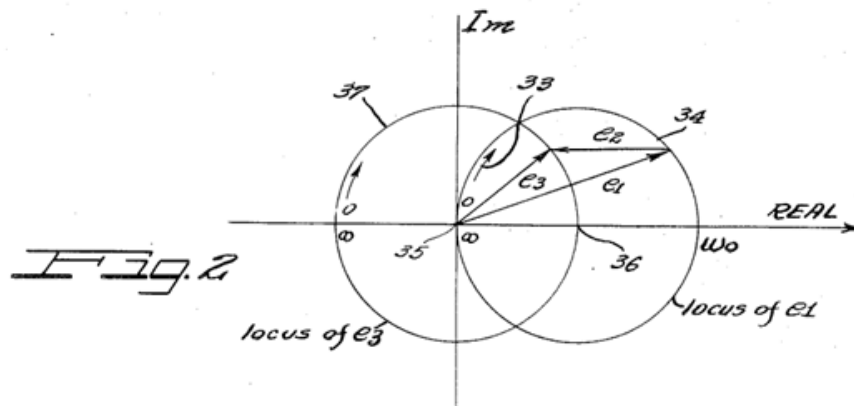
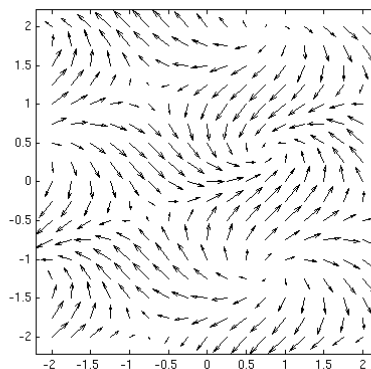


FIG. 2 is a vector plot of the initial voltage waveform, the compensating signal, and the resulting signal at the output of the differential amplifier which has a locus centered at the origin of the chart.

FIG. 3 is a portion of a group delay compensating network of the present invention illustrating the operation of the variable and fixed delay lines to produce the required signals as shown in the vector graph of FIG. 2.

94. The phrase “vector plot” says nothing about the format of the image, but instead indicates what is displayed in the image. A vector plot is also known as field plot or direction plot. It is a diagram where information is represented as arrows in the 2D plane. The following figure shows an example of a 2D “vector plot.”



A 2-D Vector Plot

95. Another plot similar to the idea of vector plot is contour plot, which plots the represented 2D information as contours in the 2D plane.

96. Despite sharing the word “vector,” vector-based graphical images and vector plots are effectively unrelated. Vector plots are graphs showing values on an axis. In contrast, vector-based graphical images are images composed of vectors, which are instructions that define geometry features (points, lines, polygons).

97. As explained above, the Childers reference discloses that graphs that plot data on an axis are saved as raster or other data image formats that store data in a dot-matrix structure. In other words, a POSITA would understand that the phrase “vector plot” as used in Childers does not suggest or indicate the use of images that contain data in the form of vector instructions or vectors. Further, any such conclusion, contradicts Childers’ teaching of raster-based images for graphs plotting information. Based on the foregoing explanation of the differences between vector-based graphical images and vector plots, a POSITA would not understand a graph showing a vector plot to be a “vector-based graphical image.”

98. Given Childers’ focus on raster-based image formats that store pixel data in a dot matrix structure both for icons and background images and the lack of any teaching to use device activity to determine what images to retrieve/transmit,

who to send it to, or when to notify a user, Childers fails to disclose (1) retrieving, based on the device identifier and device condition, “images comprising all [of] the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images”; and (2) “dispatching” this retrieved collection of image types to a communication destination using a communication method after “determining” the destination and method “based on the device identifier and the device condition.”

99. Because Barker and Childers do not collectively disclose all elements of these claims, their combination cannot render the claims obvious.

B. A POSITA Would Not Be Motivated To Combine Barker And Childers

100. Further, a POSITA would not have been motivated to combine Barker with Childers’ map view. Barker prevents a text-based tabular display of events over time and essentially teaches away from using images to represent information [EX2009 at 19-20], while Childers’ map view uses icons to represent device information and provides a way to look at the current location of a group of devices on a map ([EX2008 at ¶ 24, Fig. 8C]). Childers’ mode of visualization is incompatible with Barker’s.

101. A POSITA would not be motivated to modify Barker’s text-only

tabular presentation model with Childers' map view. Nor would a POSITA be motivated to modify Childers' map view with Barker's rules designed to monitor activity to show a log of information over time. If a POSITA reading Barker and Childers would have been motivated to do anything, it would be to utilize Childers' graph view—which shows information over time but lacks superimposed icons and is not interactive, as an additional way to display Barker's log of events over time. Indeed, only Childers' graph view describes showing event values over time. Using Childers' map view would destroy Barker's purpose, utility, and preferred data presentation format.

102. Furthermore, such a combination still would not lead to a system that provides (1) retrieving, based on the device identifier and device condition, “images comprising all [of] the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and **vector-based graphical images**”; and (2) “dispatching” this retrieved collection of image types to a communication destination using a communication method after “determining” the destination and method “based on the device identifier and the device condition.”

103. Thus, in my opinion, claims of the Challenged Patents are not obvious over Childers [EX1009] in combination with Barker [EX1007]. Therefore, ground 4 asserted by Petitioner is not supported by Childers in combination with Barker.

For these reasons, institution of an *Inter Partes* Review for each of the Challenged Patents can also be rejected under the discretion of the Board.

X. IMPERMISSIBLE HINDSIGHT

104. Dr. Polish's opinion, when arriving at the four grounds of invalidity outlined in paragraph 6 of his opinions of the '817 and '082 patents, are hindsight-based given the statement in paragraph 3 of his declaration: "I have been asked to review the Challenged Patents and their prosecution history, to provide an understanding of the technology relevant to the Challenged Patent, and to review certain prior art references."

105. This opinion is based on my understanding that a POSITA would not enjoy the benefit of being provided "select references" and challenged patent claims to use as a road map in developing an invention like those covered by the claim limitations in the challenged patents.

106. Furthermore, Dr. Polish's combinations of prior art are based on hindsight instead of what a POSITA would have been motivated to do at the time the '817 and '082 patents were filed.

107. For example, Ground 3 of Dr. Polish's declaration suggests that a POSITA would be motivated to combine Baier and Callaghan to allegedly arrive at the '817 and '082 patents. As described above, Baier describes a complete solution

for, among other things, the issue of preserving image resolution when moving from a sparse image to a detailed image. Baier's solution to this issue involves an intricate system of pixel-mapping a high-detail image to a sparse image and swapping one for the other at a user's request. [EX1007 at 15:42-18:30]. This is a complete system that solves the problem without the use of vector-based graphical images, and at best would be rendered entirely redundant by the inclusion of vector-based graphical images. To warp Baier to include vector-based graphical images would involve a thorough reworking of Baier's systems.

108. Likewise, Callaghan proposes a separate solution that specifically teaches away from the use of raster images in preserving image resolution. [EX1008 at ¶¶ 7, 30, 43]. To say that a POSITA would be motivated to simply "drop in" Callaghan's SVG files to Baier's pixel-mapping system when the two solutions are complete and specifically teach away from each other relies entirely on impermissible hindsight.

109. The same could be said of Dr. Polish's combination of Barker and Childers that form the basis of Ground 4. Barker teaches an entirely text-based interface for displaying sensor data and specifically distinguishes itself from systems that utilize image data. [EX2009 at ¶¶ 68-69, Figs. 9-10; EX2017 at 154-155]. The argument that a POSITA would combine Barker with Childers icons ignores that

Barker presents a complete solution that specifically teaches away from image-based interfaces such as Childers. In this way, Dr. Polish's Ground 4 is based entirely on impermissible hindsight.

XI. CONCLUSION

110. The Board can separately exercise its discretion to deny institution of an *Inter Partes* Review because of Petitioner's use of hindsight analysis via the influenced and biased declaration of Dr. Polish based on the consideration of select references and Patent Owner's claims as a roadmap to seek invalidation of Patent Owner's claims.

All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true. I further understand that willful false statements and the like are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code. I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 9, 2023.

A handwritten signature in black ink, consisting of a stylized 'J' followed by a horizontal line and a small upward tick.

Jun Zheng, Ph.D.