

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BRYCER, LLC, and BRYCER MANAGEMENT, INC.,
Petitioners

v.

TEGRIS, INC.,
Patent Owner.

Case No. IPR2023-01196
Patent No. 11,126,966

Before KAREN I. SWEENEY, *Trial Paralegal*

**DECLARATION OF DAVID HILLIARD WILLIAMS IN SUPPORT OF
PATENT OWNER'S RESPONSE TO PETITION**

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EXHIBIT LIST

Ex. #	Description
2001	Declaration of David Hilliard Williams
2002	David Hilliard Williams CV
2003	https://www.wsp.wa.gov/wp-content/uploads/2021/09/Application-Level-ITT-Specialized-Certificate-of-Competency-420263.pdf
2004	Lynnwood Case Study
2005	https://www.nfpa.org/News-and-Research/Publications-and-media/Blogs-Landing-Page/NFPA-Today/Blog-Posts/2020/10/30/guide-to-fire-extinguisher-inspection-testing-and-maintenance
2006	U.S. Published App. No. 2008/0114638 to Colliau
2007	U.S. Published App. No. 2003/0171957 to Watrous
2008	U.S. Published App. No. 2005/0108038 to Cober
2009	U.S. Patent No. 6,446,053 to Elliott
2010	U.S. Published App. No. 2006/0235611 to Deaton
2011	Annual Hydrant Inspection Procedures 2001
2012	U.S. Publication No. 2008/0084291 to Champion
2013	Claim 8
2014	Potts v. Martin & Bayley, Inc. Case Opinion
2015	Declaration of Andrew Moren
2016	Declaration of Leroy McNulty
2017	Declaration of Mike A. Miller
2018	Claim chart mapping Challenged Claims to Tegrifire
2019	Claim chart mapping Challenged Claims to Brycer TCE
2020	Declaration of David Williams in Support of Patent Owner Response
2021	Excerpts from MacInnes Deposition Transcript
2022	Merriam-Webster Definition of Notice
2023	Anacortes, WA Fire Department Case Study
2024	Marysville, WA Fire Department Case Study
2025	Richland, WA Fire Department Case Study
2026	Welcome to ACS Firehouse Solutions—Website Aug 23, 2007
2027	Information system - Automation, Data Processing, Decision Support _ Britannica Website, accessed 4/12/2024
2028	www.researchgate.net/figure/Example-of-geographical-information-system-GIS-mapping-in-environmental-studies-Photo_fig1_330567969
2029	GIS electric utility map data layers - Search Images.pdf2

Ex. #	Description
2030	https://www.giscloud.com/blog/gis-for-electric-utilities/ , Accessed April 12, 2024
2031	EX2031 - fire hydrant gis map data layer, fire hydrant gis map data layer - Search (bing.com)
2032	examples of life safety map data layers inside a building - Search (bing.com), Examples of life safety map data layers inside a building - Search.pdf
2033	Life Safety Plans - 2018 Project Standards (weebly.com), Life Safety Plans - 2018 Project Standards.pdf
2034	fire hydrant map data layer - Search (bing.com), Fire hydrant map data layer - Search.pdf
2035	Quantifying the High Cost of Delayed Em...pdf
2036	Fire Hydrant System in Buildings Office Industries Best 2022.pdf
2037	Fire Hydrant Systems - Torvac.pdf
2038	Standpipe Connection for Fire Protection - What You Need to Know.pdf
2039	Relational Database vs Flat File (Differences & Similarities) - DatabaseTown.pdf
2040	City of Tumwater RFP – Fire Inspection Management System, Brycer The Compliance Engine
2041	Richland WA Email
2042	BENEFITS OF PROACTIVE COMPLIANCE PROGRAM.pdf
2043	10 Ways To Improve Fire and Life Safety Inspections.pdf

I, David Hilliard Williams, declare as follows:

I. Introduction

1. I have been retained on behalf of TEGRIS, INC. (“TEGRIS”) for the above-captioned *inter partes* review (IPR) proceeding. I am being compensated for my time in connection with this IPR at my standard hourly consulting rate. I understand that this proceeding involves U.S. Patent No. 11,126,966 (“the ‘966 patent”) titled “SYSTEMS AND METHODS FOR A WEB BASED INSPECTION COMPLIANCE REGISTRY AND COMMUNICATIONS TOOL” by Andrew Stanton Moren and Robert J. Moren, and that the ‘966 patent is currently assigned to Tegriss, Inc. of Gig Harbor, WA (US).

2. I have reviewed and am familiar with the specification of the ‘966 patent filed on January 23, 2008. I understand that the ‘966 patent has been provided as EX1001. I will cite to the specification using the following format: EX1001, ‘966 patent, 1:1-10. This example citation points to the ‘966 patent specification at column 1, lines 1-10.

3. I have reviewed and am familiar with the file history of the ‘966 patent. I understand that the file history has been provided as EX1002.

4. I understand that the ‘966 patent has a filing date of January 23, 2008. The ‘966 patent also claims priority to provisional application No. 60/981,782, filed

on October 22, 2007. I do not address any claims by Petitioners with respect to priority date in this Declaration but reserve the right to do so.

5. I understand the PTAB issued a ruling on the '966 Petition, allowing the matter to go forward. I have reviewed that decision.

6. In preparing this Declaration, I have also reviewed and am familiar with the following prior art relied upon in the Petition for *Inter Partes* Review of the '966 patent and/or in my declaration below:

<u>Ex.</u>	<u>Reference Name</u>
1005	Key
1006	Sweeney
1007	Campion patent
1016	Chauhan
1018	Silva
1020	McKinney
1024	Buildingreport.com
2006	Colliau
2007	Watrous
2008	Cober
2009	Eliott
2010	Deaton
2012	Campion Published Application

7. The '966 patent describes a method for using a web registry to track the inspection compliance of an owned asset including notifying an owner of an asset that an inspection is needed to comply with a code. Ex1001, '966 Patent, Abstract.

8. I have been asked to provide my technical review, analysis, insights, and opinions regarding the '966 patent and the above-noted references that form the basis for rejecting the arguments set forth in the Petition for *Inter Partes* Review of the '966 patent. More specifically, I have been asked to opine on the arguments set forth for claim 8 of the '966 patent, which I do on its technical dimensions and in the context of a Person of Ordinary Skill in the Art (POSA) at the time of the '966 provisional priority date, although my analysis would not change if the priority date is January 23, 2008, the filing date of the '966 patent.

II. Qualifications

9. In formulating my opinions, I have relied upon my training, knowledge, and experience in the relevant art. A copy of my current *curriculum vitae* is provided as EX2002, and it provides a comprehensive description of my academic and employment history over the last thirty-plus years.

10. My curriculum vitae is attached as marked at EX2002.

11. I am President and Founder of E911-LBS Consulting, which was founded in 2002. My firm provides consulting, research, forensics, and litigation support services in the fields of telecommunications, mobile, location-based

services, and Internet-of-Things (IoT) technologies application, device, infrastructure, and network design and implementation. I have extensive experience in safety and security systems in a variety of life safety-related fields, ranging from 911 systems and processes, personal, home, and commercial safety, alarm, and security devices/applications/monitoring systems, asset tracking and recovery, and criminal forensics safety-related systems analysis. Prior to founding my company in 2002, I spent 15 years as a senior technology design and implementation consultant for world-leading technology consulting firms Accenture, Booz Allen & Hamilton, and Deloitte Consulting. I started my career in 1983 as an electrical design engineer for Hughes Aircraft Company's Radar Systems Group, working on that system's analog signal-to-digital converter and control unit for the F-15 fighter jet radar system and ground control. My relevant experience for this matter utilizes experience and expertise gained across this timeframe.

12. I obtained a BS in Electrical Engineering from Purdue University in 1983, with an emphasis on Digital System Design, graduating with top honors including the National Engineering Honor Society and National Electrical Engineering Honor Society. In 1987, I also obtained an MBA, focusing on Information Systems Management, from the University of Texas at Austin, graduating first in my class.

13. I have over 35 years of experience related to wireless location services, including experience designing, implementing, and managing numerous location-based service (“LBS”) applications, such as navigation, mobile social networking, family tracking, and worker and asset tracking management, as well as working in all fields within the location services ecosystem including all forms of location determination technologies, map data, handset technologies, user interfaces, and associated Information Technology systems including identification, authentication, privacy, security, and other related capabilities such as network engineering and operations.

14. I am currently the President of the company E911-LBS Consulting, and I have been with the company since 2002, as well President of E911-LBS Forensics Engineering, a criminal and civil forensics engineering firm. As the President of E911-LBS Consulting, I provide services across the entire wireless value chain, particularly with respect to technology and business strategic planning and product design and development associated with LBS, Global Positioning Satellite (GPS) systems, E911, WiFi-Based and other medium/long-range Real-Time Location Systems (RTLS), Radio Frequency Identification (RFID), Bluetooth, Near Field Communications (NFC), and beacon-based and other short-range communications/location systems, and other location determination and sensing technologies and services.

15. I have extensive expertise in all aspects of product and service delivery across the wireless location ecosystem including enabling network, map data, geospatial platform, chipset, data management, device, user interface, and location determination infrastructure and integration providers. I am an expert in all related aspects of mobile location services, including use of various communications networks and associated frequencies and protocols involved in the creation, processing, and delivery of information, and key associated enablers of such device hardware and software design, use/deployment of sensors, local and centralized control systems, and underlying communications and computing architectures.

16. For example, in the 1983-1985 timeframe, I was a microprocessor system design engineer on the digitization project of the F-15 fighter jet radar system. Specifically, I designed a system for converting analog signals (radar pings, sensor measurements, etc.) to digital form, and for feeding the converted signals to various parties and localized and centralized control subsystems, including pilots, carriers, and ground control stations. The converted signals corresponded to data relating to navigational and directional information, aircraft status, the location of other aircraft/targets relative to the pilot's position, and associated images.

17. In the 1987-1995 timeframe, as a senior consultant/manager for Deloitte Consulting and Booz, Allen, and Hamilton, I designed and deployed a

variety of computer centers and communications networks supporting industries including hospitality/retail, transportation, and financial services.

18. In the 1995 to 2000 timeframe, as an Associate Partner in the Communications & High Technology Practice of Accenture (one of the world's leading technology companies), I focused on using wireless location technologies to provide services to the public sector and commercial markets. From 1998 to 2000, I led the development of the LBS product/technology strategy and roadmap for Nextel Communications, Inc. (later acquired by Sprint, and now part of T-Mobile). My work with Nextel resulted in some of the earliest LBS applications in the U.S. market and included extensive research into the potential use of various technologies in providing and enabling a wide array of location-based services. Many of the Nextel products selected for development and implementation included various forms of worker and asset tracking that matched—based on their location—workers with other workers, or workers with assets (*e.g.*, field equipment, vehicles, etc.), tracked worker/asset locations on a map, and provided navigation directions from one point to another. My work developing the product concept and initial requirements sets heavily emphasized the tracking and alert capabilities for those applications. My work also included leading the development of the underlying network and Information Technology architectures that would be required to support the LBS

applications product strategy and roadmap, including the future incorporation of other capabilities including Wi-Fi.

19. In 2003, I led the development of part of AT&T Wireless's E911 infrastructure, including the development of systems, processes, and reporting infrastructure to manage and track the deployment of time difference of arrival-based location determination technologies. I managed the testing and Federal Communications Commission reporting of network location inaccuracies, with a particular focus on detecting and troubleshooting out-of-norm technology deployment and inaccurate location conditions. This work also generated the accuracy data associated with determining the location of a portable electronic device that could then be used as supplemental information (*e.g.*, how accurate the location was) to location-based applications, such as asset tracking, navigation, POI information, or people-finding services.

20. From 2004 to 2006, I worked with NAVTEQ (now called HERE)—the leading provider of map data and services essential to creating LBS applications—to develop the company's web developer website content and tools. Specifically, I designed and managed the site map and overall content, including the development of comprehensive technical and business web content for all NAVTEQ map product and service lines. Through the developer site, application developers and business managers became intimately familiar with map data, Geographical Information

System (GIS) platforms, and location-based services and associated user interface and associated data population options available to successfully develop and launch their LBS applications. For example, I developed content for highlighting key types of map data and for providing technical details on how NAVTEQ tools could be used in LBS design for various consumer and business applications, for example, data product packages focused on shopping and consumer Points-of-Interest, such as retail/retail locations, restaurants and entertainment spots, which could be used by application developers for a variety of purposes, such as retail location local search, and navigation packages focused on different levels of navigation granularity (*e.g.*, malls vs. highways vs. backroads vs. trails) and modes of transportation (*e.g.*, walking, truck, car, bike) across many forms of tracking and user interface platforms. Much of this map data productization involved links to/dependencies upon the types of location determination technology/techniques, including GPS, cellular network-based techniques, Wi-Fi positioning/networks, Cell ID-based, and other networks/techniques.

21. I also have extensive LBS application product design and implementation experience, including related disciplines including data privacy and security management. For example, from 2007 to 2010, in the role of lead Product Realization Manager, I managed the design, implementation, and launch of several consumer and business-oriented LBS applications for AT&T (then, AT&T

Mobility). These LBS applications included navigation, mobile social networking, family tracking, local search, 411-with-LBS, games, mobile resource management, fleet management and tracking, and asset tracking. I also developed corporate-wide location data privacy policies and associated system implementation for all LBS customers. The app had to work within the constraints and capabilities of the literally dozens of phone/device platforms, and also within the constraints and capabilities of the rest of the AT&T IT, network, and operational (sales, customer service, etc.) systems, architecture and processes.

22. Many of these apps involved extensive alerts associated with location-related triggers, such as entering/exiting an area. For example, my work in AT&T's implementation of mobile social networking focused on finalizing the design of the Loopt social networking application, an app being adapted into AT&T's network and product line. This role and work required extensive knowledge of how the app worked (including its use of location data sharing mechanisms and associated capabilities such as geofences). The role required design modifications to ensure successful implementation across multiple users/friends using different device platforms (and thus differing screen and functional capabilities) so that friends' shared user experience was as accurate and complete as possible. This would include synchronization/coordination of location-alerts, enabling for example joint alerts

when friends were nearby or at a certain POI, and provided directions for enabling the friends/users to meet.

23. I have worked extensively in the field of asset management and related capabilities, including alerts including time-based and event-based alerts, such as proximity-based and geofence-based alerts. For example, my work with such asset management systems with AT&T involved alert-based centralized dispatch and remote control over local control systems, triggered off of certain location, location area/geofences, and asset-related conditions, metrics, and time-based events.

24. Further, these applications had to be tied into (and be used by) AT&T's network, AT&T's location infrastructure, and various AT&T IT systems used for functions including Sales, Customer Care, Fulfillment, Billing/Accounts Receivable, and various network and IT operations. The work also included extensive work with AT&T Legal to develop and implement AT&T's location privacy and data security policies. The integration of the application into the above required extensive authorization-related design work to ensure that a given user could appropriately access the various AT&T systems and subsystems, as well as the application, under the appropriate conditions/circumstances, including appropriately authorizing the use of and the sharing of a user's location with other users and/or systems. This work in location-related data security and privacy networking resulted in a patent: U.S. Patent 8,613,109, titled "Method and Apparatus

for Providing Mobile Social Networking Privacy,” that issued on December 17, 2013, of which I was the only non-employee inventor.

25. In addition to the above applications, enabling location technologies, wireless communications, and privacy and security experience and expertise described above, I also have many years of Information Technology experience. For example, as a consultant in the Information Technology practices of Deloitte Consulting (originally Touche Ross), Booz Allen & Hamilton, and Andersen Consulting (now Accenture), I served in key technology development and technology leadership roles in numerous projects designing and implementing mainframe, mini-computer, and client-server-based computing systems across a wide variety of industries and a wide variety of functions/applications. This work included several years working with utilities in helping them optimize their operations using wireless communications, as well as leveraging their assets for communications purposes.

26. I also led the design and development of a number of different communications networks associated with the above computing systems, including wide- and local-area networks, utilizing both wired and wireless technologies, involving private and public (*e.g.*, Internet-based) communications backbones.

27. I have written numerous articles and reports on location-based services and technologies, as well as authoring multiple books, including:

- The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services (2005 and 2009 versions);
- The Definitive Guide to Wireless E911 (2004, 2005 versions); and
- The Definitive Guide to Mobile Positioning and Location Management (co-author).

28. I am the primary/sole inventor of several patents extensively establishing, tracking, and utilizing networks of devices, platforms, people, places, and entities in supporting those attempting to control/modify/correct/improve various undesired activities and behaviors, such as those suffering from addiction or those in difficulty with the law on issues related to such behaviors, utilizing a wide array of sensor systems and long and short-range networks to collect and transmit data, and to locally and centrally generate alerts and various responses under a wide variety of contextual and location-based events and triggers.

29. I have served/am serving as a mobile location forensics expert in over 50 criminal (homicide, arson, robbery, etc.) and civil (trade secrets, product liability, etc.) cases, many involving various forms of vehicle telematics and otherwise tracking of individual movements and associated behaviors, using a variety of devices and platforms, possibly associated with the committing of a crime or other infraction, utilizing a variety of data including location information, video/camera data, and various sensor-based data.

30. I have served/am serving as a mobile/wireless and location technology and application/system expert in patent matters involving over 200 patents ranging from short and long-range network design, usage and authentication to local and centralized control systems to safety, security, and surveillance systems, and have been deposed in such matters over 35 times. I have testified in court in ITC court, the Eastern and Western Districts of Texas, District Courts in New York and California, and international (Canada, Trinidad and Tobago) venues, as well as various U.S. criminal courts.

31. My curriculum *vitae* contains further details on my education, experience, publications, and other qualifications to render an expert opinion. EX2002. My work on this case is being billed at a flat rate of \$485 per hour, with reimbursement for actual expenses. My compensation is not contingent upon the outcome of this *inter partes* review proceeding.

III. Legal Understanding

A. My Understanding of Claim Construction

32. I understand that during an *inter partes* review proceeding, claims are to be construed in light of the specification as would be read by a person of ordinary skill in the relevant art at the time the application was filed. I understand that claim terms are given their ordinary and customary meaning as would be understood by a person of ordinary skill in the relevant art in the context of the entire disclosure. A

claim term, however, will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the claim term in the specification.

33. At this point in the proceedings, Petitioners are not advancing any claim constructions. Should they do so in the future, I reserve the right to respond. I have reviewed the deposition testimony of Richard MacInnes, who was retained by Petitioners in this matter and was cross-examined regarding the construction of certain claim elements that he applied in connection with his adoption of the statements in his Declaration, marked as EX1003. Below, I propose certain claim constructions in my claim 8 analysis. For example, I will propose claim construction for “fire hydrant management software” and other terms, which fits the details and intent of that term, as it is used in the patent specification, claims, and prosecution history.

B. My Understanding of Obviousness

34. I understand that a patent claim is presumed to be valid, but it may be invalidated if it can be proved that the claimed invention would have been obvious to a person of ordinary skill in the art at the time the application was filed. This means that even if all of the requirements of the claim cannot be found in a single prior art reference that would anticipate the claim, the claim can still be invalid.

35. To obtain a patent, a claimed invention must have, as of the priority date, been nonobvious in view of the prior art in the field. I understand that an invention is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

36. I understand that to prove that prior art or a combination of prior art renders a patent obvious, it is necessary to: (1) identify the particular references that, singly or in combination, render the patent obvious; (2) specifically identify which elements of the patent claim appear in each of the asserted references; and (3) explain how the prior art references could have been combined in order to create the inventions claimed in the asserted claim.

37. I also understand that when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to combine the references exists so as to avoid impermissibly applying hindsight when considering the prior art. I understand this test should not be rigidly applied, but that the test can be important to avoiding such hindsight.

38. I understand that certain objective indicia can be important evidence as to whether a patent is obvious or nonobvious. Such indicia include: (1) commercial success of products covered by the patent claims; (2) a long-felt need for the

invention; (3) failed attempts by others to make the invention; (4) copying of the invention by others in the field; (5) unexpected results achieved by the invention as compared to the closest prior art; (6) praise of the invention by the infringer or others in the field; (7) the taking of licenses under the patent by others; (8) expressions of surprise by experts and those skilled in the art at the making of the invention; and (9) the patentee proceeded contrary to the accepted wisdom of the prior art.

39. I also understand that “obviousness” is a legal conclusion based on the underlying factual issues of the scope and content of the prior art, the differences between the claimed invention and the prior art, the level of ordinary skill in the prior art, and any objective indicia of non-obviousness. For that reason, I am not rendering a legal opinion on the ultimate legal question of obviousness. Rather, my testimony addresses the underlying facts and factual analysis that would support a legal conclusion of obviousness or non-obviousness, and when I use the term obvious, I am referring to the perspective of one of ordinary skill at the time of invention.

C. Level of Ordinary Skill in the Art

40. I understand that a person of ordinary skill in the relevant art (“POSA”) is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity—not an automaton.

41. I have been asked to consider the level of ordinary skill in the field that someone would have had at the time the claimed invention was made. In deciding the level of ordinary skill, I considered the following:

- the levels of education and experience of persons working in the field;
- the types of problems encountered in the field; and
- the sophistication of the technology.

42. My opinion below explains how a POSA would have understood the technology described in the references put forth in the Petition, at the time of the patent provisional filing in 2007. Specifically, based on the disclosure of the '966 patent, a POSA would have had either: (1) a Bachelor of Science degree in Electrical Engineering or an equivalent field, with at least 2 years in asset management, including familiarity with associated asset inspection, testing, and/or maintenance disciplines, as well as familiarity with the life safety industry; or (2) a Master of Science degree in Electrical Engineering or an equivalent field, with at least 1 year of academic or industry experience in the same field. This description is approximate, and a higher level of education or skill may make up for less experience, and vice-versa.

43. Included in the above is knowledge of life safety systems, including fire hydrants, fire alarms, and/or building sprinkler systems. As indicated in the Qualifications section, at that time I had several years' experience with public safety

911 systems and processes, as well as other safety-related fields/disciplines. In addition, as part of this effort I have interviewed one or the inventors of the '966 patent and related system personnel, to more fully understand the state of the art up to the time of the filing date thereof. In total, I believe that qualifies me as a POSA at that time.

44. I reviewed the Declaration of Richard MacInnes (EX1003), his curriculum vitae (EX1004), and his deposition testimony (EX2021), none of which, alone or in combination, demonstrate that he has the credentials and experience to qualify as a POSA, under the above definition or the one included in his declaration. His engineering degree was obtained at a time before web-based registries existed and his product development and programming experience has not been in a relevant field. For the past three decades, he has been a business consultant with no demonstrated programming or product development experience relevant to the technology at issue in this proceeding. While he appears to have experience with asset management generally, that does not demonstrate that he has any applicable knowledge or experience in this field. In addition, he testified on cross-examination that he did not perform any investigation regarding the software and processes used in the technical field at issue in this case, relying solely on prior art from counsel from Petitioners.

IV. Patent and Prosecution History

45. The inventors of the patent have a long history of working in the life safety field.

46. As one of the named inventors explained, “no one was enforcing inspections [nor] Inspections, Testing, and Maintenance related to them.” The documentation related to the inspections and ITM “would be filed by the firehouse document manager, then die.” At the time of the patent provisional filing, “only about 20% [of life safety equipment owners], most of them box stores, would follow up” on inspections/ITM, primarily for insurance purposes.¹

47. The inventors in their patent disclosure described a variety of assets, fire-related and otherwise, including assets associated with what is known as “life safety” functions. These assets functions include, as their core/primary purpose, capabilities that actively and directly prevent life threatening situations, or actively and directly help in in trying to recover from/survive such life-threatening situations. This could include assets ranging from a heart defibrillator to a tornado shelter to Personal Protective Equipment (PPE) for hospital staff and life preservers for boaters. The key to identifying such systems (also applicable to fire and other “emergency” assets) is as follows: is the core, or primary purpose, of the asset to

¹ Source: Telephone Interview with Andrew Moren on 10/3/23

prevent/pre-empt a life-threatening situation, and/or to help recover/survive a life-threatening situation.

48. In addition to fire and life safety-related assets, consistent with the above would be for other types of assets that have, as their core/primary purpose, emergency prevention or survival. This would include assets such as emergency lighting systems, emergency warning systems, emergency evacuation plans, emergency response teams, even 911 communications system. The word “emergency” doesn’t have to be in the title; it is the core purpose/use cases that are key. All of the above types of assets could have one or both of preempting (a fire, life safety situation, or emergency) or (if already underway), recovering from/surviving such situations.

49. With that as a premise, as a minimum starting point it is *inclusive* of software that can be used to manage Fire Hydrants (both public and private). Such software can also manage related assets with the word “fire” in them used in the *Background of The Invention* section of the original application such as, Fire Alarm Systems, Fire Sprinkler Systems, and Fire Extinguishers. Like hydrants, such fire-related assets have, as their core/primary purpose, the prevention of and/or fighting of fires and are required to be working when there is a fire emergency.

50. Finally, in addition to the fire/life safety/emergency primary/core purpose or use cases described above, the scope of the disclosure includes those

assets that can be—and are—inspectable by a qualified inspector(s). Inspection (as well as often associated functions of testing and maintenance) is clearly part of the core overall functionality involved in the patent, and facilitating the proper inspections of fire/life safety/emergency asset inspections and the flow of inspection-related information is at the core of what the patent is trying to accomplish.

51. It is (very) important to note that while the disclosure of the original patent application and initial office actions were very broad as to the type web registry-based owned asset management involved encompassing not only fire hydrants, fire alarm systems, and fire sprinkler systems, fire hood system, and fire extinguishers, but also all sorts of other assets ranging from retention ponds and boilers to farm equipment and weapon caches, as described in the '966 Patent Background of the Invention (EX1001, 1:22-34), that broad range of assets was not the final claimed result that was approved by the Examiner. Instead, the Examiner approved revised claim language for pending claim 21 (which became granted claim 8) shown below:

21. (Previously Presented) A computer-implemented method for using a fire hydrant management software and a web-based registry to track requisite inspection of an owned asset comprising:

granting remote access to a web-based registry system, wherein the web-based registry is configured to run a fire hydrant management software, to at least three classes of user, wherein the three classes of user comprise:

- (1) an owner of an asset
- (2) an approval authority
- (3) an inspector

retrieving, by a computer-based fire hydrant management software system, real time records of assets from a database, the database being accessible and augmentable by a classes of user;

analyzing the records of assets from the database to identify notification events;

based on the analysis, notifying an owner of an asset ~~at~~ of a notification event, wherein the notice includes a standard format description of the type of inspection, and a cost associated with the type of inspection, and wherein the notification event comprises a designatable interval in advance of an impending deadline for the inspection, and wherein the owner of the asset, upon remotely accessing the fire hydrant management software compliance registry, may update and review the status of the assets;

based upon the analysis, ~~notifying~~ sending a standard format notice to the approval authority of the status of the assets assigned to the approval authority, and wherein the approval authority, upon accessing the web-based registry, may update and review the status of the assets assigned;

upon logging on to a password controlled website configured to provide access to the fire hydrant management software, providing to an inspector the owner selects, the selection based upon a list of qualified inspectors that are available to inspect the asset based upon attributes

including proximity to the asset, a web-based template configured to describe the asset an each of the steps of the inspection;

receiving from the inspector, inspection information in specific response to the web-based template;

storing in a database in association with the asset, the inspection information, wherein the inspection information is accessible to the users, and updating the database in association with the asset based upon the inspection information;

transmitting to the approval authority, a standard format compliance report including noting compliance, wherein the compliance report includes, noting deficiencies in the asset and storing the noted deficiencies in association with the asset.

See EX1002, 604-616, 628-629.

52. The above does not mean that if an asset has a few functions or use cases related to a fire, life safety, or emergency services asset, that the asset qualifies as being covered under “fire hydrant management,” as the Petitioner asserts in its Petition. As discussed herein, almost any physical (and some digital) assets can become “dangerous” if neglected, abused, or misused. Putting aside the issue about what is “dangerous” or not (a term also used by the Petitioners in advocating certain types of assets as being included in Fire Hydrant Management), including those assets just because they have potentially a few non-primary/fringe fire/life safety/emergency use cases in the scope of this term would render adding “fire hydrant management” to the claims almost meaningless. As such, assets such as boilers or elevators, which *primary* purpose is to heat liquids or move people, respectively, would *not* qualify as assets being managed with “fire hydrant

management software” under any construction. This is discussed in more detail and in the discussion of each of the individual pieces of the Petitioners’ prior art.

V. Claim Construction

53. As seen above, and through the patent examination, as claims were modified by the later office actions, “fire hydrant management software” was a key addition to the claims to secure allowance and narrowed the scope of claim 8 (and others). It is important to have an explicit construction for the claim term, both because of the specificity and importance of its use in getting the patent approved by the Examiner, and because the Petitioners are extremely vague in what *they* think the term means.

A. Fire Hydrant Management Software

54. In forming an opinion on “fire hydrant management software,” first I believe it is important to understand the “boundaries,” e.g. the metes and bounds, of the term. In my view, “fire hydrant management” is first and foremost a description of the scope of the type of assets managed by the software. It identifies a class or type of assets that the software is configured to manage, notwithstanding that in a commercial product or service, software may include functionality to manage other types of assets as well. Nonetheless, I do not believe, similar to the Petitioners via its Petition positions, that the patent disclosure is focused solely on the management of fire hydrants. However, it is not any and all types of assets either, even if they

possibly have situations or use cases where they become “dangerous” (which is the case for many, even most assets if they are misused or not taken care of). Otherwise, the scope of assets would be huge (many thousands of types of assets), and the inclusion of the term in the claims meaningless. Further, as discussed above, claim 8 was amended during prosecution to include in the preamble and body of the claim that the method employed a web-based registry configured to run fire hydrant management software (“FHMS”). While that term is used in the ‘966 specification in connection with discussing prior art systems that failed to solve the compliance problem for fire hydrants, as discussed herein, claim 8 recites a FHMS that employs a process that provides for collaboration between the pertinent stakeholder, which solved the lack of compliance problem, when prior FHMS software did not.

55. The ‘966 specification provides a description of fire hydrant management software that is essentially the same as my proposed construction and an explanation of deficiencies in existing FHMS, stating:

A typical fire hydrant management software program allows the user to input hydrant information, schedule maintenance, and create reminders for service. The local fire department can evaluate inputted data to determine water flow information and general location. These programs do not record data such as water quality, GPS location, or condition. Also

they do not record requests for maintenance or improvements.

None of previous approaches communicate with each other or communicate with a global registry. In fact, none of them communicate with other users who use the same program and therefore there is not a system that currently combines all of the gathered data for use by all fire departments. Commonly, because of high software costs and the lack of organization, departments do not use a formal hydrant management software program and instead rely on pencil, paper, calendars, and file cabinets.

EX1001, 1:63-2:12 (emphasis added). The Institution Decision observed that this definition of FHMS referred in part to the prior art. However, this does not mean that the claimed system, which improved the prior art in several ways, could not also invoke the same term with the same meaning in claiming its improved system. That would be like concluding that a patent claim to an entire new car that included the term wheel would necessarily means the definition of “wheel” would change merely because it had been used in the prior art. Instead, the opposite is true. The meaning of wheel would remain constant, and the invention would be comprised of the entire claim that added to it, without changing the meaning. So to here, there is absolutely nothing in the intrinsic record to suggest that the patentee intended a

departure of the minimum definition of “fire hydrant management software.” No principles of claim construction warrant substituting the explicit definition from the specification. Further, the ‘966 specification describes in extensive detail the web-registry configured to run FHMS performing the recited functions among others. For example, Figs. 4A and 4B and Figs. 7-23 depict a “Hydrant Works Inspection System” and a “Hydrant Scout” hand-held device, all of which are tailored to the management of ITM for fire hydrants and related equipment. *See* EX1001. Further, the data schema shown in Fig. 4A and 4B illustrate the complex requirements for managing ITM for fire hydrants. (*Id.*) As discussed herein, the ITM process for fire hydrants is a unique application for asset management, in part, due to the extensive regulations that are only applicable to such assets and the critical nature of such assets, in that, the ITM data related thereto is used by first responders when life and property are at risk.

56. Thus, in my opinion a proper construction of the term “fire hydrant management software” would be:

*Software that allows the user to input fire hydrant
information, schedule maintenance, and create reminders
for service.*

B. Notice, Notification, Notification Event

57. Merriam-Webster Dictionary defines the term Notice as:

A warning or intimation of something²

58. Even without delving into the technical and ‘966 patent specifics below, this definition of notice clearly conveys multiple concepts: 1) that something important is happening or about to happen, 2) it is going to happen soon, and 3) just knowing that some *thing* is about to happen is not enough—you need to know the *specifics*.

59. This definition of “notice” has very significant implications in the ‘966 patent. In contrast, the Petitioners’ clearly view that Key’s placement of a task in a task list amounts to a “notice” or “notification.” The Petition uses this implicit construction of Key in a variety of ways in an effort to read onto several “notice” limitations of claim 8: for a Jurisdiction to decide it needs to send notice of a need for an impending inspection to an owner; to a Jurisdiction from an Inspector that an inspection is completed; and as way to inform a Jurisdiction Reviewer that he/she needs to review that inspection. The Petition contends that just inputting a task into an online to-do list is sufficient to meet the “notice” limitations of the ‘966 patent.

² EXHIBIT 2022 - Notice Definition & Meaning - Merriam-Webster.pdf

This is an inappropriate implicit construction of those terms, as well as the associated term “notification event.”

60. The ‘966 patent provides specific embodiments and associated contexts with respect to the terms notice(s), notification(s), and notification event(s) that not only do not support this implicit construction(s), they teach *away* from them. These include (emphasis added):

- A year later, the property owner **will receive notice (via email, physical mail, or other)** that the fire sprinkler system **is due** for annual inspection. The fire marshal will receive weekly or monthly updates of all due and overdue inspections. 4:27-31
- For each asset on the inspection list, generating a standard format **notice notifying the approval authority** of the status of the assets assigned to the approval authority. Claim 8
- For each asset on the inspection list, generating, according to **computer-executable instructions** of the fire hydrant management software, a standard format **notice notifying an owner of the asset of an impending deadline for the inspection such notice to include** the list of qualified inspectors for the asset, a description of the type of inspection, and a cost associated with the type of inspection. Claim 1

- Analyzing the records of assets from the database to **identify notification events**... Claim 8
- Based on the analysis, **notifying an owner of an asset of a notification event, wherein the notice includes** a standard format description of the type of inspection, and a cost associated with the type of inspection, and wherein **the notification event comprises** a designatable interval **in advance of an impending deadline** for the inspection. Claim 8
- Based on the analysis, **sending a standard format notice to the approval authority** of the status of the assets assigned to the approval authority, and wherein the approval authority, upon accessing the web-based registry, may update and review the status of the assets assigned. Claim 8

61. As discussed more in the Background of Technology section, Notices, Notifications, and Notifying can have a variety of characteristics. In my opinion, the characteristics that apply to the '966 patent based on the above citations include the following:

- *Be self-contained/complete in content*—All use of notices and notifying in the '966 patent have a “direct” element, not indirect (e.g. having to login to another system to access the information). Further, by requiring

- “sending” of notices, a POSA would have an expectation that all information that the recipient needs to know about the situation associated with the notice is contained in the notice. Combined with the next element (time-urgency), this necessitates that the notification has as absolutely few delays as possible built-in to how (and when), and in what form/degree of completeness the recipient receives the content of the notice;
- *Have a time-urgency element, therefore ideally be electronically sent to the recipient*—The ‘966 refers to sending a “**notice notifying an owner of the asset of an *impending deadline for the inspection***. There is absolutely no ambiguity in this citation: the owner needs to know about the inspection, **soon**. The specification also states that owner “**will receive notice (via email, physical mail, or other)**. While paper (e.g. U.S. mail) is allowed as a possibility, a POSA would recognize that US postal service is not exactly fast and would use it only if the recipient did not have electronic delivery (e.g. email) at all. Indeed, here the use of the term “sending” in the claims also means in practicality that there is an electronic communication being done, e.g. email, not just placing a task in a task list.

62. The ‘966 patent also refers to a “notification event.” This concept, and details, fully support the idea of fully-contained content in a notice, and any associated notification having time-urgency. While the patent only refers to this term

in the claims, it is clear that such an event triggers the need for important information to be delivered to the recipient in complete form and in a very timely manner, as seen in claim 8 (emphasis added):

- Analyze the records of assets from the database to **identify notification events**;
- Based on the analysis, **notifying an owner of an asset of a notification event**;
- And wherein the **notification event comprises a designatable interval in advance of an *impending deadline* for the inspection.**

63. This last limitation element in particular conveys the need for completeness and urgency in the notification (sending of a notice electronically) to a recipient, in this case the owner. It doesn't take much imagination to realize that the owner, upon receiving this notice, will immediately prioritize associated preparations for the inspection, to be done as soon as possible or at a minimum before the *impending* deadline.

64. Also, a POSA would recognize that the "based on the analysis," combined with the rest of the citations, would mean that the notification based on the notification event analysis would be done *automatically*, not manually input, as well as a minimal number of associated steps, to be able to facilitate meeting the *impending* deadline. Further, to the extent that for whatever reason the owner cannot

accommodate a suggested date/time for the inspection (or, as the '966 patent suggests, there is not specific date/time proposed in the notice but instead allows the owner to have some degree of control in scheduling it), the owner will want to appropriately get the inspection coordinated with the inspector as soon as is practical.

65. Thus, there is a very substantial, material difference between the manual, passive information about an inspection placed in a task list of Key, requiring additional steps by the owner or other stakeholder to even realize there is a task for him/her to do and find out what it is, and the automated, time-urgent, complete notices sent through an email notification upon triggering by a notification event of the '966 patent.

66. Thus, the terms “sending a notice,” “notifying,” and “notification event” should be construed as follows:

Notification Event: An upcoming inspection for one or more fire hydrants or related life safety devices or systems.

Notifying and Sending a ... Notice: Automatically sending a message to a recipient related to a notification event.

This construction of notifying and notice is distinct from, and not-inclusive of, the Petitioners’ implied construction of providing access to a web-registry or software where information may be found.

VI. Background of the Business and The Technology

67. Before getting into the rebuttal to the various arguments asserting the invalidity of the ‘966 patent, it is very important to understand the market and use cases for which the ‘966 patent was intended, and the key technology enablers and infrastructure it provides. Some of this was described in the Patent and Prosecution History section, as well as in the declaration in support of the Patent Owner Preliminary Response.

68. However, I have provided additional detail here, in a number of respects, that elaborates more fully on various key issues. First, I provide a background of the asset inspection and compliance industry, particularly for the life safety market, that provides additional insights into the state of the industry and market up to and at the time of the ‘966’s various filings. This is important not only for overall context; it also provides a detailed understanding of the contrast between various technical aspects of the ‘966 patent and the prior art, as well as provide a foundation for the Commercial Success portion of the Secondary Considerations

section, where it is demonstrated that the ‘966-based commercial system had a major impact on improving inspection compliance.

69. In addition, it is critical to understand the state of the technology with respect to fire hydrants and related assets inspection, testing and compliance (referred to throughout this declaration interchangeably as Fire Hydrant Management Software (FHMS), FHMS compliance, FHMS Inspection, Testing and Maintenance, or some combination) and/or at the time of ‘966 patent. Indeed, it is my opinion that the focus on large entities (government jurisdictions, insurers) and inspector focus of the systems of the time (and applicable art), and their lack of an owner focus, contributed very significantly to the chronic lack of compliance that existed up to that time. The technology and associated processes were very much skewed to supporting the large entities/inspectors, were proprietary (designed for jurisdiction employees and processes), and were still paper-intensive, with what was not being fragmented and standalone, and with little integration across the compliance stakeholders and associated Inspection, Testing, and Maintenance ecosystem—all issues that were specifically addressed by the ‘966 patent. **In particular such prior systems, and art, were *not* designed to facilitate collaboration across all stakeholders (jurisdiction/regulatory bodies, Inspectors, and Owners), focused instead on the jurisdictions and to some extent Inspectors (not the owners).** This is discussed in its own section.

70. Next, I provide a brief overview of the technologies associated with the utility industry (from which industry some of the art upon which the Petitioner's challenge depends). The overview of the utility industry technology is directed toward demonstrating how very different those systems (and art up to the time of the '966 patent) are from what is needed for life safety asset inspection and compliance, and by doing so demonstrate why a POSA would not be motivated to seek out utility-related system art (e.g. Chauhan) for obviousness invalidity purposes.

71. Lastly, I examine the differences in asset management systems. The Petitioner clearly attempts to portray all asset management systems as interchangeable. They are not: they are different with respect to a) the purpose of that asset management system, e.g. what it is used for, by whom, and why; b) what data is captured to support that purpose, and how it is captured. Further, the patent field is clearly narrower than "asset management systems," specifically claim 8 is about (emphasis added):

A computer-implemented method for using a **fire hydrant management software and a web-based registry to track requisite inspection of an owned asset...**

72. The Petitioner's prior art is mostly in the field of general asset management software, with their using marginal use cases to position it as more narrowly as including inspection and compliance and stretching their applicability

even further to include Fire Hydrant Management Software. As will be seen, a POSA would not seek out this general asset management software art when looking for art in the owned asset inspection tracking field, let alone the further, critical FHMS narrowing.

73. For the sake of efficiency, I am not repeating the Background of Technology elements in my original Patent Owner Preliminary Response declaration. However, those elements remain important, and are worth summarizing, particularly with respect to how they provide contrast between the '966 patent and the prior art. They include:

- *Number of Jurisdictions:* 67 jurisdictions are presumed by the Key patent, whereas the '966 inventors estimate that there were about 15,000 relevant jurisdictions for the '966 patent at the time of the provisional patent filing in the United States fire safety market alone. Besides indicating the vast difference in scale, from a technical standpoint it demonstrates the vastly different focus on the classes of user and their particular roles in the art. Sometimes a difference in degree is so large that it becomes a difference in kind, and that is the case here. The '966 focuses on enabling the owner role; Key focuses on enabling Jurisdictions, and to a lesser extent Insurers and Inspectors. Owners have little to no functionality provided to them by the art.

- *Type of Assets:* The ‘966 patent focuses on emergency-related life safety assets, whereas the prior art either focus on general assets (e.g. Key), or specific industries (Utilities for Chauhan, Wastewater systems for McKinney, and Construction for Sweeney). This is a critical difference, as it greatly increases the importance of “fresh” real-time data, so that emergency response personnel know quickly, and accurately and as up to date as possible, exactly what emergency/life safety assets they have to work with in responding to an emergency. In contrast, the Petitioner’s prior art, while including the ability to access data in real-time, say little, and provide no functionality about, addressing the criticality of how accurate and “fresh” the data is, nor do they provide capabilities to help in that regard. The numbers, while impossible to quantify precisely, widely vary accordingly.
- *Type/Scope of Inspectors/Inspections:* the ‘966 patent focuses on Fire/Emergency/Life Safety assets used primarily or solely for fire/emergency/life safety saving purposes. The Petitioners’ art, to the extent it addresses specific Inspector requirements at all, is very generic about their qualifications, capabilities, and focus.

74. Other technical contrasts are worth highlighting briefly, as they play a role in this Background. These include:

- Differences in system architecture, particularly their openness/accessibility to a wide variety of user classes (particularly owners), and more broadly the systems design for collaboration, which are very different than traditional designed-for-a-specific-stakeholder systems;
- Critical differences between Fire Hydrant Management Software asset management and inspection management systems and other types of asset management systems (e.g. the Petitioners' prior art). This is discussed more in the Claim Construction section and throughout this declaration, as there are numerous unique (or at least material different) characteristics of fire hydrant and related assets in contrast to general assets, even ones that have inspection and compliance elements.

A. The Life Safety Asset Inspection and Compliance Industry was Fragmented and Uncoordinated, with Poor Use of Technology, Resulting in Low Compliance Rates

75. At the time of the '966 filing date, a fair characterization of the industry would have the following terms: top-down (driven/pushed by jurisdictions, with little regard for other stakeholders as equal partners), fragmented (little-to-no coordination among the various parties involved within a jurisdiction, let alone across jurisdictions), and paper-based (limited technology use, with data mostly recorded in file cabinets in paper form).

76. Unsurprisingly, these problems resulted in very poor life safety compliance. Various studies and benchmarks conducted by the inventors of the '966 patent had metrics including the following:³

Compliance Attribute	Anacortes, WA Fire Dept.	Lynnwood, WA Fire Department	Marysville, WA Fire Department	Richland, WA Fire Dept.
Overall Compliance	Poor (30%)	Poor (32.75 %)	Very Poor (20%)	Very Poor (20%)
Systems w/ a Deficiency	Poor (27.5%)	Poor (12.5%)	Poor (50%)	Poor (25%)
Database Quality				
• # of known properties w/ at least 1 system	Fair (178)	Fair (609)	Poor (209)	Fair (501)
• # of known systems	Fair (321)	Fair (1465)	Fair (458)	(Fair) 854
# of Licensed contractors in Jurisdiction	Very Poor (15)	Poor (40)	Very Poor (25)	Very Poor (15)
# of Systems being Inspected	Low (150)	Fair (480)	Very Low (92)	Very Poor (171)
# of impaired systems	Fair (49)	Poor (183)	Very Poor (229)	Very Poor (214)
% accuracy of CURRENT contact list	Very Good (95%)	Poor (25%)	Very Poor (10%)	Poor (20%)
% of ITM service providers communicated with during a year	Poor (30%)	Very Poor (10%)	Poor (30%)	Very Poor (10%)
% of Property Owners communicated with during a year	Good (80%)	Very Poor (10%)	Poor (25%)	Very Poor (5%)

77. The above statistics (compiled in the form of case studies by the inventors and the respective fire departments) are consistent with other studies done by the inventors' competitors (many who are in the process of licensing the '966

³ Exhibit 2004—Lynnwood Case Study. Exhibit 2023. Anacortes, WA Fire Department Case Study. Exhibit 2024—Marysville, WA Fire Department Case Study, Exhibit 2025-Richland, WA Fire Department Case Study

patent) as well as independent agencies such as the Board of Fire Commissioners. Overall, these poor compliance statistics were enabled/cause by a variety of factors (addressed by the ‘966 patent), including:

- **Data Fragmentation and Lack of Visibility by All Key Stakeholders—**
Inspection and Compliance data were predominately on paper, in file cabinets. Those that were not were stored in standalone silo-ed systems. Further, there was ample opportunity for unqualified or even fraudulent inspectors being able to submit unqualified inspection reports due to lack of visibility. One fire marshal stated that that he would find unlicensed ‘fly by night’ or ‘trunk slammer’ contractors who would work in the city with a city business license, state license, or individual technicians license.⁴ Owners also were often unaware of compliance and inspection requirements, relying on Jurisdictions to inform them of inspections and issues.
- **Top-Down Processes—**Indeed, nearly all the processes associated with Inspection, Testing, and Compliance were driven from “the top,” e.g. Fire Marshall/Fire Department, or other Jurisdiction body. All the other participants, particularly Inspectors and especially Owners, assumed that they would be informed if there was an issue by the regulatory entity, and

⁴ EX2015, Moren Declaration, paragraph 142.

- would generally do nothing until if and when there were. **This heavily reactive process (combined with the data fragmentation) meant nothing would happen until the jurisdiction triggered it, which did not happen much, even most of the time in many cases.**
- **Lack of Collaborative Design and Associated Tools (Particularly Owner Tools)**—While of course some owners tried to avoid regulatory requirements, most (indeed, the vast majority) were relatively eager to comply. However, there were few tools available to owners to help them manage their own asset regulatory requirements, thus (combined with the top-down process) there was little-to-no incentive to improve compliance. **As will be seen, it was this lack of collaborative system and process design, and lack of tools, including notification and scheduling tools that enabled the owner to proactively and materially contribute to the compliance process, that was a core reason for failure of other systemic “solutions” to the industry’s problems, and associated extremely poor compliance.**

78. Much of the above was caused, enabled by, or aggravated by poor use of the inaccessible, non-collaborative and user-unfriendly technology by the participants.

B. The Use of Technology in the Life Safety Industry was Late in Adoption, Fragmented, and Myopic to Individual Stakeholders.

79. At the time of the '966 priority date (2007), business technology usage in general was far along in some respects, such as using client-server architectures, (stationary) computers, and enterprise-wide applications, along with (some) business use of the internet, and in other respects were in relatively early stage, particularly with respect to mobile technology (for example, that was the year the iPhone was introduced). Cloud services (extremely helpful in web-based applications) were just getting going (AWS was launched only in 2006). More generally, the Information Technologies used by business, while advanced in the use of networking and client-server computing, for example, for the most part still used it only for internal computing—not necessarily for end customers, and then primarily for rudimentary data collection and delivery purposes (obtaining customer information and delivering documents).

Prior Systems Attempting to Improve Compliance

80. However, at the time of the '966 patent in the Life Safety Inspection, Testing, and Compliance markets, the use of such technologies was more basic, to put it diplomatically.⁵ Fire Marshalls/Departments (charged with fire prevention) were generally under-staffed and/or very constrained in funds, as well as relying on the

⁵ See EX1001, 2:9-11; EX2015, Moren Declaration, paragraphs 113-114.

broader local government for key jurisdiction-wide IT-related expenditures.⁶ Many Fire Departments were funded by jurisdiction-level public safety-related funds, which generally went first to managing emergency calls and dispatching emergency resources. Other jurisdiction IT-related funds were generally for basic computer systems (e.g. payroll, HR, etc.). Further, effectively all of what systems existed were “closed,” meaning proprietary⁷, and accessible entirely or nearly so only by internal (to the entity) users, not outside users, e.g. customers.⁸ This meant not only could customers, such as owners, not use the applications that jurisdictions, inspectors, or insurers could, they could not see, let alone control and change, their own data in such systems. Paper forms had to be filled out, or at best web-based forms that were printed out and the data re-keyed into standalone, limited functionality systems.⁹ Nor were there any tools that owners could use to help them manage their life safety asset

⁶ See EX1001, 2:9-11; EX2015, Moren Declaration, paragraphs 156, 160.

⁷ In its Institution Decision, the Board not see the relevance of a “closed centralized architecture” to Claim 8 (particularly 8[b]). The prior art did not provide for collaboration of three stakeholders as in the ‘966 patent, and thus, they failed to solve the lack of compliance problem for fire hydrants. They were focused on and designed for the needs of one or two stakeholders, not all of the classes of users in the ‘966 patent. A POSA would understand that “adding” another class of user to such prior art systems, particularly for collaboration purposes, is almost impossible to do after the fact, as discussed in Section IV.C.

⁸ See EX1001, 2:9-11; EX2015, Moren Declaration, paragraphs 192-193.

⁹ EX2016, McNulty Declaration, paragraph 25; EX2017 Miller Declaration, paragraph 53.

compliance in coordination with any of the other stakeholders. **In short, none of the systems enabled any meaningful degree of collaboration between stakeholders: collaboration that was the key to increased compliance.**

81. In addition, while GIS (Geographical Information Systems) existed in 2007, using it required powerful computers and specialized knowledge, often scarce in such jurisdictions. Even more scarce were the large scale, specialized map data needed for key GIS-enabled applications, such as public/outside fire hydrant map data and inside-building private hydrant sprinkler data. Such layers required very significant—and different—efforts to collect, process, structure, store, and adapt GIS tools for such data to not only be viewable but also to be integrated with other data to provide key life safety functionality, such as the real-time providing to fire departments geographically-visible maps of working and non-working hydrant and sprinkler systems in a particular area of a building being consumed by fire.

82. Indeed, GIS systems—notably the data layers used, the operational layers they overlay, and what the combinations are used for—vary greatly across industries and associated use cases, and are **not** interchangeable between utility asset management and fire hydrant management. Not only are the data layers different, but the data they integrate with are also very different, and what they are used for are very different. Thus, utility GIS systems, with their utility-specific map data layers (such as electrical transmission networks) and integration with utility industry-specific

operational data (such as distribution substations and field crews responsible for a given area), for purposes of managing outages, are very different from life safety GIS systems, where fire hydrant asset network map data (public and private) must be integrated with building layouts (outside and inside), and with data about which systems are working (in compliance) or not, to assist fire hydrant departments in responding to fires and other emergencies. **Literally, the differences in utility GIS systems and life safety GIS systems could affect whether people live or die. Thus, such GIS systems are not interchangeable, and therefore a POSA would not look to a utility GIS system to use for life safety purposes.** This is discussed below.

Individual Stakeholder Systems

83. While there were software solutions looking to solve the lack of compliance of fire hydrants with applicable regulations and the associated issues, they were ineffective until the '966 and associated Tegriss system came to be. Those early solutions were aimed at helping one, at most two of the life safety stakeholders (compliance jurisdictions, inspectors, insurers, and owners), but not all of them, including the three in this matter (jurisdictions, inspectors, and owners). Some jurisdiction-focused systems would help various forms of reporting, but not compliance. Inspectors had their own systems, as did insurers. Even some property owners could use excel-type spreadsheets to track various asset types, but they

generally would not be dedicated to life safety, and certainly had very limited ability to be integrated with other systems.

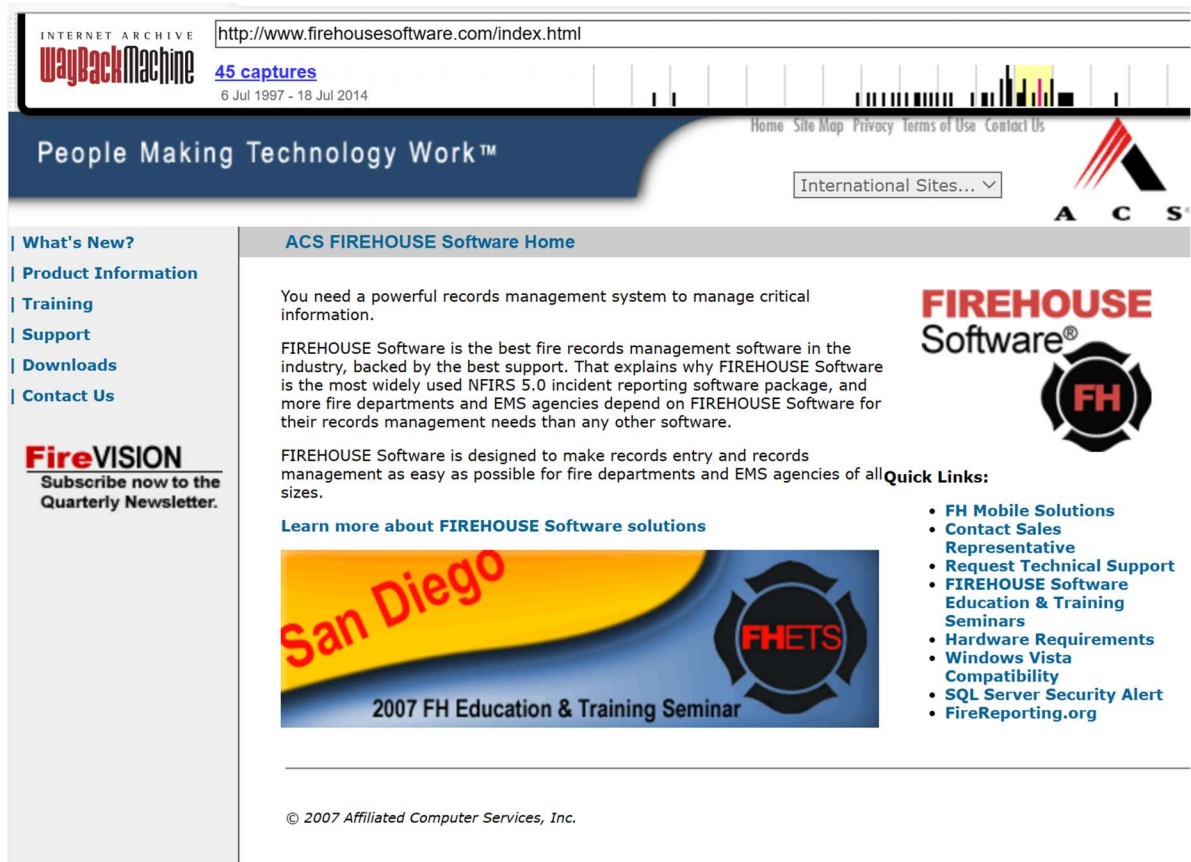
84. More broadly, as the ‘966 patent and associated real-life systems demonstrated, compliance in the life safety industry required equal, collaborative participation from the property owner, inspector, and fire department. To do otherwise invited—and resulted in—failure. And achieving this collaboration was very hard to achieve, as it turns out, as demonstrated by the consistently low, barely-budging compliance rates, requiring the novelty of the ‘966 patent in to overcome or avoid deficiencies in other systems focused only one or two specific stakeholders.

85. For example, there were efforts to upgrade fire departments systems focused on enforcing the requirement for periodic ITM (inspection testing maintenance), but primarily in the area of record keeping and sending notices.¹⁰ This was primarily done (poorly) with an understaffed crew in the prevention department through site visits and mailed letters to owners.¹¹ Some better-funded departments would use a data entry software platform (like *Firehouse*, see below) to manually input compliance-related data and use better records management to present the information in useful ways to fire compliance personnel.¹²

¹⁰ See EX1001, 1:59-3:4.

¹¹ *Id.*; EX2015 Moren Declaration, paragraph 191.

¹² Exhibit 2027--Welcome to ACS Firehouse Solutions—Website Aug 23, 2007.



86. These fire department-centric solutions required significant resources to collect, input, and maintain the information. However, even with enough resources to input data, the database was incomplete without property owners getting their inspections done, and inspection contractors submitting the reports to the department.¹³ Hence, these fire department-focused solutions did little or nothing to improve compliance.¹⁴ Also, Inspection Contractors and Property owners **did not**

¹³ See EX1001, 2:13-64.

¹⁴ *Id*; see also EX2015 Moren Declaration, paragraph 191.

have access to input, review, or edit information in these fire department systems, so all the work was borne by limited departmental resources.

87. In attempts to improve compliance from an Inspector perspective, the Inspection Contractors at the time of the '966 patent had Inspector-centric programs to help step through/manage the inspection process.¹⁵ These programs would enable the inspector to move through a checklist of required inspection points, take pictures, identify deficiencies, etc., then create a custom report. Optional functions helped prepare an email that they could send to the fire department and/or property owner, or even include a function to facilitate an invoice to the property owner.

88. However, usually inspection reporting and invoicing were manual processes handled outside the software.¹⁶ **But since the fire department did not (or could not because of poor/paper recordkeeping and limited resources) enforce the collection of reports, there was insufficient reason for inspection contractors (or property owners) to submit their report to the city/regulatory entity.**¹⁷ Often owners' viewpoints were along the lines of nothing good could come from making yourself known to the fire department, especially if you had a deficiency. Owners would thus possibly (e.g. likely) be angry at their inspection

¹⁵ EX2016, McNulty Declaration, paragraph 25.

¹⁶ EX1001, 2:9-13.

¹⁷ EX2015, Moren Declaration, paragraphs 199-205.

contractor for “turning them in,” so such inspectors were torn between keeping the customer (the owner) or adhering to compliance reporting requirements (that could result in major \$ outlays by the owner), when there was a good chance, the reports would not even be looked at. Again, the other stakeholders, particularly owners, did not have access to these inspector-focused software programs, nor did the inspectors have electronic links to the jurisdictions in most cases, and even then they were minimal (e.g. email).

89. In the meantime, Property Owners, if they used any technology at all (which was rare at the time, particularly for small owners), used general asset management or accounting software, perhaps (manually) combining with scheduling application functionality or even embedded notes to remind them when inspections were needed and who were the last vendors they used. When receiving an inspection report from an inspector, more sophisticated owners might scan in or store PDF versions of the completed report. **But without enforcement from the fire department, building owners would ignore the compliance requirements until notified.** And if they did have an inspection report most owners had it stored in a file cabinet.¹⁸

¹⁸ Andrew Moren interviews/discussions

90. Occasionally, an insurance carrier would offer improved premiums if the owner provided them with recent reports, proving that the building was still protected.¹⁹ **But overall, the only way inspectors or fire departments could access property owner information was by physically going on-site and looking at the last inspection tag (if there was one). There were no collaborative tools for the owner to proactively assist this kind of verification, nor more broadly in any of the compliance Inspection, Testing, and Maintenance processes. Instead, the owner would wait (sometimes indefinitely) for jurisdictions to contact them and dictate compliance/inspection requirements, and even then the owners would have no access to the systems and processes used by the jurisdictions and inspectors.**²⁰

91. While insurers are not formally part of the claims in this matter²¹, it is worth noting that insurance systems at the time of the '966 patent were also focused on the needs of the insurer and had very limited interfaces to outside parties. Thus, issuers also had “closed” systems that by design were intended for internal (to the company/industry) usage only.²²

¹⁹ EX2015, Moren Declaration, paragraphs 91, 117.

²⁰ *Id.* at ¶ 113.

²¹ *Id.* at ¶ 31.

²²

92. Thus, up to the time of the '966 patent and associated real-life systems, there were no integrated, collaborative systems that could bring all stakeholders together in a proactive compliance effort.²³ Each one primarily focused on the individual stakeholder's collection and management of their own information. **None of these systems created a collaborative platform where each stakeholder was enabled by design and tools to add to the collective record and/or keep it current.** This was especially difficult (or impossible) to do without a 3rd party software platform that could protect sensitive information from each stakeholder while also enabling collaboration. Each stakeholder needed to personalize the data to make it useful to their business and operational requirements, but that did not mean they wanted to share *all* their data with other stakeholders—only what was needed to show compliance and to support the other stakeholders in their own compliance-related processes.

93. Further, one of the biggest issues that Life Safety-related entities had in 2007 (particularly government-related ones) was the lack of integration of IT systems, also known as system (and associated processes) fragmentation. If done at all, the various prior system would be integrated internal to the jurisdiction, e.g. within a

²³EX1001, 1:59-2:33; EX2015, Moren Declaration, paragraph 191.

department or sub-set of departments (such as administrative functions).²⁴ Practically speaking there was little-to-no integration with external entities such as owners, outside (perhaps) limited emails.

94. As a result of the above, compliance and related activities were in total top-down, paper-intensive, fragmented with respect to processes and data management, poorly coordinated among stakeholders, with owners only able to react to directives from the jurisdictions, not being able proactively participate in the compliance process.²⁵ Unsurprisingly, compliance rates were low, often very low, with the various attempts described above to improve technology usage unsuccessful.²⁶

The '966 Patent Solution

95. As Mr. Moren put it in his declaration, “the ‘966 patent solves several industry problems by tracking each asset and prompting collaboration from each stakeholder when needed.”²⁷ Core to this was the need for various tools to facilitate easy cross-stakeholder communications, such as timely, automated notifications. Such timely automated notifications and related tools are surprisingly hard to

²⁴ EX1001, 2:1-33, 2:64-3:4.

²⁵ *Id.*; see also EX2015, Moren Declaration, paragraphs 111, 155, and 191.

²⁶ *Id.*

²⁷ EX2015, Moren Declaration, paragraph 109.

implement if not designed from the start to facilitate cross-stakeholder communications, which the '966 patent and associated systems did. Further, as described earlier in the Claim Construction section, such notices, being part of what the '966 patent refers to as “notification events,” were in practicality sophisticated systems in themselves, and not obvious in the art at the time. Rather, systems like Key relied on passive information (tasks in to-do lists) that were not the active, specific, “notification events” of the '966 patent.

96. For example, by helping the fire departments send notification letters to owners (as the responsible party), legal pressure was applied and instructions given, with tools (such as finding qualified and in-proximity inspectors) to follow those instructions. Legal pressure without guidance and support was ineffective, even counterproductive. That enforcement would also enable more inspectors doing more inspections. By giving the inspectors a 3rd party, easy-to-use interface to submit reports, the fire department would now have a collaborative database being constantly and organically populated and updated by someone other than themselves. More so, when a deficiency was discovered, the platform would automatically notify the owner to fix it. Deficiency tracking, while an essential part of Life Safety processes, had always been done manually, never automatically. Similarly, automatically setting the next due date so the process would be cyclical

and ongoing, not a one-off process to be redone from scratch again and again, had also never been done before.

97. Such scheduling and associated notifications (discussed more shortly) would also be enabled in the form of a collaborative effort; instead of a static anniversary date set on a calendar, it would be determined more analytically by the type of system it was and based on information from the last compliance cycle, including when last approved. In stark contrast, previous solutions had been built around a single calendar event or function, such as collecting data for and building a report, which at best helped complete an individual compliance activity, not facilitate ongoing compliance via automatically resetting the cycle and building upon past compliance activities. Further, proactive notifications—the most effective way to respond to notification events—to owners about upcoming needed inspections or related events (e.g. repairs) gave owners not only the lead time to prepare as needed, the ability for the owner to selection inspectors and coordinate those inspections to accommodate the needs of the owner (and the inspector) resulted in inspectors and owners to “get-on-the-same-page” (e.g. collaborate) *much* more effectively than had been done historically, resulting in *dramatic* improvements in

compliance rates.²⁸ Such collaborative capabilities via collaborative information systems design needed a very different approach to how interactions with and between all parties, particularly owners, were designed into the software, in contrast to how traditional systems (like the Petitioners' prior art) were designed.

98. The effect of the '966 innovations were nothing short of monumental, resulting in **major** improvements to compliance rates and related metrics, as seen below²⁹:

Compliance Attribute	Anacortes, WA Fire Dept.	Lynnwood, WA Fire Department	Marysville, WA Fire Department	Richland, WA Fire Dept.
Overall Compliance	30% → 64%	32.75% → 69%	20% → 80.2%	20% → 76%
Systems w/ a Deficiency	27.5% → 39%	12.5% → 2.58%	50% → 13.78%	25% → 7.1%

²⁸ Andrew Moren interviews/discussions; EX2042 – BENEFITS OF PROACTIVE COMPLIANCE PROGRAM.pdf; EX2043 – 10 Ways To Improve Fire and Life Safety Inspections.pdf, <https://inspecttrack.com/software/fire-and-life-safety-inspection-software/>

²⁹ From baseline pre-innovation system installation and post-installation impact one (1) year later.

Database Quality				
• # of known properties w/ at least 1 system;	178 → 172 ³⁰	609 → 867 ³²	209 → 298	501 → 469 ³³
• # of known systems	321 → 367 ³¹	1465 → 1741	458 → 595	854 → 1083
# of Licensed contractors in Jurisdiction	15 → 97	40 → 99	25 → 133	15 → 45
# of Systems being Inspected	150 → 366	480 → 1201	92 → 477	171 → 823
# of impaired systems	49 → 66 ³⁴	183 → 45 ³⁵	229 → 82	214 → 77
ITM Revenue in market	N/A	N/A	\$27.5K→115.7K	N/A
% accuracy of CURRENT contact list	95% → 100%	25% → 100%	10% → 100%	20% → 100%
% of ITM service providers communicated with during a year	30% → 100%	10% → 100%	30% → 100%	10% → 100%
% of Property Owners communicated with during a year	80% → 100%	10% → 100%	25% → 100%	5% → 100%
Departmental Efficiency				
• FTE Hours dedicated to	780 hrs→130 hrs	Not Available	1352 hrs→520 hrs	780 hrs→322.4 hrs

³⁰ The existing database had duplicate building addresses. Other buildings had been demolished but had still been in database.

³¹ An up-to-date database of all fire safety systems was maintained in the city, but additional 13% were located by service contractors in the first year. Note: some buildings were found to have more than one safety system, contributing to the increase (applicable to all jurisdiction stats).

³² The additional properties were discovered to have systems that had previously been unknown and thus not inspected.

³³ Department discovered 30+ properties in their database that were actually outside their jurisdiction.

³⁴ This number increased due to the increase in the number of known systems, the number of systems being inspected, and the number of licensed inspectors improving the impaired systems detection rate in this particular jurisdiction.

³⁵ Over 130 impaired systems were identified and repaired.

ITM Compliance • \$\$ dedicated to ITM activities	\$31.5K→\$5.25K	Not Available	\$59K → \$21K	\$32.3K→\$14.6K
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99. The above demonstrate some startling results from the ‘966 innovations. First and foremost are the overall compliance rates: **at least doubling and even quadrupling compliance, and in a short period of time.**

100. Other, underlying, metrics speak to why compliance jumped. **Data quality dramatically increased**, with “bad” buildings (destroyed, out of jurisdiction) removed from roles, and buildings found and/or with more than one system identified and corrected.

101. **Inspection volumes and quality also dramatically increased**, adding more qualified inspectors to the jurisdiction’s ITM “ecosystem,” and in the process greatly increasing the number of systems being inspected, and in turn the number of deficiencies repaired.

102. **Communications across all parties greatly improved as well.** Starting with a much-improved contact list, ITM service providers and property owners saw communications jump 10 times or even 20 times.

103. Finally, these improvements not only did not require an increase in manpower and budget in jurisdictions’ ITM administration: **work hours and associated costs were actually cut in half.**

104. **In my professional experience such major jumps in productivity and market effectiveness from a new platform introduction are extremely rare**, and this rarity speaks to the innovation of the ‘966 patent and the associated system in the market that achieved these improvements, particularly given the known issues it addressed, and the previous failed systems’ attempts to rectify them. More on this in the various Grounds and the Secondary Considerations section.

C. The Design of Collaboration-Enabling System (CES) Software is Very Different than Hierarchical Proprietary Software.

105. As described above, the ‘966 patent was very collaborative in nature, and the benefits realized from the collaboration enabled between Owner, Jurisdiction, and Inspectors was not only very tangible, its impact was immense, resulting in 2x to 4x **multiplies** in improvements in compliance rates. It is worth examining in more detail how the ‘966 patent was indeed a collaboration system, why the prior art (and previous system attempts to improve compliance) are/were not, and why the difference is material to this matter.

106. First and foremost, the ‘966 system/software meets the definition of a Collaboration System (emphasis added):

Collaboration systems:

The main objectives of collaboration systems are to facilitate communication and teamwork among the

members of an organization and across organizations.

One type of collaboration system, known as a **workflow system, is used to route relevant documents** automatically to all appropriate individuals for their contributions.

Development, pricing, and approval of a commercial insurance policy is a process that can benefit from such a system. **Another category of collaboration systems allows different individuals to work simultaneously on a shared project.** Known as groupware, such systems accomplish this by **allowing controlled shared access,** often over an intranet, to the work objects, such as business proposals, new designs, or digital products in progress. The collaborators can be located anywhere in the world, and, in some multinational companies, work on a project continues 24 hours a day...

Other types of collaboration systems include enhanced e-mail and videoconferencing systems... Yet another type of collaboration software, known as wiki, **enables multiple participants to add and edit content...** In the

open innovation initiative, **members of the public, as well as existing and potential customers, can be drawn in, if desired, to enable the cocreation of new products or projection of future outcomes.**³⁶

107. The ‘966 patent and associated products meet several of the definitions/examples described above. First, they are designed to facilitate *communications and teamwork across organizations* (fire departments, inspectors/inspector companies, and asset owners). Second, the Life Safety/FHMS Inspection, Testing and Maintenance compliance process is very much an example of a *workflow system*, where the inspection, need for repair, actual repair, and (if needed) re-inspection work steps having to be done in a certain order as well as having the steps dependent upon the work/outcome of the previous steps.

108. Further, all the participants in the system must have **access to the system, including the ability to add and edit content**. Finally, “members of the public” (e.g. owners, also serving in the role of existing and potential customers for inspection and/or repair services) are all heavily involved, with ***all*** the stakeholders (jurisdictions, inspectors, and owners) focused on, and contributing to, a common

³⁶ EX2027, <https://www.britannica.com/topic/information-system/Operational-support-and-enterprise-systems>

objective: being in compliance with life safety regulations, particularly for fire hydrants and related assets.

109. In contrast, most of the prior art (including Key) are not collaborative systems, or at a minimum not collaborative systems involving the owner. At best the art, such as Key, “facilitates efficiencies” across organizations by having the same interface across jurisdictions. But there is no coordination/collaboration *between* jurisdictions; the standard interface is merely a way of simplifying the system’s use for multiple jurisdictions, while still allowing some flexibility for different individual jurisdiction’s ways of operating.

110. Also as described earlier, previous attempts to improve compliance with non-collaborative software were not successful. Therefore, in my opinion (and in the opinions of numerous life safety jurisdictions and ‘966 customers), a—indeed the—major reason for the success of the ‘966-driven innovation was the collaboration the related software enabled. **Not only were the prior attempts to address the industry’s compliance problem lacking in collaboration capabilities, so are the prior art systems/references asserted by the Petitioner.**

111. Petitioners via Mr. MacInnes assert that the claimed invention is a combination of familiar elements that is thus the result of common sense, and not innovation. (EX1003, ¶23). To demonstrate the fallacy of this assertion, it is worth examining the characteristics of collaboration system software in more detail. Such

collaboration does not occur “naturally” in software design; it has to be very specifically designed that way, particularly in treating all stakeholders as equally important users of the software, including access to and editing of all critical data. Further, any prior art, like Key, that was not specifically designed to enable this collaboration, would not be readily modifiable to create such capabilities, nor would a POSA look to seek it out to replicate such collaborative capabilities—indeed, non-collaborative systems actually teach *away* from stakeholder collaboration, rather than simply omitting it, as non-collaborative systems are specifically designed for the benefit of one (or at least a subset of) stakeholder, often at the expense of other stakeholders or at least not particularly focusing on their needs.

112. To better understand the above assertions, it is important to understand at a more detailed level how collaborative software differs from “traditional” software that is intended to fulfill the requirements of only one or two stakeholders, while only addressing the requirements associated other participants (like owners) if they are relevant to the needs of the stakeholders (e.g. Jursidictions, Inspectors) for which the system is being designed. These differing dimensions include the following:

<i>Software Dimensions</i>	Collaborative Life Safety-Type Systems	Traditional Life Safety System Software
<i>Power/Control of Functionality and Design</i>	Approximately Equal Across Stakeholders	Proprietary/Main Stakeholder (Primary stakeholder)

<i>Access to Data</i>	Relatively Equal Access by all stakeholders	Access as allowed by primary stakeholder
<i>Processes</i>	Multiple Processes; at least one major one initiatable by and focused on each stakeholder	Top-Down, e.g. driven by primary stakeholder (usually jurisdiction)
<i>Architecture</i>	Open	Closed/Proprietary ³⁷
<i>Editing/Augmenting</i>	All Stakeholders	Primary Stakeholder
<i>Synchronization of Data, Process inputs and outputs</i>	Real time input and access; fresh data; same data available to all stakeholders simultaneously	Tied to timing needs of primary stakeholder. For example, updates from non-primary stakeholder are updated at the primary stakeholder's leisure
<i>Collaboration Tools</i>	Many, for all stakeholders (particularly for stakeholders typically ignored by traditional systems)	Typically only within one stakeholder type or a portion of stakeholders
<i>Analytical Tools</i>	Look to identify cross-stakeholder opportunities for improvement, in this case compliance improvement	Looks to identify primary stakeholder opportunities for improvement, even if at cross purposes of non-primary stakeholders
<i>Scheduling/Calendar</i>	Ideally integrated, Open scheduling; alternatively, ability for one stakeholder to view	One stakeholder drives schedule of activities (consistent with top-down process control).

³⁷ The various dimensions and differences between Open and Closed architectures are discussed at length in my first declaration submitted to the Board. In short though non-collaborative systems are specifically focused on the primary stakeholder—their access, ability to edit, functionality, and overall requirements—typically resulting in a system “open” only to that stakeholder, and closed to all others.

	and/or modify another's schedule	Little to no flexibility available to other stakeholders
<i>Notifications and Alerts</i>	Proactive notifications are core design element to maximize all stakeholder awareness of upcoming events. Includes various ways of and flexibility associated with reminders and other messages about tasks and to-dos. Notifications and Alerts, particularly action/task-related ones, are immediately relevant in the associated header of the message, as well as the body of the message.	Notifications are "directive" and "reactive," in nature, e.g. sent out by one stakeholder (e.g. jurisdiction), directing owner to do an action by a certain date, and receiving stakeholder (e.g. owner) has to react to that directive. Notifications and Alerts, particularly action/task-related ones, are immediately relevant in the associated header of the message, as well as the body of the message.

113. The '966 patent in nearly all respects reflects the design tenets of the collaborative software list above (second column), as opposed to the prior art the traditional list. The bolded dimensions on the left deal with issues of direct relevance to '966 claim 8, and will be discussed more accordingly later. However, it is worthwhile to examine the Notifications and Alerts row in more detail.

114. Notifications, Alerts, and Reminders (“Notifications”) are, in many fields such as location-related services, a major sub-field or discipline area in its own right. Notifications do not “just happen,” nor do alerts or reminders.³⁸

115. All types of notifications et. al. have various systems and processes that they rely on, as well as key characteristics, including:

- *Purpose*: What are they being used for, and particularly what type of information is being conveyed—General information, specific information, background information? Are tasks or to-dos being communicated? Have some version(s) of the information (or tasks) been sent before, and have the details change? Or is it just being re-sent (a “true” reminder)?
- *Completeness and Urgency of Notifications*: Notifications, particularly those with tasks that are needed to be performed and/or ones that have an immediacy and/or urgency about them, are expected to be complete and self-contained.

In other words, there should not be other steps, such as having to log into other systems, that must be performed before the recipient finds out about the task

³⁸ There are different frameworks for characterizing the differences between notifications and alerts, but for this matter a good way of doing so is viewing notifications as used for non-urgent communication and providing informational updates, while alerts are used for urgent communication and convey critical information that requires immediate action or attention. A Reminder is a kind of hybrid of the two—informational and requiring attention soon but not necessarily immediately. But for this declaration unless otherwise specified the term “Notifications” applies to all three.

or action that needs to be taken. Further, the task/actions should be communicated in the header of the message (so it will not be ignored), and fully explained in the body of the message, so there is no ambiguity about the tasks or actions to be done, nor a delay, nor a dependency on any other system having to be functional before the recipient can find out the task or action to be taken. Note: this characteristic is common to both collaborative and non-collaborative systems. In collaborative systems this becomes even more important, as the work tasks involved by the recipient (e.g. the Owner) often are intertwined with other stakeholders (e.g. the Inspectors), and the prompt completion of the task impacting the efficiency of all involved (e.g. successfully being compliant).

Further, while all notifications are not (nor do they need to be) urgent, as selecting urgent notification in an email, they do have an expectation of being delivered and read in a reasonable (e.g. reasonably short) amount of time. Thus, generating notifications automatically upon a notification event occurring, and delivering via a channel, and in a way/format, that facilitates reasonably fast delivery and reading of the contained notice, is a core requirement of collaborative systems. Further, since there are very often work dependencies involved in collaborative systems, such as notifying an owner of the need for an inspection, the owner coordinating with the inspector for

the inspection, and the inspector and/or owner notifying the jurisdiction of the completed inspection, having part of that process to be passive, e.g. have no built in timing, urgency, or reasonably short expectation of completion, goes against the core functionality of collaborative systems. More practically, not facilitating timely responses through automated, active notifications in response to notification events increases the likelihood of a breakdown in communications between the stakeholders, reduced efficiency of execution of interrelated work tasks, and even “dropping the ball” by one or more stakeholders---any and all resulting in reduction in compliance and associated very low compliance rates.

- *Scheduling:* As noted above in the Background of Technology section, scheduling, particularly for inspections, can play an important part of a notification. A “dictated” schedule notification, e.g. Inspector X is coming to your business at 9am Tuesday May 8th, may or may not be automatically linked to the recipient’s scheduling system (e.g. click to accept the meeting). However, in a much more collaborative system, where the Owner for example can select his/her own inspector and/or request their own inspection schedule, the underlying scheduling systems for all the involved stakeholders have to be linked in some form (to avoid the dreaded “can you meet on Tuesday at

10am instead....No, how about Wednesday at 11...No, how about Thursday...).

- *Timing/Urgency*: While some notifications can be decoupled from timing, the vast majority of them do not, particularly in a business context. A simple urgent indicator gives a sense of importance and need-to-complete without being specific; but the more specificity the better, especially if there is an associated scheduling that needs to be done.
- *User Interface(s)*: Not everyone uses email, uses it all the time, or uses it only for certain types of correspondence. Traditional notification systems tend to not care: they use the channel they want, and everybody else better too. But there are other communications channels: phone, text, DM/IM, even postal mail. Communications can be improved (and compliance as well) if the notifications are being sent via the channel most likely to actually be used by the recipient. This can get even more complex with respect to the timing of the notification. Owners, particularly part-time ones, or ones with multiple properties/buildings, may have different user interfaces depending on time of day and/or the location/property that they are at any given time. Indeed, they may have different emails etc. depending on various dimensions. The best or even feasible ways of managing such channel possibilities and choices in one domain does not make it “obvious” how to manage them in another domain.

116. More broadly, the above dimensions and differences are in stark contrast to the supposedly important system dimensions the Petitioner used to argue similarities between the '966 patent and the prior art, including the below (emphasis added by Petitioner in its original declaration):

“Key discloses a “hardware architecture” (similar to Figure 2 of the '966 patent). **Client computers 305** “run web browsing applications that retrieve and display the [JOM's] web pages” which are “retrieve[d] ... over a global computer network 199 such as the Internet” by “mak[ing] a request over Internet 199 to a **web server 320**,” which are “operative to implement the front-end software” to “display information to users operating a web browser” and “provide notifications in a known manner usually via email.” EX1005, [0065]-[0067]. **Application servers 330**, coupled to **web servers 320** and **database servers 340**, are “operative to implement the application software” which “contains the logic that is used to determine which web pages are presented to the user and how respond to user's actions,” “contains the necessary logic to process the user's transaction and provide the

associated updates and any notifications,” and are described “in greater detail” in Figure 4. EX1005, [0068].

Database servers 340 are “operative to store and retrieve information from a **database 350.**” EX1005, [0069].”

117. In other words, the Petitioner asserts that what is important in comparing the ‘966 and the prior art is the physical architecture, e.g. client server, types of servers, centralized databases, and so forth, versus the real core differences between the prior art systems and the system explicitly claimed: collaboration-enabling for all stakeholders, versus just fulfilling the narrow requirements of one or two of the stakeholders through traditional software design approaches. **The ‘966 patent claimed invention and associated real-life systems are designed for collaboration across all stakeholders, while the prior art (particularly Key) were not.**

D. The Data and Systems Used in (Supposedly) Related Industries and Fields Asserted by The Petitioner were in Fact Very Different than Those in Life Safety Fire Hydrant Management Software (FHMS).

118. While the claims are about Life Safety Asset Management—particularly Fire Hydrant Management Software—and their associated inspection-related processes, Petitioners submit as part of their challenge a utility-industry focused, Geographical Information System (GIS) (Chauhan) for its alleged disclosure of the

Fire Hydrant Management System portions of claim 8. Even using the Board’s preliminary construction in its Institution Decision that FHMS is “management software that processes information about fire hydrant assets,” Chauhan does not disclose what a POSA would be looking for in “management software that processes information about fire hydrant assets.” Specifically, Chauhan’s utility focus, combined with its vague, ill-defined reference to a “hydrant” theme user interface, particularly in a GIS system context, would not lead a POSA to seek out the utility-centric Chauhan for a Life Safety asset management software as claimed. This section, as well as later discussions specifically on Motivation to Combine in the Lack of Motivation to Combine or Reasonable Expectation of Success section, discuss why.

119. The core of Chauhan’s functionality, architecture, design, and usage is a Geographic Information System. Its usefulness (or not) in disclosing a particular limitation as alleged, particularly a platform-defining limitation of Fire Hydrant Management System cannot be divorced from its GIS capabilities. Thus, I examine its GIS software capabilities in this section, breaking them down into 3 core components, then analyzing if, and if so how, those components disclose (or not) “management software that processes information about fire hydrant assets³⁹.” In my opinion, Chauhan does not a) disclose sufficiently comprehensive and complete

³⁹ See Paper 9, p. 22; however, in my opinion, FHMS should be construed as proposed in Section V.B.

information about fire hydrants to constitute FHMS as recited claimed claim 8 preamble and steps [a], [b], [d], and [f]; and b) the “feeder” data from utility-specific systems would be little-to-no use in providing/enhancing “information about fire hydrant assets.” Further, c) the functionality that would be enabled by combining a) and b) in a GIS platform would be near useless in how the “information about fire hydrant assets” would be used by its main user—fire departments—in its core function—ensuring complete and accurate information about all fire hydrants and related assets. While the claim does not recite “the functionality” of fire hydrant assets themselves, it expressly recites several limitations that are specific to the inspection and management of fire hydrant and related life safety assets. Therefore, deficiencies in Chauhan’s disclosure of “information about fire hydrant assets” inhibit the key functions that fire hydrant management software as claimed is intended to enable, firefighting in particular. For example, Chauhan does not even collect, much less combine all the “information about fire hydrant assets” that a fire department compliance department would need to collect and inspect, nor would it provide the data, in a useful form, that a fire fighter would need to best fight a fire using that system. In addition, Chauhan only addresses public assets and many fire hydrants and related life safety systems are privately owned. With such deficiencies, a POSA would not be motivated to select Chauhan for the problem solved by the ‘966 patent, nor would there be a reasonable expectation of success.

120. Chahuan's Abstract describes the following (emphasis added):

An automated management system for managing data, **outage repair, load switching, job workflow and crew dispatching, crew workflow, installation, maintenance and restoration of utility services by integrating geographic information systems (GIS) data with many other data sources so as to gather, transform, manipulate, analyze, and produce desired information for continuously supplying utility and relevant services. The data sources include customer information systems (CIS) and billing data, interactive voice recognition (IVR) call management data, supervisory control and data acquisition (SCADA), mobile crew management (MCM) data, automatic meter reading (AMR) data, automated vehicle location (AVL) data, engineering analysis data supported by 3rd party software packages (such as load monitoring and balancing), etc. In particular, **the system allows an on-site engineer to retrieve data** (ex. field maps, work orders, codes) **or enter, via a portable device,****

inspection data (ex. such as poles or underground facilities, code violations).

(EX1016, Abstract, emphasis added.)

121. The Petitioners argue that Chauhan discloses an automated management system for managing data by integrating GIS data and refers to Chauhan's a brief, vague, and undefined HYDRANT themed user interface as managing information regarding fire hydrant inspections. (Paper 1, pp. 14-15.) However, Petitioners ignore the inconsistent details about the Chauhan's GIS capability that any such fire hydrant management would be integrated with, which are in stark contrast to how fire hydrants and related information would be integrated into and used into a Fire Hydrant GIS system, as shown in '966 patent Figs. 4A and 4B, and the three core dimensions of such a GIS system:

- The nature of the GIS-specific map data
- The utility systems and data they will be coupled with, and
- How their combination would be used,

122. As discussed in Section VI.D above, all of these dimensions in the Chauhan patent are *very* different from how a Life Safety/FHMS asset management system would use a GIS capability. And asserting that the Utility GIS system would be "obviously" combinable with other art to create an overall Life Safety/FHMS asset management capability is based on faulty logic and ignorance about what a

GIS system is and is used for; A POSA would not only *not* ignore these major differences but would further actively *exclude* the art based on those differences. .

123. What would be the specific GIS-related differences of concern to a POSA in considering whether a GIS patent could work for life safety/FHMS? There are three major dimensions that distinguish if and how a GIS system could work with other art:

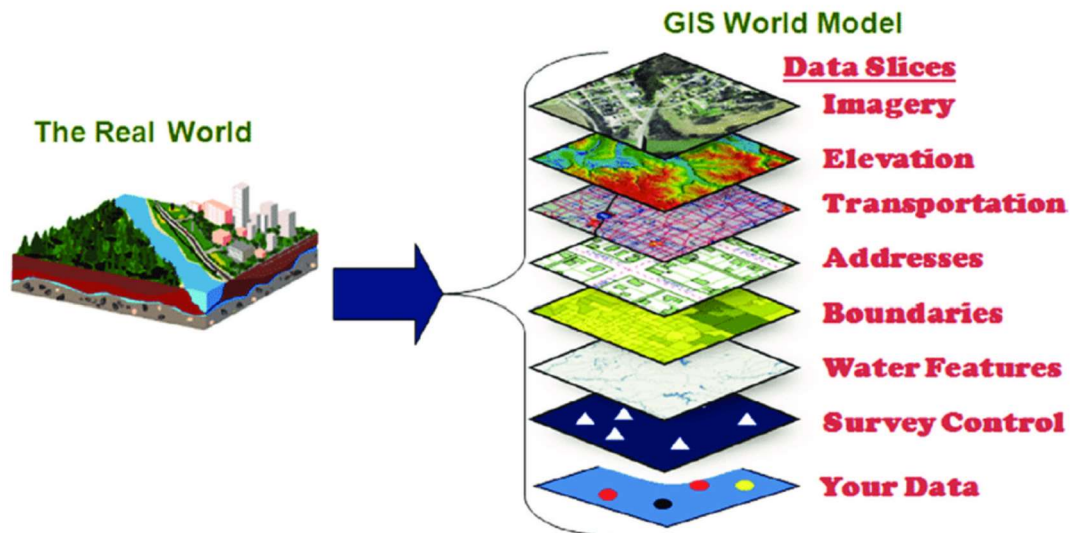
- 1) The type of (and specifics) of the GIS data overlay that is being used;
- 2) The systems and data on which the GIS overlay is being applied; and
- 3) How the combined data would be used, e.g. its functionality.

124. **These dimensions are very different between Chauhan Utilities-centric GIS system and the ‘966 patent’s FHMS system.**

GIS Overlay

125. First, it is important—indeed critical—to understand how GIS systems work, as relevant to this matter. At their core is map data: the electronic representation of physical world elements. This can capture almost anything and everything in our world, and are organized into “layers”: not just the streets, roads, and buildings most people are aware of in their navigation applications, but many others that can capture certain attributes of everything you see, and many things you cannot see: Weather, Terrain, Environmental, and other information types--all have their own data sets that

GIS programs use to overlay other data to provide geographical-related information, illustrated by the below.⁴⁰

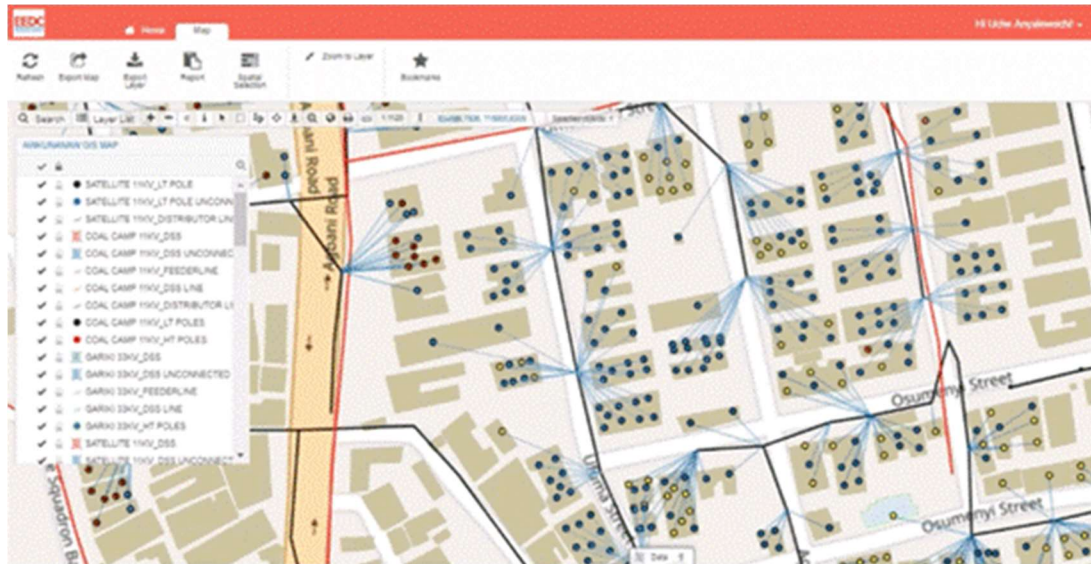


Example of geographical information system (GIS) mapping in environmental studies. Photo adapted from <https://technofaq.org/posts/2017/07/thoughts-on-the-future-of-gis-what-will-change-in-50-years/> [6].

126. There are literally hundreds of thousands, even *millions* of data layers possible to use in any GIS system, many of them highly specialized. One such specialized system is the electric utility GIS system below, incorporating numerous, highly specialized data layers (partially seen in list on left side, highly specific to that particular utility and area).⁴¹

⁴⁰ EX2028 - https://www.researchgate.net/figure/Example-of-geographical-information-system-GIS-mapping-in-environmental-studies-Photo_fig1_330567969

⁴¹ EX2029 - GIS electric utility map data layers - Search Images.pdf2



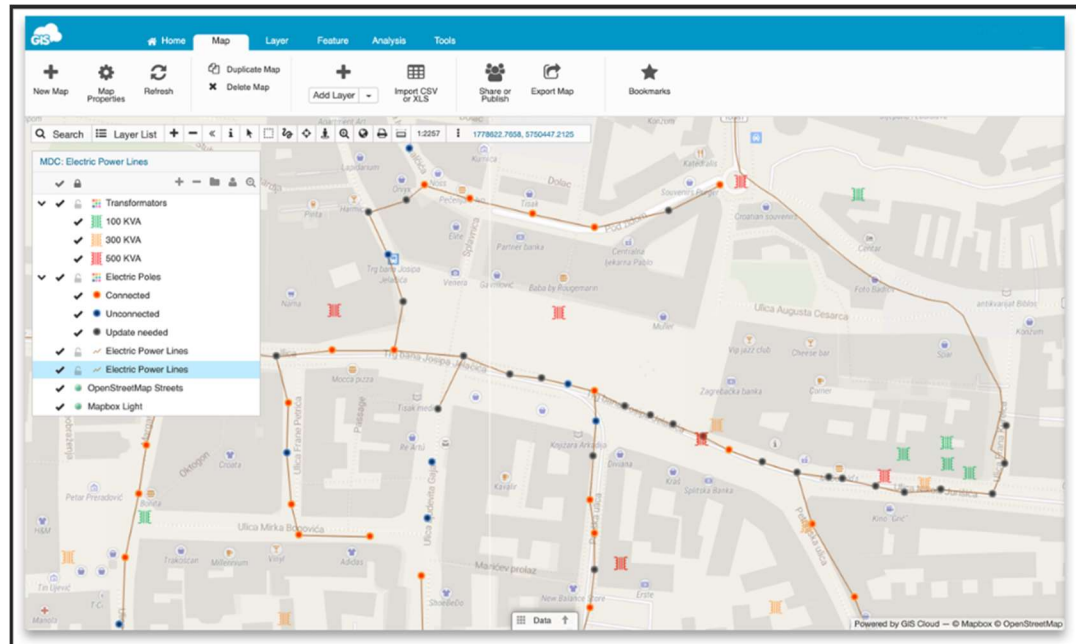
127. Indeed, data/data layers that could be used by utilities very significantly differ by type of utility: electric vs. gas vs. water vs. sewer. For example, instead of the various types of poles, substations, and feeder lines like in the above, gas, water, and even sewer would be very different, starting with underground lines, distribution nodes, sewer lift stations, etc., and all of these would be very different from what a fire department—compliance and fire-fighting—would be interested in, **to the extent that a POSA would not seek out such GIS systems for this matter, in my opinion, notwithstanding its single reference to an ill-defined “HYDRANT” themed user interface.** Specific examples of GIS data layers that a utility would use, and a life safety/FHMS system would not use (or use very little) include:

- **Utility Infrastructure:** This layer includes the location and attributes of utility infrastructure such as power lines, transformers, substations, poles, conduits, pipes, valves, and meters. It provides a comprehensive

inventory of the utility network, enabling operators to quickly identify the affected assets during an outage. **This kind of layer is not applicable to a life safety compliance GIS system, as fire departments and similar life safety entities are not interested in such data, and in event much of such data would be confidential/considered a trade secret by the utility.**

- **Circuit and Feeder Information:** Circuit and feeder layers depict the electrical or hydraulic circuits that deliver utility services to specific areas. They help operators isolate the affected sections of the network and assess the scope of the outage, enabling targeted response and restoration efforts. **This kind of layer is not applicable to a life safety/FHMS compliance GIS system, for similar reasons as the above point.**
- **Outage Reports and Notifications:** These layers display real-time outage reports, customer notifications, and trouble tickets generated by customers or automated monitoring systems. They provide situational awareness and help prioritize response activities based on the severity and impact of the outage, such as the below.⁴²

⁴² EX2030 - <https://www.giscloud.com/blog/gis-for-electric-utilities/>



This kind of layer is not applicable to a life safety/FHMS compliance GIS system. While utility outages and fires might have surface similarities (and indeed some outages may be caused by fires), how they are dealt with are very different, and thus the data needed (for example by the repair crew or fire department responders, respectively) would be very different, in content and interface to the users.

It is worth noting that fire departments do not generally “call in” utility representatives to fight fires, nor do utilities bring in fire department representatives to deal with outages. However, there may be interactions between the two before an incident, for a particular area, when the fire department develops its “attack plan” for an area and/or

particular type of incident. But such interaction, if at all, does not involve life safety compliance data.

Indeed, a Fire Department’s “Attack Plan” for an area and/or type of fire could involve all sorts of data that is not part of a utility GIS system, above and beyond the layers discussed here. This includes what systems are present on the property and where they are (fire hydrants (external/internal and public/private), standpipes, fire sprinkler system, fire alarm system, fire extinguishers, hose valves, fire pumps, etc.), and if they are operational and/or to what degree functional/available. These data are very different what would be part of any type of normal utility GIS system.

- **Customer Data, Including Locations:** Customer location data layers identify the geographic distribution of utility customers, including residential, commercial, and industrial properties. They enable operators to assess the number of affected customers, prioritize restoration efforts, and communicate outage information to impacted stakeholders. This data is mainly used in the context of outages, and large-scale maintenance, and repair. While this kind of layer is of course applicable, at least at a high level, to fire departments, its detail and usage would be very different (discussed more shortly). **This kind**

of layer is applicable to a life safety/FHMS compliance GIS system, but also would be applicable to many—and probably the vast majority of—other types of GIS systems, and thus would not stand out to a POSA seeking prior art. Further, unlike the ‘966 patent, utility customer location (and other) data are generally not accessible to customers, and certainly not in augmentable/editable form. Finally, while of course “customers” can extend to individual buildings or houses, utilities generally concern themselves up to the point where the utility enters the property, and the infrastructure transitions from utility-owned to owner-owned. If a problem/outage seems to be in any way with respect to the owner property and/or customer-owned equipment, the utility field crew will not get involved, instead recommending an electrician, plumber, gas technician, etc. This is in stark contrast to life safety and their fire hydrant-related assets, where owners are ultimately responsible for the associated assets, legally and operationally. Put another way, utilities only care about the customer only if utility-owned infrastructure is involved, whereas life safety assets are typically owned by owners. **So, in effect, utility GIS in practicality ends where life safety/FHMS GIS starts.**

- **Field Crew Assignments:** These layers display the current assignments and locations of field crews responsible for outage response and repair. They facilitate coordination and communication between dispatchers, supervisors, and field personnel, ensuring timely deployment and efficient task management. While seemingly similar to managing and deploying inspectors, they are in reality very different. Field Crews are employees, and in outage situations typically on call or immediately deployed. Further, they are deployed based on a variety of rules (union and technical specialty), as well as location. Nor are fire department emergency response teams (the core users of the data collected and verified by the '966 patent) not similar to utility field crews, as utility field teams are generally not dealing with life emergency situations, but generally outages and associated repairs.
- **Weather and Environmental Conditions:** Weather and environmental layers provide real-time information on weather patterns, temperature, precipitation, wind speed, and other environmental factors that may affect outage response activities. They help utilities anticipate potential challenges and adjust response strategies accordingly. Weather is simply not a factor in ascertaining whether a nearby hydrant or other life safety equipment needed

inspection or had been inspected and was in compliance, and therefore sufficient working order to be useful in fighting the fire. Therefore, it would not be information captured in a life safety/FHMS compliance system or any GIS overlay for such a system.

128. Thus, as explained above, the GIS map data layers used in utility GIS are very different than those that would be used in Fire Hydrant Management Systems (a version of Life Safety systems). Petitioner, however, states that its HYDRANT themed user interface (with practically no explanatory detail) would cover all life safety type data. Regarding this aspect of Chauhan, Mr. MacInnes asserts:

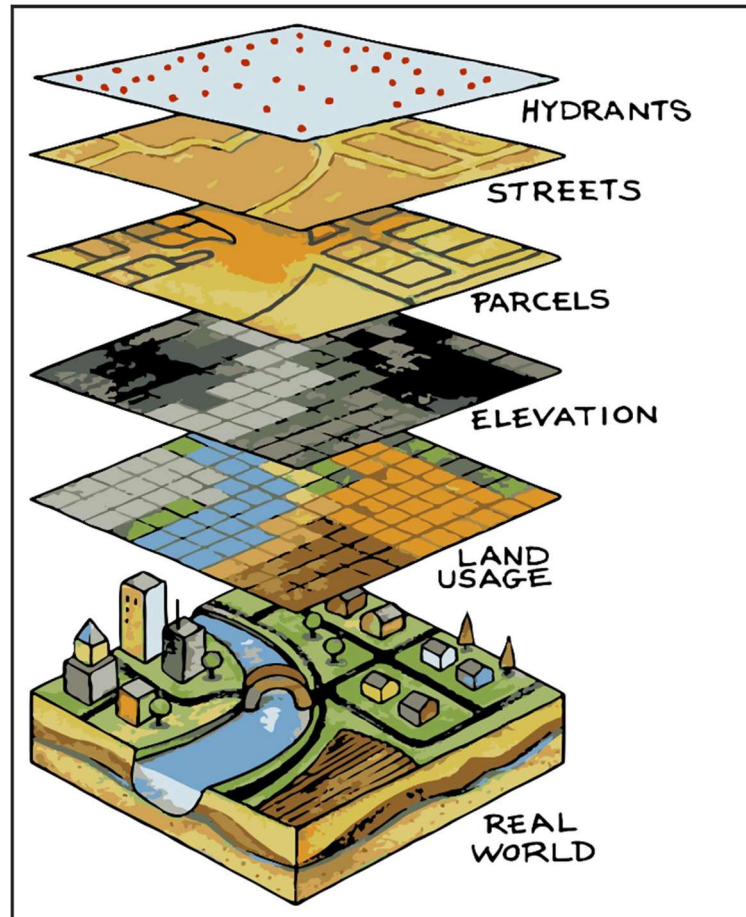
Chauhan discloses specifically that its UtilityCenter is intended to be used for “fire hydrant inspections” (among many other utility inspections): “a contractor hired to do fire hydrant inspections could be given a laptop with UtilityCenter loaded on it and assigned a username that only allows him to edit and view the inspection fields on the HYDRANT theme.” Ex. 1016 at [0207]. I note that Chauhan discloses that its utility center is applicable to many different utilities (beyond just fire hydrants) and that the “same technology” that it disclosed “has been tailored to the specific needs of public agencies[.]

(EX1003, ¶114 citing EX1016, [0207], [0218].)

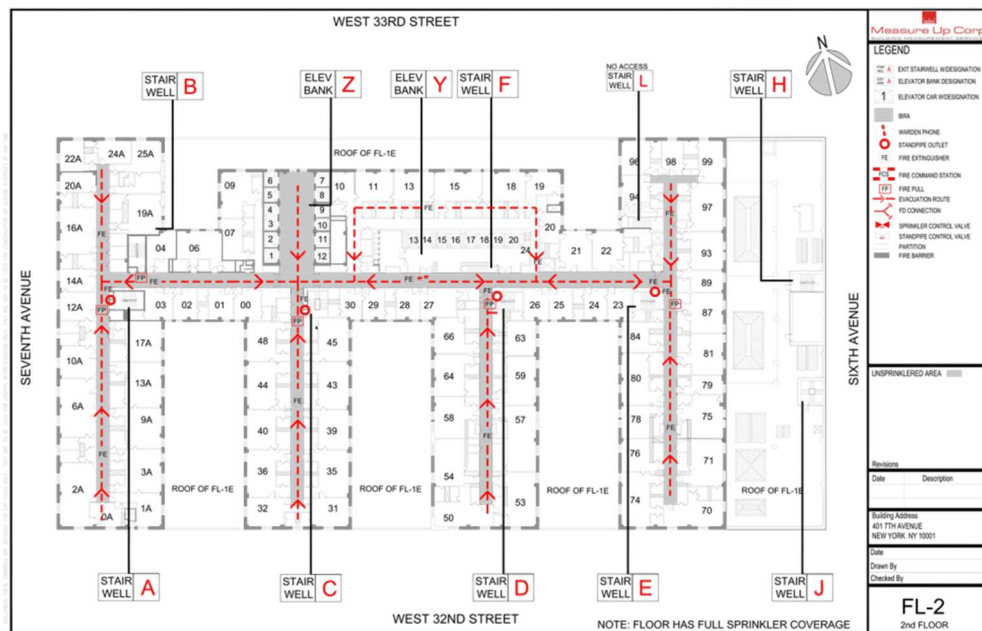
129. This is incorrect. Chauhan refers to a HYDRANT themed user interface as an example in the context of describing a “new Security Manager,” added to a later version of the software, providing an administrator the ability to restrict access to the system based on a particular task to be performed. (EX2016, [0207].) Chauhan does not otherwise describe the functions or data necessary for ITM of fire hydrants and does not even describe the referenced Hydrant themed user interface. In addition, Mr. MacInnes’ reliance on the general statement in the second to last paragraph of Chauhan that “the same technology has been tailored to the specific needs of public agencies, such as fire and police departments” misses the point. Chauhan is a top-down, closed-system that would not have solved fire departments’ “lack of compliance problem,” even if similar technology had been developed for their use, as such products already existed and failed to improve compliance.

130. At best, with its “HYDRANT” themed user interface, Chauhan’s system might add a map data layer depicting the physical locations of *some* hydrants, such as the below:⁴³

⁴³ EX2031 - [fire hydrant gis map data layer - Search \(bing.com\)](#)



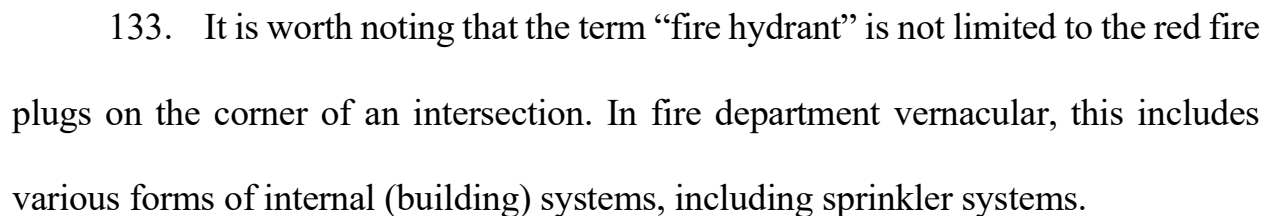
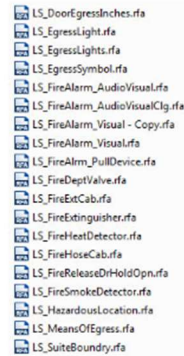
131. But this kind of layer would overlay onto a “utility world” “information about fire hydrant assets” that, since Chauhan is focused on (e.g. typically only deals with) utility-owned infrastructure, would not include the other types of life safety equipment that a Life Safety/FHMS GIS system would have, e.g. fire hydrants (all external (outside) and internal (inside buildings/property), and public (owned and/or on public property) and private (owned and/or on private property) hydrants), standpipes, fire sprinkler system, fire alarm system, fire extinguishers, hose valves, fire pumps, etc.), nor would they have the internal (to a building/property) information about where those assets are, and nor would they have information on

attributes (standpipes, extinguishers, sprinkler control valves, etc.):⁴⁴

also showing the more than a dozen map layers needed to populate the map:⁴⁵

⁴⁴ EX2032 - [examples of life safety map data layers inside a building - Search Images \(bing.com\)](#)

⁴⁵ EX2033 - <https://2015projectstd.weebly.com/life-safety-plans.html>



A detailed map of the San Diego Harbor Area, showing the locations of various San Diego Harbor (SDH) facilities. The map includes major streets such as 4th Ave, 5th Ave, 6th Ave, 7th Ave, 8th Ave, 9th Ave, K St, L St, M St, N St, O St, P St, Q St, R St, S St, T St, U St, V St, W St, X St, Y St, and Z St. Key landmarks include the Naval Training Center, Marina Linear Park, and the San Diego Harbor. Numerous SDH locations are marked with red crosses and labeled with codes such as SDH8804, SDH8805, SDH8807, SDH8809, SDH9034, SDH9256, SDH8597, SDH8598, SDH8600, SDH8812, SDH9023, SDH9026, SDH8718, SDH8760, SDH8606, SDH8605, SDH8607, SDH8979, SDH9022, SDH9027, SDH9025, SDH22594, SDH9024, SDH9028, SDH8602, SDH20314, SDH8604, SDH21314, SDH21218, SDH9029, SDH8603, SDH8766, SDH8767, SDH23987, SDH24761, SDH22628, SDH22786, and SDH8763. The map also shows the San Diego Harbor, Marina Linear Park, and the Naval Training Center.

⁴⁶ EX2034 - fire hydrant map data layer - Search (bing.com)

Utility GIS “Feeder” Systems and Data

136. The Chauhan art is extremely specific as to the types of systems and data the GIS capability will be integrated with, as shown in its claim 11:

A method for **integrating** and providing **utility management**

information, comprising (emphasis added):

providing a computer server with a cache memory;

providing at least one other computer electronically networked
with said server;

linking a geographic information systems (GIS) database with
at least one other database;

providing a plurality of data sources;

providing at least one interface between said data sources and
said at least one other database;

importing **and synchronizing data** said data sources and said

at least one other database so as to support on-demand

queries **for the utility management information**, linking a

geographic information systems (GIS) database with at least
one other database; providing a plurality of data sources;

wherein said data sources include a customer information

data, billing data, interactive voice recognition (IVR) call

**management data, supervisory control and data
acquisition (SCADA) data, mobile crew management
(MCM) data, automatic meter reading (AMR) data,
automated vehicle location (AVL) data, engineering
analysis data supported by 3rd party software packages**

(EX2016, emphasis added.)

137. The first several elements of this claim are what the Petitioner seems to be emphasizing: e.g., according to Petitioners, it is a GIS system linked with other databases, and that Chauhan’s passing reference to a “HYDRANT” themed user interface is sufficient to convey the data and functionality described by the rest of the claim. But this is a fallacy: the core of the claim—and Chauhan overall—is the functionality (and underlying GIS data integration) represented by the claim “punchline”: what data sources that the GIS system would be integrated with.

138. A Life Safety/FHMS GIS system would draw on little—even none—of the data described in Chauhan (in the last limitation element of claim 11, and throughout Chauhan), other than perhaps “customer information data” or “billing data”, which applies to almost any system in some form. In general Life Safety/FHMS systems would use billing data for guidance where to send invoices (if applicable), and would be very unlikely to use the other types of data: IVR data (voice response is not an element of the ‘966 patent nor in fire departments and associated compliance

and inspection systems), utility SCADA data (data very specific to utility systems), AMR data (meter reading very specific to utilities), and AVL data (there is no AVL data in the '966 patent). Mobile Crew Data, while at a very high level might be comparable to Inspectors or a fire department on-call fire crew, would be very different in details and, in any event, Inspectors do not work in crews, and managing on-call fire crews are not relevant to the compliance portion of Life Safety/FHMS asset compliance. Finally, the devil-is-in-the-details with respect to 3rd party engineering analysis data, and such utility engineering analysis would have little-to-no similarity to Life Safety/FHMS compliance data, particularly to a POSA looking for major similarities.

139. It is also worth pointing out the “**and synchronizing data** said data sources and said at least one other database” portion of Claim 11. This further emphasizes the point that a POSA would not consider Chauhan in connection with attempting to solve the lack of compliance problem for fire hydrants, nor would a POSA have a reasonable expectation of success in combining Chauhan with Key to make the invention recited in claim 8, which solved that problem. What Claim 11 means, particularly in a GIS context, is that all the data have to be synchronized with each other—with respect to time, location, other contextual factors, and ideally purpose. This makes the synchronization linkages of the feeder data with the GIS life safety data (in this case hydrants) critical, which is very hard to do if the data

was obtained in unrelated data capture processes. A system like the '966 patent that focuses on capturing all the life safety/fire hydrant asset state and operational data, including GIS data attributes, with the appropriate time stamps and contextual data to ensure data consistency, using a methodical, coordinated process, would already yield such data synchronization. Slapping together data layers and underlying data from totally different systems of Key and Chauhan, in at best tangentially-related fields, would not work and would not be considered by an objective POSA.

140. It is also worth it to point out—again—that to the extent utilities capture fire hydrant and building data (for a supposed HYDRANT themed user interface), the data would in practicality be a) limited to public fire hydrants only, and b) that hydrant data would not include all the other Life Safety assets described earlier (extinguishers, sprinkler systems, etc.), nor would it cover private fire hydrants and related systems, particularly those within a building structure. This is because utility GIS building schematics, if any are captured in a utility system, would only be to a level of detail associated with the associated utilities, e.g. the property footprint, building exterior and dimensions, and (possibly) the portion of the inside of the building where the utility assets were interconnected to the private assets (e.g. breaker boxes, meter readers, etc.). It almost certainly would not capture private infrastructure data unrelated to the utility's products and services, such as sprinkler systems, private hydrants, etc.

141. Thus, any fire hydrant data overlay onto a utility system data would be incomplete, as it would be without the buildings' internal (private) fire hydrant data, let alone all the other types of fire hydrant-related information, e.g. standpipes, fire sprinkler system, fire alarm system, fire extinguishers, hose valves, fire pumps, etc. This kind of partial/incomplete data would not just give a fire fighter an incomplete picture of the life safety assets he/she has to work with during a fire, it could give him/her a *dangerous* picture of those assets, such as if public hydrant A is used despite being in a dangerous position relative to the fire, when private hydrant B (if he/she had known about it) would be much closer/safer to use, and so forth.

142. **So, the GIS data layers, and the underlying systems and data the data layers are integrated with, are very different between Chauhan's utility outage system and Key's system for managing inspections of pressure vessels, and both are very different from the '966 patent's Life Safety/FHMS GIS.** A POSA would not look to either Key or Chauhan to solve the fire hydrant compliance problem addressed by the '966 patent or to make the solution recited in claim 8, and a POSA would not have a reasonable expectation of success in combining Key and Chauhan to do so. To complete the lack of usefulness trifecta of Chauhan is how that combination would be used in a Utility context versus Life Safety context, next.

Utility GIS-Related Functionality

143. Not only are the utility GIS systems and associated data feeds different than those for Life Safety, the functionality of the overall system that would use such GIS systems are very different. Indeed, Chauhan is very specific as to the functionality its integrated utility GIS system would provide, in numerous places in the specification and well represented in its continuation of Claim 11 (emphasis added): the computer server performs at least one step of:

- (1) predicting outage based the IVR call management data, the AMR data, or the SCADA data,**
- (2) making speculative changes or permanent changes to data from the data sources to so as to analyze resulted consequences,**
- (3) building a crew by Crew Members, Equipment, Materials, Work order Assignments, Outage Assignments, Crew Current Physical Locations, and Skill Sets,**
- (4) processing the IVR call management data by district,**
- (5) generating a customer callback list based upon an outage or a switching operation,**

- (6) associating an outage with at least one voice message,**
- (7) sketching ad hoc graphics on top of a GIS graphic so as to associate a sketch with a work order,**
- (8) providing a point-and-click interface to at least one authorized user to assign and control tools and data access of other users to access the tools or data necessary for performing the users' daily work,
- (9) defining work order types by a user thereby linking and updating data therein in work order headers,
- (10) searching for a trouble call,**
- (11) displaying locations of customers to receive a call back in a GIS graphic based upon a Callback list,**
- 12) displaying the IVR call management data, the SCADA data, the MCM data, the AMR data, the AVL data, the engineering analysis data in a GIS graphic,**
- (13) building outages, splitting outages, restoring outages, or partially restoring outages,**
- (14) managing crews by district,

**(15) building at least one trace cache with domain
specific information thereby tracking and caching
incremental data changes whenever occurring.**

144. The bolded functionality above is not applicable to a Life Safety/FHMS GIS system, and the non-bolded portions are applicable to many kinds of GIS systems (e.g. a point-and-click interface...to access tools, defining work orders...even managing work crews by district), and thus not be useful in identifying GIS-related art. As mentioned, Inspectors are not managed by crews, while fire department crew information is outside the scope of a life safety/FHMS compliance system.

145. The Petitioner attempts to gloss over all the above concerns through the one sentence that refers to “hydrant” in Chauhan. Based on that sentence, Petitioner contend that Chauhan is intended for ““*fire hydrant* inspections”” and that there is a ““***HYDRANT*** Theme’ that allows an inspector to ‘edit and view inspection fields.”” *Id.* at 24–25 (citing Ex. 1016 ¶ 207; Ex. 1003 ¶¶ 85, 127).

146. Chauhan, with its single sentence description, does not describe anything with respect to the nature of the hydrant map data information, how it will be integrated and “synchronized,” nor how the combined (or even uncombined) information would be used. Nor does it say how it would be sourced. Nor does it

even say it would be presented as a GIS layer. There is simply no disclosure. Instead, it could be conveyed in some other form outside of a GIS layer. Nor does it convey any insight that it would or could include information about anything more than public hydrants (which would be incomplete and even worse than useless as it would not include all the private life safety asset information).

147. Petitioner’s lone assertion regarding functionality is a bald-faced conclusionary statement:

“Chauhan discloses that its UtilityCenter has wide applicability and that the ‘*same technology*’ can be used for various other assets and applications including ... ‘fire and police departments’” *Id.* at 25 (citing Ex. 1016 ¶¶ 42, 218; Ex. 1003 ¶¶ 114–115, 130).

148. This provides absolutely no insight into what specific functionality it is referring to and how “fire and police departments” would use it. In my opinion, given a POSA would be looking for a) Life Safety/Fire Hydrant-related GIS map data, b) associated Life Safety/Fire Hydrant-related feeder systems with which to integrate a), and c) at least some degree of confirmation regarding functional (e.g. management) fit of the prior art for Life Safety/FHMS compliance purposes, they would not seek out Chauhan, as:

- Any life safety/fire hydrant map data would be at best limited to public fire hydrants, omitting/neglecting/not having access to private fire hydrant-related data;
- The feeder systems that such hydrants would be associated with (overlaid on top of) have little to nothing to do with life safety/fire hydrants, but instead very detailed utility asset and operational data, and
- There is absolutely no functional/operational discussion about how that integrated data could or would be used. **Unlike many “traditional assets,” not only are there many important functional nuances unique to emergency-supporting assets such as fire hydrants, the criticality of those assets being fully functional, and/or knowing if and to what degree they are functional, is absolutely essential in a fire-fighting situation. Further, it is important to understand if the management software for the fire hydrant assets has the “freshest,” most real-time information as possible. Thus it is important to know the processes by which fire hydrant asset data gets into the system, and how current and complete the data in the**

system actually is.⁴⁷ Without such information, a POSA would not know if the system could actually “manage the fire hydrant assets” in a way usable for all the stakeholders, particularly the key actual end users and use cases, e.g. fire fighters fighting fires. Further, without this information, given the concerns with respect to fire hydrant and feeder system data, a POSA would have little motivation to combine any system with a partial data, uncertain functionality, unknown-if-current system, and even less expectation of a reasonable expectation of success.

149. At the end of the day, while compliance systems are generally intended to make sure all Life Safety/Fire Hydrant Assets are in working order, the reason for

⁴⁷ This is discussed more in the Missing Elements section. Having owners being able to update information about their fire hydrant assets and it being immediately reflected in the central database is critical to a firefighter’s “real time access” to the asset information. If, on the other hand, the database only gets updated after it goes through a review and approval process (as with Key), there is no certainty that the information about the fire hydrant asset in the database actually reflects current reality, potentially causing a very dangerous misinterpretation by the fire fighters about what firefighting working assets they have to fight a fire in progress. In my opinion such a delayed-updating system would be counter to the desired functionality of “management software [used] to manage information concerning fire hydrant assets,” per the Institution Decision. (Paper 9, pp. 22.) Further, any analysis done on this supposedly real-time data would have a strong possibility of being done on outdated, incorrect data, and thus that analysis part of the management software would potentially have major deficiencies, as analysis is only as good as the data it is based upon.

making sure that they are in working order is so that they can be used, immediately and effectively, in the event of an emergency. That means the information needs to be complete, useful, and immediately conveyable in a very directed and specific form to users who have no time to waste on checking to see if all the data they need is there and/or having to filter, analyze, or otherwise interpret it to glean the critical information they need to fight a fire. A system based on, and focused on, Life Safety/FHMS data, which in turn is based on a robust Life Safety/Fire Hydrant-related compliance Inspection Testing and Maintenance system and associated processes, would fulfill those needs.

150. In contrast, any system that had a bolted-on utility GIS capability with a “HYDRANT” themed user interface would not fulfil those needs, even if the base system is a robust platform for such capabilities, which is not the case here, with Key, discussed next.

VII. Asset Management Systems are Not Interchangeable. In particular, Assets, and the Data About Those Assets, Used by Firefighters in Responding to Fires are Very Different than General Assets or Even Other Assets with Inspection and Compliance Requirements.

151. Lastly, I examine the differences in asset management systems. As described above, the Petitioner clearly attempts to portray all assets as the same, and all asset management systems as interchangeable. They are **not**: they are different with respect to a) the purpose of that asset management system, e.g. what it is used

for, by whom, and why; b) what data is captured to support that purpose, and how it is captured, stored, and retrieved. Further, the patent scope of the ‘966 patent claim 8 is clearly narrower than “asset management systems.” In addition, the data schema and database system sophistication needs for fire hydrants are vastly more complex for those of the ‘966 patent with respect to hydrants, versus simple, flat file systems such as Key.

Major Variations in Purpose and Criticality of Data

152. First, Information about Fire Hydrants (Public and Private, In-Building and external) and related assets (sprinkler systems, fire extinguishers, standpipes, etc.) have a very different, at-the-end-of-the-day purpose vs. other kinds of assets: their existence and usefulness is for one purpose only: **to enable emergency responders such as fire fighters to be perfectly equipped in terms of data and knowledge about fire-fighting assets when fighting fires and other situations. Such data completeness/comprehensiveness, accuracy, and being up to date could directly determine if someone lives or dies, as well affecting the potential for major property damage.**

153. The Inspection, Testing, and Maintenance compliance aspects of the ‘966 patent are intended with that end purpose in mind. The process of trying to ensure FHMS ITM compliance is not about trying to appease insurers, or making sure government records are up-to-date and the proper boxes checked, or saving

money, or even making money (on inspections and repairs). These are collateral by-products of the core purpose: **limiting the loss of life and property damage**.

154. When a fire breaks out, firefighters have to respond as absolutely fast as possible. In 30 seconds, a small flame can become a major fire. In 2 minutes, a fire can become life threatening by fire or smoke or CO² inhalation. In five minutes, a fire can engulf a residence in flames. Fires are by their nature very expensive (which is why insurers are so interested in FHMS compliance), and every minute of delay can dramatically increase the danger and damage. In a study published by Value in Health, Thai researchers found that the monetary value for a one-minute improvement for each dispatch equated to **between \$10,229 and \$172,576** depending on the nature of the injury.⁴⁸

155. Thus, firefighters must have the absolute best, up-to-date, accurate, and comprehensive data as possible, about all assets that could be used in fighting a fire. Not just fire hydrants outside the building. As seen in the previous section, there are many differences between the relatively simple capture of external/public fire hydrants and all the various privately-owned assets in and around a building. And

⁴⁸ EX2035 - Quantifying the High Cost of Delayed Em...pdf, <https://www.simplesense.io/blog/quantifying-the-high-cost-of-delayed-emergency-response-at-the-workplace#:~:text=In%20five%20minutes%2C%20a%20fire%20can%20engulf%20a,%24172%2C576%20depending%20on%20the%20nature%20of%20the%20injury.>

the details matter—greatly. FHMS assets can vary greatly by location in a building, even in a small area. If a private hydrant system on the 4th floor NE corner is out-of-order or operating sub-par, then it is far better to find that out before basing the fire attack plan on that hydrant. Or, if an attack plan is based only on the external/public fire hydrants, not knowing that the 4th floor SE corner hydrant is fully functional and will cut off 7 minutes of response time by using it could make the difference between fire containment and total building loss.

Major Variations in Data Sources Specifics, Complexity, and Need To Be Up-to-Date as Possible

156. And as also seen above, the various sources for that data are highly specialized. Data about detailed Life Safety plans and from other life safety/emergency-specific data sources could—and do—provide the level of detail that emergency responders need, at the level of specificity and integration that can make all the difference to a fire fighter. And the processes for making that data as truly “real-time” with respect to reflecting as close to current conditions as possible are critically important. It does no good for an owner asset replacement update or an inspection report about a malfunctioning hydrant emailed to a jurisdiction to be sitting in queue awaiting someone’s approval, while in the meantime a fire breaks out, and lives are lost as the firefighters futilely attempt to get that hydrant working, or can’t find the asset they are looking for because it has been taken out of

commission or the asset replaced in a different form and/or location. In addition, the data and data sources associated with must adhere to numerous, and stringent codes, standards, and regulations that distinguish fire and life safety systems, services, and components apart from any other system, service, or component, and in turn dramatically impact the needs of an ITM compliance system that serves it.⁴⁹ As Mr. Moran states in his declaration, contrasting Key with the ‘966 patent, “[Key’s] assets have inherent properties *which are very different* than fire protection systems with specific codes, standards, and regulations.”⁵⁰ This practical—and systems requirements intensive—reality makes the ‘966 patent very different from not only Key, but also Chauhan and Sweeney. Even McKinney, which does refer to standards, does so focused solely on NSF (National Sanitation Foundation) standards, which are in no way related to codes, standards, and regulations for Fire Protection. Adding to the complexity and required sophistication needed for such Fire Protection asset management systems is that fire and life safety systems have numerous co-dependencies that would not be captured by simple, standalone asset focused, asset management systems. These co-dependencies impact their inspection and compliance processes, as each of these systems have individual code inspection requirements, periodic inspection cycles have multiple timelines required for the

⁴⁹ Moren Declaration, paragraphs 33 and 35

⁵⁰ Moren Declaration, paragraph 36, emphasis added.

same system, multiple inspections are required for multiple systems on the same property, with multiple inspectors performing the multiple inspections. In total, a ITM compliance system for fire and life safety needs to manage multiple system types, with multiple inspection cycles, across multiple properties, utilizing multiple inspectors, all managed with a single jurisdiction. The Petitioners' art does not do that, nor would combining the art in any form satisfy the needed asset management sophistication for Fire and Life Safety.⁵¹

157. Thus, that some sort of generic asset management compliance system could be “tweaked” to support the knowledge requirements that time-critical, highly-focused-and-specialized, codes, standards and regulations-intensive firefighting requires defies not only common sense, and technical sense, it frankly is a disservice to emergency responders everywhere. So is the concept that a few fringe use cases from art from other industries, such as utilities, wastewater, and construction could support what a firefighter needs in an emergency situation.

158. Further, from a more IPR-focused patent search-focused perspective, the art that the Petitioner used was not in the field as defined by claim 8 of the '966 patent.

⁵¹ Moren Declaration, paragraphs 41, 42, 43

A computer-implemented method for using a **fire hydrant management software and a web-based registry to track requisite inspection of an owned asset...**

159. A Google search of patents before October 23, 2007, for “asset management” yields over 100,000 results. Further limiting by including “Inspection,” “Testing,” “Maintenance,” and “Compliance” reduces it to about 77,000 results. But adding “to track requisite inspection of an owned asset” reduces it *greatly* to about 2,700 results.⁵² But none of those remaining art include the Key, Chauhan, McKinney, or Sweeney art of the Petitioner. As discussed below, in my opinion there is nothing in any of the art to catch the attention of a POSA looking for **fire hydrant management software and a web-based registry to track requisite inspection of an owned asset...** Petitioners appear to have word searched for art that had some sort of reference to fire hydrants, no matter how superficial and non-core to the overall purpose of that art. Then they attempt to (and in hindsight) ignore and otherwise waive away the very specific, very

⁵²[https://patents.google.com/?q=\(asset+management\)&q=inspection&q=testing&q=maintenance&q=compliance&q=track+requisite+inspection+of+an+owned+asset&before=priority:20071023&patents=false](https://patents.google.com/?q=(asset+management)&q=inspection&q=testing&q=maintenance&q=compliance&q=track+requisite+inspection+of+an+owned+asset&before=priority:20071023&patents=false)

purposeful, unique requirements of FHMS through an “oh look, it has a fire hydrant reference too” grafted obviousness argument.

160. For example, the fields described in those prior art specification are not relevant to the more narrowed field of claim 8 of the ‘966 patent.

161. Key focuses on providing a standard user interface for “managing” inspections (vs. “tracking” them) across jurisdictions, and says nothing about assets, nor owners (or owned assets) in its field description (emphasis added):

The invention relates generally to the field of network-based services and, more particularly, to a **jurisdiction online management system that manages required inspections** mandated by a plurality **of different jurisdictions performed by non-governmental entities.**

(EX1005, [0002].)

162. Key’s data users are primarily government bureaucracy employees, not first responders.

163. Chauhan is very specific, very focused on utility operations, with nothing about inspectors, owners, or “owned assets.” Indeed, as Chauhan’s described functions and the specification describing its underlying systems make clear, it is focused on utility infrastructure, not owner assets:

“The invention generally relates to an automated management system for **managing data, outage repair, load switching, job workflow and crew dispatching, crew workflow, installation, maintenance and restoration of utility services** by integrating geographic information systems (GIS) data with many other data sources so as to gather, transform, manipulate, analyze, and produce desired information for continuously supplying utility and relevant services.

(EX1016, Abstract.)

164. Chauhan’s data users are utility employees in various capacities, not first responders.

165. Sweeney is also very specific, about managing construction assets, primarily for buildings under construction:

The present invention relates to the field of construction. In particular, the present application provides methods and systems for the **online condition management of a construction asset**.

(EX1006, [0002].)

166. Sweeney's data users are construction project managers and administrators, not first responders.

167. McKinney, while referencing inspection in its field description, focuses on compliance very specifically for wastewater and environmental systems. Even further, its claims and specification are targeted almost exclusively to technical aspects of extracting and communicating data from remote systems, making this field description much broader than what a POSA would view as the actual focus and content of the patent, yet still not applicable to FHMS and tracking inspection of owner assets:

The present invention relates generally to monitoring Systems and, in a presently preferred embodiment, provides a System and method for Servicing and for **Verifying compliance related to maintenance**, operation, inspection, **repair**, and/or Service contract renewal Status **of environmental equipment** such as wastewater treatment Systems.

(EX1020, [0003].)

168. McKinney's data users are environmental system/company employees, not first responders.

169. Thus, a POSA looking for art to support the data for fire hydrant-related assets that support the firefighter user needs and requirements about those assets would not look to systems that really had nothing to do with the firefighting world in almost every respect.

170. There are two other points to make, the first with respect to the claim 8 field narrowing above, and the second with respect to the vast difference between fire hydrants and related systems and other more “traditional” assets.

171. The first is with respect to the “owned” portion of “owned asset” narrowing of the field in claim 8. This (“owned”) is not a meaningless and/or casually-used adjective. It definitively narrows the type of assets involved. Since in theory every physical asset in this world (and many non-physical ones) is owned by some person or entity, a POSA reviewing the ‘966 patent specification, provisional applications, and prosecution history would realize the term “owned” is at a minimum inclusive of *private* ownership. Thus, a POSA looking for an asset management system would not look for, and potentially exclude, any such system that does not explicitly recognize and accommodate such privately-owned assets, such as public/quasi-public entities like utilities. Privately owned assets would have a variety of differences between them and public entities, including but not limited to: a higher volume of assets in total; a larger number of individual owners, and varying (and more complex) legal, privacy, and security requirements. By

themselves these differences would give a POSA pause when looking at systems that are for public assets only vs. those that are designed for or to at least include private assets.

172. Indeed, this gives rise to the second point, that public fire hydrants are distinct from, even very different than *private* fire hydrants and related systems. A POSA would recognize that the '966 FHMS system not only deals with the traditionally-known outside-on-public land fire hydrants, but also a host of other fire hydrants (privately owned) outside and inside buildings such as the below:⁵³⁵⁴



⁵³ EX2036 - Fire Hydrant System in Buildings_ Office_ Industries _ Best 2022.pdf, <https://damiaglobalservices.com/fire-hydrant-system-in-buildings/>

⁵⁴ EX2037 - Fire Hydrant Systems - Torvac.pdf, <https://www.torvacolutions.com.au/fire-protection/fire-hydrant-systems/>



173. A POSA would even further expect—and demand—the capability to track (in detail, fully, comprehensively, accurately, and as up-to-date-as-possible) other privately owned fire safety-related assets, including standpipes, fire sprinkler systems, fire alarm systems, fire extinguishers, hose valves, and fire pumps. Many buildings have multitudes of these systems, including variations between and even within floors, greatly increasing the complexity of any fire attack plan depending on the location of the fire and the location and condition of the building’s firefighting assets. Many of these firefighting assets are complex in their own right, with major data variations/types within the asset, as seen below for standpipes:⁵⁵⁵⁶

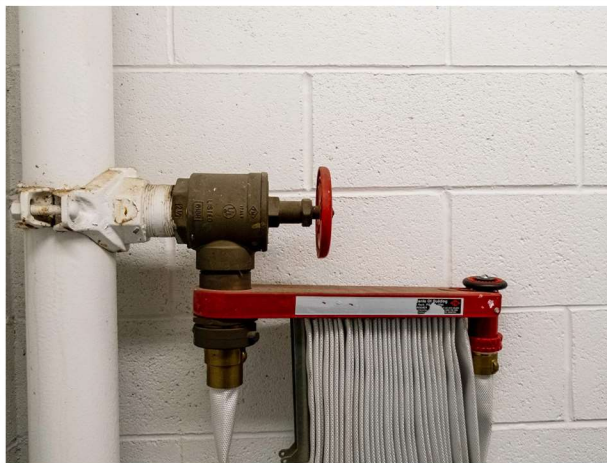
⁵⁵ EX2038 - Standpipe Connection for Fire Protection - What You Need to Know.pdf, <https://www.balkanplumbing.com/standpipe-connection-guide/>

⁵⁶ Interestingly (red box above), the only “fire safety needs” this article is concerned with are “property owners and firefighters.” No regulatory entities, no inspectors, no insurers.

What Is A Standpipe System?

Inside the structure of a building a standpipe is a collection of piping, hose connections, valves, as well as accompanying equipment. Their sole purpose is to help extinguish a fire to protect lives and property. The positioning of the hose connection allows water to be discharged in spray patterns or streams once the hoses as well as nozzles are connected.

The standpipe system also has numerous outlets located on each floor of a building. This enables firefighters to reach all the areas in a building. However, they are designed differently to accommodate various fire safety needs of property owners and firefighters. Read on to learn about the different classes of standpipes systems.



Fire House, Warehouse complex, Active fire protection (AFP) standpipes

Classes Of Standpipes Systems

Class I Standpipe Systems

These systems are restricted for use by professional firefighters as they release water under high pressure that may be hard for an inexperienced person to control. Their outlets are usually installed within building stairwells.

Firefighters usually carry a unique hose to attach to class I standpipe connections. In most places, you can fit a 2.5" hose. However, in New York and San Francisco, you can fit a 3" hose to your class I standpipe.

Class II Standpipe Systems

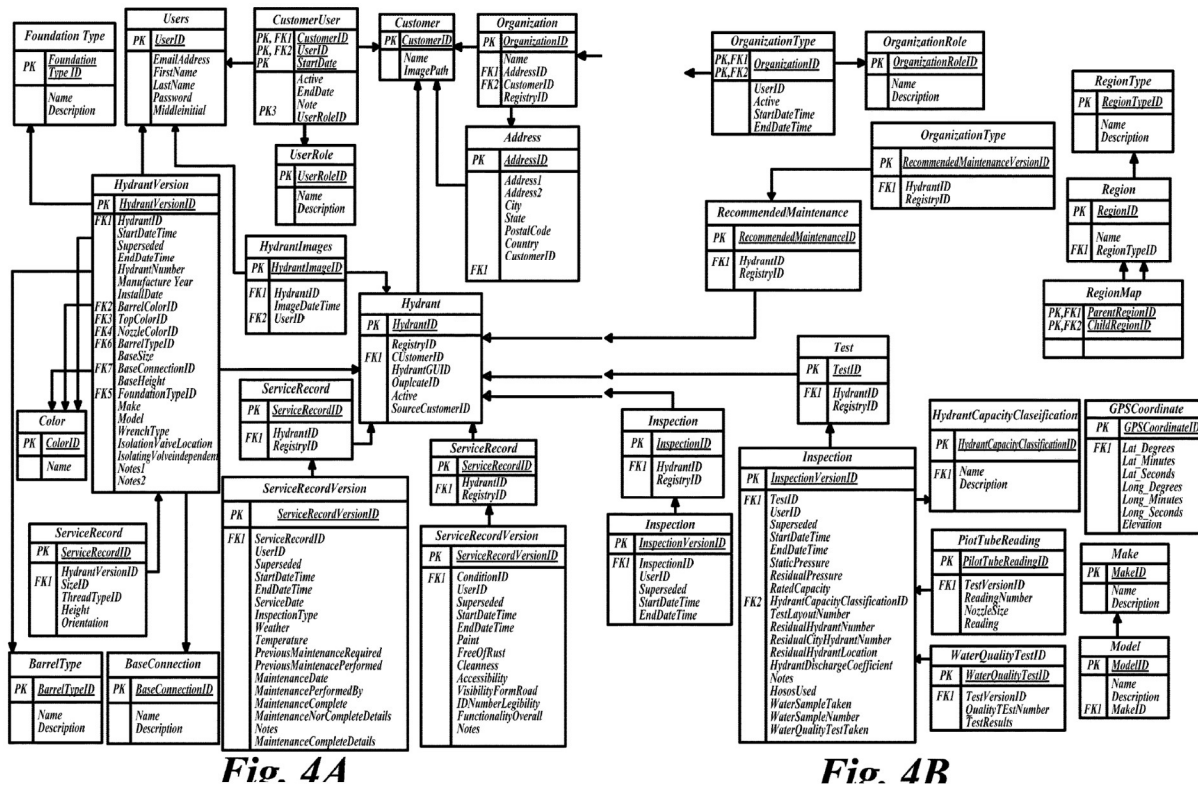
They are common on hallways of buildings, mostly accommodating a 1.5" hose. They are easy to operate and can be accessed and used by anybody. However, property owners are increasingly shunning them. There has been a heightened safety risk of inexperienced people trying to use them to put out fires and getting hurt in the process. As a result, they mostly exist on old buildings, with new building owners preferring domestic fire sprinklers.

Class III Standpipe Systems

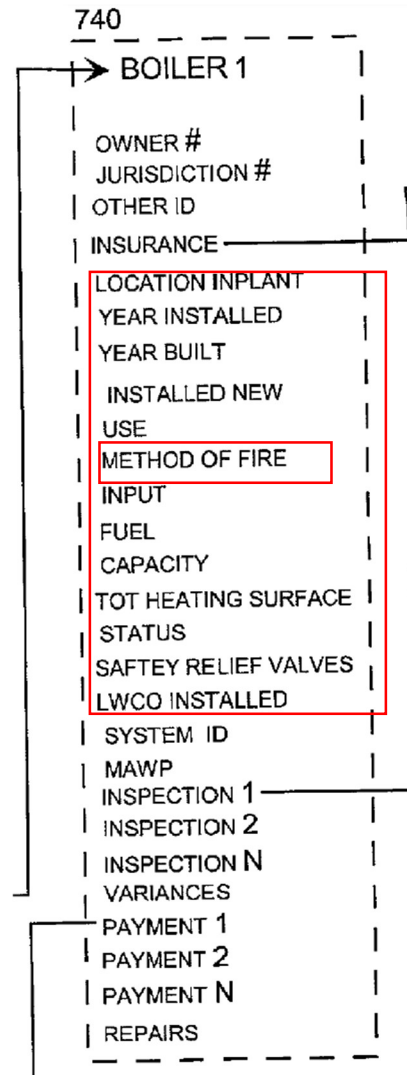
This is a hybrid of class I and Class II standpipe systems. They have permanently fixed 1.5" hoses for use by inexperienced firefighters. And 2.5" hose connections where professional firefighters attach their hoses. Some Class III systems have 2.5" connections and reducers with 1.5" hoses permanently attached. But some do not include the permanent 1.5" hose.



174. Further, even if a POSA would only expect to be sufficient an asset management system supporting only publicly-owned, outside fire hydrants, the POSA would expect a host of *detailed* information about those fire hydrants, such as shown in the '966 patent:



175. In my opinion, the above '966 fire hydrant data schema is far more sophisticated than that for a "traditional" asset, such as a boiler. Indeed, it is worth contrasting the above fire hydrant data schema with the data elements that might be expected for a building boiler, from the Key patent below:



176. Two points on the above boiler schema. The first is that there is only one (1) attribute related to fires/firefighting—the “method of fire” attribute, which presumably is about what kind of extinguishing substance that should be used in the event of a boiler fire (water, CO², wet chemical, etc.).

177. The second is the contrast between the 12 boiler-specific attributes in a single flat file list in the (bigger) red box above, to the several dozen attributes multiply interconnected and formatted for a relational database management system

(RDMS) database in the '966 patent. By itself, this tremendous jump in size, complexity, and interrelationships between fire hydrant data elements would cause a POSA to avoid such simple, limited interconnection asset data schemas and associated flat file database of Key towards a system that could readily handle the much bigger, complex, and more highly interconnected data elements needed for fire hydrants such as in the '966. **These contrasting simple vs. complex asset data schemas would have major differences in how their data would be in practicality captured/collected, stored, and retrieved, and a POSA would not be motivated to use simple data schema, flat file art, while replicating a system with far more complex data schema requiring RDBS. A POSA would be even less inclined to have a reasonable expectation of success trying to make a larger, more complex, more interconnected data schema requiring a robust Relational Database System (RDBS) work in a simple, one-table flat file database. Such flat file systems simply cannot handle complex data tasks.**⁵⁷⁵⁸

⁵⁷EX2039 - Relational Database vs Flat File (Differences & Similarities) - DatabaseTown.pdf, <https://databasetown.com/relational-database-vs-flat-file-differences-similarities/#:~:text=Relational%20databases%20are%20more%20powerful%20and%20flexible%20than,not%20designed%20to%20handle%20complex%20data%20management%20tasks>.

⁵⁸ Key does not describe database schema variations and types of database management systems, instead just referring to them as a/the "database." In my opinion, the simple table structure described by Key's Figure 7, including its

178. It is also worth commenting on any argument that financial transactions associated with owner payment of inspections, fees, etc. would be considered by a POSA to be part of an asset management system, and in turn any payments or associated information provided by the owner about payments would be somehow “editing” or “augmenting” the asset management system. They would not. Invoicing and payment processing systems are, by themselves, a very complex field—indeed, set of industries and numerous fields/disciplines—totally distinct from an asset management system. The ability to manage the generation of invoices through billing and Accounts Payable/Receivable capabilities, enable a customer to select from a variety of payment alternatives, accept, verify, and process securely those transactions, appropriately update a customer’s account, and manage ongoing payments and related issues (disputes, partial payments, credit cards/credit card fees, etc.) are *extremely* complex. That a payment has been made via such capabilities, and then perhaps a flag in an asset data record saying the customer is current in his/her payment about an asset inspection, does not mean that the customer has edited or augmented the asset record. Indeed, if customers could readily edit/augment such “payment current?” fields themselves, it would undoubtedly

simple lists and one attribute per table, one-way linkages to other tables, could be managed by a flat file database system, not needing a much more sophisticated (complex) and costly RDMS system.

cause a mass amount of confusion (and fraud). Instead, asset management systems and payment systems are kept separate, and for good reason, even if there is information about payment/invoices flowing from one system to the other.

179. In short, in my opinion there is nothing in any of the art to catch the attention of a POSA looking for **fire hydrant management software and a web-based registry to track requisite inspection of an owned asset...**. It is my opinion that the Petitioners instead searched for art that had some sort of reference to fire hydrants, no matter how superficial and non-core to the overall purpose of that art. Then they attempt to (and in hindsight) ignore and otherwise waive away the very specific, very purposeful, unique requirements of FHMS through an “oh look, it has a fire hydrant reference too” grafted obviousness argument.

180. These deficiencies will be discussed more in the following sections.

VIII. Lack of Motivation to Combine or Reasonable Expectation of Success

181. The sole ground in the Institution Decision uses four references as Prior Art to assert obviousness for the ‘966 patent for claim 8:

- Key
- Chauhan
- Sweeney
- McKinney

182. For numerous reasons, more fully elaborated here since the Patent Owner Preliminary Response, these patents fail to disclose several of the claim 8 limitations. Further, a POSA would not have been motivated to seek out or combine these references when attempting to solve a fire department's lack of compliance problem or otherwise create the invention recited in the Challenged Claims. Also, in my opinion using them in combination would not have a reasonable expectation of success in achieving the '966 patent's technical objectives or resulting in the claimed invention. In addition, the references alone or as combined by Petitioners are missing key elements with respect to claim 8, as discussed in that separate section below.

A. Key

183. Petitioners use U.S. Patent App. Pub. No. 2002/0029222 ("Key") published March 7, 2002 [EX1005], as their primary §103 prior art reference.

184. In my opinion, Key would not be sought out as prior art for a POSA seeking to solve a fire department's lack of compliance problem or to otherwise create the invention recited in the Challenged Claims, nor would a POSA, using Key as the primary reference, believe that there would be a reasonable expectation of success in combining it with other art to make the invention recited in the Challenged Claims. Further, Key fails in critical aspects of technical scope and focus.

185. In particular, Key is deficient in its (lack of) support for owners, and for its lack of collaborative capabilities involving owners, and the disparities

between the assets being managed would lead a POSA to not only seek out Key as prior art, but view Key as *teaching away* from key aspects of the ‘966 patent.

186. Petitioners assert as follows regarding Key:

Key discloses “**a jurisdiction online management system** that manages required inspections mandated by a plurality of different jurisdictions performed by non-government entities.” “The system provides an *efficient, centralized, and web enabled process* for transfer of data between multiple jurisdictions and multiple entities required to routinely interact with the multiple jurisdictions,” where the “system manages required inspections **mandated by [the] jurisdictions performed by non-government entities...** The system “provides a **hierarchical data structure** that allows for easy updates” and “enables real time availability of current data.” EX1005, [0017]. According to Key, **the system is applicable to a variety of assets, including “pressure vessels, boilers, elevators, amusement park rides, and *other required jurisdictional inspections of objects.*”** EX1005, [0015].

(Petition, pp. 10-11, emphasis added with bold and italics in the original text. Underlining added for this declaration.)

187. Key focuses on two stakeholders: the Jurisdiction (authority), and Inspectors/inspection capabilities. There is no mention of owners in this overview of Key. Rather, Key is Jurisdiction-centric, with little significant mention of owners other than an entity to be dictated to. Further, there is a very strict data structure geared towards jurisdictions, not owner. In addition, its focus is on non-emergency assets, with no expectation of firefighters ultimately using the system for firefighting purposes.

188. As mentioned in the Background of Technology section, Petitioners place major emphasis on how its prior art—particularly its primary reference Key—uses a very similar systems architecture to the ‘966 patent, as if that is *the* critical similarity that must be demonstrated:

“Key discloses a “hardware architecture” (similar to Figure 2 of the ’966 patent). **Client computers 305** “run web browsing applications that retrieve and display the [JOM’s] web pages” which are “retrieve[d] ... over a global computer network 199 such as the Internet” by “mak[ing] a request over Internet 199 to a **web server 320**,” which are “operative to implement the front-end

software” to “display information to users operating a web browser” and “provide notifications in a known manner usually via email.” EX1005, [0065]-[0067]. **Application servers 330**, coupled to **web servers 320** and **database servers 340**, are “operative to implement the application software” which “contains the logic that is used to determine which web pages are presented to the user and how respond to user’s actions,” “contains the necessary logic to process the user’s transaction and provide the associated updates and any notifications,” and are described “in greater detail” in Figure 4. EX1005, [0068]. **Database servers 340** are “operative to store and retrieve information from a **database 350**.” EX1005, [0069].”

Petition, pp. 11-12.

189. This highly emphasized by the Petitioners similarity between the two patents is actually irrelevant. While client-server architecture in general, utilizing various forms of client computers and web, application, and database servers, was well known at the time of the ‘966 patent priority date, including for unrelated asset management purposes as discussed above, that architecture and associated components would not provide a helpful basis for a POSA seeking similar art.

Indeed, as described earlier in the Background of Technology section, Client-Server computing, including its architecture and protocols, was used for many thousands of purposes and use cases at that time, none of which would have been helpful for solving the problems addressed by the inventors of the '966 patent.

190. Key sought to solve a problem related to differing inspection requirements for pressure vessels and reports across jurisdictions; and thus, describes a system where a certain pressure-vessel inspection form is selected for use by an inspector based on the jurisdiction. Even if it could be modified for use by fire hydrant inspectors, which it cannot, it would not solve the lack of compliance problem because it is not collaborative with respect to the asset owner, and it does not describe an open, real-time system that could be used effectively by first responders, **a necessary criterion for any fire department solution.**

191. The above in my opinion makes clear that Key would not have been sought out by a POSA looking for prior art to the '966 patent. Even if a POSA had stumbled across Key, the POSA would not have found it useful or applicable in solving the problem the inventors sought to solve with the '966 patent for at least the reasons set forth above. Petitioners recognize this, and thus note for example that Key "objects 150" (such as pressure vessels and boilers) "can be dangerous if they are not properly maintained and operated." This comment is in effect saying that if you abuse, neglect, or misuse a piece of equipment or system, it can be bad.

Further, the term “dangerous” can be subjective. Is it referring to life-threatening situations only, or would the possibility of a minor injury also qualify?

192. Regardless, such a comment is applicable to many, even most assets, particularly if the asset is neglected, abused, or misused. Key makes clear that any “dangerous” condition is not a normal state of its inspected assets, instead being focused on providing “a **cost-effective** system for the performance and jurisdictional review of boiler and pressure vessel inspections.” EX1005, KEY [0043], emphasis added.

193. Even with the neglect-and-it-can-be-dangerous catch-all, Key’s cost-effective asset management focus through a common user interface is not at all targeted towards assets used primarily for fire emergency purposes such as fire hydrants. That is, the ‘966 patent is focused on a different problem – namely, ensuring firefighters have the best, most current, most complete and accurate data about firefighting assets, through improved compliance through more and better inspections and maintenance to provide safe and effective assets (often without requiring actual use of the assets). As stated above, in my opinion, at a minimum the primary art used in such an IPR petition should at least be focused on those kinds of assets. That the Petitioners did not (due, in all likelihood, to the scarcity of such art as seen in the Background of Technology section) in my view undermines its entire obviousness argument, including for claim 8.

194. As mentioned above, another aspect of Key that in my view teaches away from, or at least does not lend itself to selecting, Key is the difference in user/stakeholder focus between Key and the ‘966 patent. Like the ‘966 patent, Key discloses various stakeholders (also called users), specifically: jurisdictions, insurance companies, inspectors, and owners. However, besides having an “extra” stakeholder (insurers), Key designs its system first and foremost around 67 jurisdictions’ requirements desired inspection documentation (*e.g.*, what forms they want filled out, and in what format, following a process they dictate), followed closely by system elements under the control or direction of the insurer and thus a closed, centralized system.

195. In contrast, the ‘966 patent does not even mention an insurer as one of the “classes of user” in its claims, including claim 8, and only a few times (7) in the specification. In contrast Key references “insurance” fifty-four (54) times, including in its claims. As any POSA even casually familiar with the insurance industry knows, insurance systems are highly specialized and focused in supporting a business model based on actuarial-based risk and reward calculations and use cases. Put another way, A POSA would be unlikely to look at insurance industry-focused systems for art on a system that is not insurance industry-focused, such as the ‘966 patent. Further, insurance is about managing risks, especially long-term risks (hence

its extensive use of tools like actuarial tables), not responding to immediate, life-or-death data needs.

196. This distinction, and more broadly the differing emphasis on types of users, has significant practical implications in examining system art. The ‘966 patent specification (and history) of the patent makes clear that the asset owner user is “first among equals,” *e.g.*, that much of the system is geared towards notifying/alerting the user to an inspection requirement and facilitating their participation in getting the asset inspected. In Key, the owner is last in priority after Jurisdiction, Insurer, and Inspector—indeed almost an afterthought, and at best a tail being wagged by the jurisdiction dog. As a high-level contrast, the Key patent only references variations of “owner” 29 times, and *never* in the claims. In contrast the ‘966 patent uses variations of “owner” and “owned” 81 times, including in the claims (including in every independent claim).

197. In my opinion this disconnect in users of the system and associated purpose and use cases, an overall disinterest in (and lack of design for) collaboration between all the stakeholders, would cause a POSA to not be motivated to investigate Key as a piece of prior art, let alone being its primary art, in an obviousness analysis. Further, even if a POSA did so, in my view it would not have a reasonable expectation of success to result in the invention defined by claim 8, as the relevant details of the systems are so different.

B. Chauhan

198. In my opinion a POSA would be not to be motivated to seek out Chauhan as prior art in an obviousness analysis and would be unlikely to view its combination with Key to have a reasonable expectation of success to result in the claimed invention.

199. The Petitioners describe Chauhan as follows:

Chauhan “generally relates to an automated management system for managing data, outage repair, load switching, job workflow and crew dispatching, crew workflow, installation, maintenance and restoration of utility services by integrating geographic information systems (GIS) data with many other data sources so as to gather, transform, manipulate, analyze, and produce desired information for continuously supplying utility and relevant services.” EX1016, [0001]. Chauhan discloses entering of inspection data such as for the purpose of “code violations.” EX1016, [0001].

Chauhan discloses a “UtilityCenter™ [that] is an integrated GIS suite of applications that manages information across the entire utility” and with “[t]he

primary data ... stored in a Microsoft SQL Server® database” as known in the art, (EX1016, [0039]-[0042], FIG. 1, below), including “*fire hydrant inspections* ... with UtilityCenter” and a “HYDRANT Theme” that allows an inspector “edit and view inspection fields,” (EX1016, [0207]). Beyond fire hydrants, Chauhan discloses that its UtilityCenter has wide applicability and that the “same technology” can be used for “electric transmission and distribution utilities,” as well as “fire and police departments, zoning and planning commissions, ... gas pipeline and distribution utilities, water distribution utilities & wastewater utilities, broadband telecom providers, real property tax assessment, municipal zoning and planning, ... Department of Energy utility applications, and other local, state and federal government agencies.” EX1016, [0218], [0042] (various “utility themes”).

Petition, pp. 14-15.

200. First off, Chauhan is in a very distinct field—utility management. Like insurance companies, utility companies are generally highly specialized and focused

on utility-specific use cases and associated assets. That those assets need to be inspected, tested, and maintained are certainly important, but so do many other types of assets, for sometimes widely diverse reasons (*e.g.*, cost management, performance optimization, replacement planning).

201. Like Key, Chauhan is only tangentially interested in emergency assets and situations, instead focused on “managing data, outage repair, load switching, job workflow and crew dispatching, crew workflow, installation, maintenance and restoration of utility services by integrating geographic information systems (GIS) data with many other data sources.” EX1016, Abstract. A POSA could argue that while the ‘966 patent is focused on pre-empting problems with respect to assets (*e.g.*, making sure fire hydrants work before they are needed), Chauhan at best is focused on fixing assets after they break. More importantly, little of the data that Chauhan provides would be relevant to firefighters—the ultimate user of the fire hydrant data in the FHMS.

202. As described in the Background of Technology section, the data that Chauhan would “bring to the table” with its “HYDRANT” themed user interface would, at best, be a partial list of public, external (to a building) fire hydrants, overlaid on top of a variety of (mostly useless to a firefighter) utility-specific data sourced from highly utility-specific feeder systems.

203. Further, as also described in the Background of Technology section, a POSA would not have a Reasonable Expectation of Success, as Chahuan would capture the fire hydrant information in a simple table format, with single, one-way links to other data, making a flat file structure database system the logical way of managing that data. In contrast, the far more sophisticated set of tables capturing literally dozens of attributes in a series of multiple-interconnected tables would demand a relationship database management system (RDBS). **Put another way, Chauhan's simple flat file DB structure would not work for Fire Hydrants and related assets.**

204. The Petitioners appear to have included Chauhan in its Petition (including claim 8) because of its references to a fire hydrant in the following sentence:

The system architecture allows managers or administrators to temporarily assign permissions to work crews. For example, a contractor hired to do **fire hydrant** inspections could be given a laptop with UtilityCenter loaded on it and assigned a username that only allows him to edit and view the inspection fields on the **HYDRANT theme**.

EX1016, ¶0207 (emphasis added.)

205. The context and usage of the HYDRANT term adds nothing to how that kind of asset would be treated any differently than any other kind of asset. Its use of

“HYDRANT” does serve to illustrate Chauhan’s use of “themes,” but with no detail as to what the HYDRANT themed user interface includes, how it is used in connection with the rest of the system, or that theme is any different than any other theme. And as clearly described above, its suitability to provide the data a firefighter needs in fighting fires, through a comprehensive, complete fire hydrant asset inspection and compliance process, is at best partial and incomplete, if not outright misleading and even dangerous.

C. Sweeney

206. Sweeney is inappropriate art in that a POSA would not be motivated to seek out a construction asset management system in trying to replicate the ‘966 patent or otherwise solve a fire department’s lack of compliance problem. As the Petitioners note, Sweeney discloses “methods and systems for online management of construction assets.” EX1006, [0007], [0002]. Sweeney further discloses that an “asset owner/manager may log in to a secure portion of a website to reach a web page containing the asset owner’s information” and may, *e.g.*, view “inspection reports.” EX1006, [0040]-[0041]. A report may be generated that “relate[s] to one or more of the plurality of the construction assets and be generated according to at least one of age of the construction asset, a rated condition of the construction asset, a type of the construction asset, recommended repairs listed on the inspection report[], date of construction, date of last repair, expected remaining lifetime of the

construction asset, contractors responsible for construction of or repairs to the construction asset, a location of the construction asset, repair history, repair type, repair costs, defect history, and the like.” EX1006, [0042], [0007]-[0008]. *See* Petition, pp. 16-17. However, Sweeney discloses archived inspection reports related to a construction asset. EX1006, [0039]. Even if an asset owner queried archived inspection reports, it would not constitute claim 8 step [8d] “notifying the owner of an asset” in advance of an inspection nor would it disclose the recited contents of such notice, e.g., a standard format description of the type of inspection to be performed and a cost associated therewith.

207. Petitioners appear to use Sweeney in an effort to address Key’s (and as applicable McKinney’s) deficiencies with respect to owners and owner-related functionality. More specifically, Petitioners attempt use Sweeney to address part of claim 8’s limitation about notifying an owner of an inspection, as well as schedule and cost information about that inspection.

208. However, in my opinion a POSA would not seek out Sweeney when considering art alone or in combination with Key to make the invention recited in the ‘966 claim 8, as it is in a different asset field. Construction assets, particularly large items like roofs, driveways, and parking lots, are not primarily used for fire emergency assets as (in my opinion) the claims require. Short of a roof collapsing or a sink hole developing in a driveway, there are even very few fringe “dangerous”

use cases. Sweeney states “The present invention enables online monitoring of the condition of construction asset, Such as a building, a roof, a parking lot, or the like.” [EX1006, 0002]. Even if it is argued that the assets involved are broader, Sweeney claim 15 provides a view on what this broader set of assets would look like:

15. A method in accordance with claim 12, wherein:

Said project comprises at least one of repair of a roof leak, roof replacement, building repair, building renovation, building remodeling, driveway repair, driveway repaving, parking lot repair, parking lot repaving, window repair, window replacement, gutter repair, gutter replacement, interior painting, exterior painting, erection of a commercial or residential Structure, and demolition of a commercial or residential Structure.

[EX1006, pp. 10-11.]

209. In short, the assets covered by Sweeney bear no resemblance to those of the ‘966 patent’s fire emergency assets. Further, it should be noted that the scope of Sweeney’s inspections is focused on during construction or after construction but in need of repair—not the pre-emptive nature of the ‘966 patent that ensures the fire emergency assets are in order after they are put in place, but before they are used.

That Sweeney uses inspection-related forms, bids, schedules, etc., is not sufficient to distinguish Sweeney from literally thousands of other potential asset management patents involving inspections and asset management.

210. As seen above, a POSA would not have a reasonable expectation of success that the combination of references would result in the claimed invention, and there is a lack of Motivation to Combine. Sweeney focuses on a completely different set of assets, used different temporal contexts (*e.g.*, during construction and after repair is needed), than the ‘966 patent. Further, Sweeney does not support determining a precise location of an asset, enabling owner to find inspectors in general nor in an “in proximity” capability, mentioning only that a “geographic location” element can be involved, thus being inadequate with respect to those elements of the ‘966 patent.

D. McKinney

211. Similar to the above art, in my opinion a POSA would not be motivated to seek out McKinney as art relative to the ‘966 patent, and would have reservations with respect to a reasonable expectation of success to result in the claimed invention.

212. As the Petitioners state, McKinney “relates generally to monitoring systems and, in a presently preferred embodiment, provides a system and method for servicing and for verifying compliance related to maintenance, operation, inspection, repair, and/or service contract renewal status of environmental equipment such as

wastewater treatment systems.” EX1020, [0003]. McKinney discloses that its system “may provide an electronic regulatory compliance method for one or a plurality of environmental equipment systems” that may have “a plurality of different owners,” where the assets must comply with certain regulations. EX1020, [0032], [0044]-[0045]. McKinney further discloses a web-based system operating over the Internet, (EX1020, [0023], [0029], [0050]-[0053]) as well as “form letters” provided to, *e.g.*, the owner, scheduling of inspections, and monitoring by the regulatory agency, (EX1020, [0057]-[0059]). *See* Petition, p. 18.

213. McKinney makes no reference to the term “fire” in any way in its specification or claims, nor does it mention inspectors, let alone identifying inspectors in proximity to assets being inspected. It does mention the use of alarms, in the context of enabling alarms to communicate remotely. However, McKinney’s **core purpose is fundamentally different than the ‘966 patent**, and even the other prior art. Specifically, McKinney is about setting up ad hoc communications networks to connect remote wastewater-related systems with various service and regulatory bodies:

“The present invention provides an electronic communication system and method that permits an environmental equipment system installer to install equipment without the need to run a data line such as a

telephone line or other specialized data line thereby
decreasing the cost and time required for installing the
system.”

[EX1020, Abstract.]

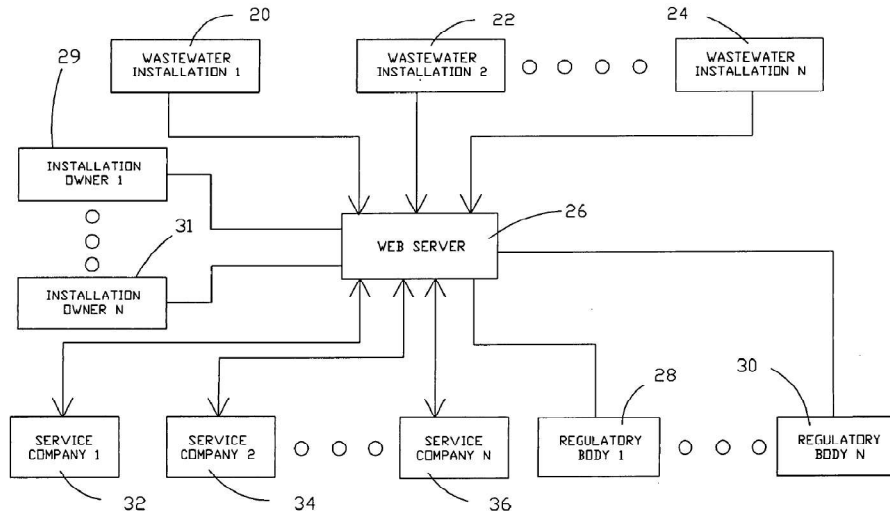


FIG. 2

[EX1020, p.3.]

214. This is **completely different** purpose than the ‘966 patent, despite the Petitioners’ attempt to use it for purposes such as the “in proximity to” element of claim 8. Setting up ad hoc networks is a very specialized field in the communications world; putting communications capabilities in place where there is little-to-no existing communications infrastructure. McKinney is for being able to collect information about remote wastewater installations by setting up communications nodes to collect wastewater system data and sending it to remote servers.

215. To restate, the primary reason that a POSA would not look to McKinney in replicating the ‘966 patent’s capabilities is that it is for a completely

different purpose than the '966 patent—setting up remote data collection and communications capabilities, versus facilitating the inspection of fire emergency assets. Further, a POSA would have doubts with respect to a reasonable expectation of success in that McKinney's focus in large part has little to do with end users (*e.g.*, owners), as well as having surprisingly little to do with precision location/GPS/proximity, despite its rural/remote context.

IX. Missing Elements

216. As described in the sections above, each piece of prior art has serious deficiencies. These are summarized below with respect to technical scope, while reiterating their lack of Motivation to Combine and lack of Expectation of Success, with respect to claim 8.

217. The sole ground of invalidity fails for several reasons. Overall, the proposed combination of four references fails to teach each and every limitation in the Challenged Claims. In particular the references do not teach the owner-enabling, collaboration (and compliance) enhancing capabilities enabled by the system/(method?) claimed, nor do they teach the method-related functionality related to fire hydrant management capabilities of the claims. In addition, several of the individual claim 8 limitations are missing/not met by the prior art, as described below.

- A. [8a] “granting remote access to a web-based registry system, wherein the web-based registry is configured to run a fire hydrant management software, to at least three classes of user, wherein the three classes of user comprise: (1) an owner of an asset (2) an approval authority (3) an inspector”**

218. Regarding step [8a], Petitioners assert Key alone or in combination with Chauhan arguing that it would have been obvious that “asset” in Key could be a fire hydrant. (Paper 1., p. 33 citing EX1003, ¶¶150, 124-139.) There are numerous issues with this argument.

219. First, Mr. MacInnes admits that Key does not disclose a “fire hydrant” or “fire hydrant management software.” (EX1003, ¶150) However, he elsewhere notes that Key states that it could be employed to other objects, and that pressure vessels disclosed in Key may be dangerous; hence, a POSA would have motivated and found it logical to apply Key’s system to manage fire hydrants. (EX1003, ¶¶124-126.) However, unlike pressure vessels, which in and of themselves can be dangerous, a fire hydrant is not dangerous itself; rather, its use is necessary to assist in responding to another danger. Further, implicit in that assertion are the false assumptions that: (1) the applications are interchangeable for an asset management system, and (2) different kinds of additional assets, like fire hydrants, can be merely plugged into an asset management system directed to a different application, such as Key’s pressure vessels or Chauhan’s public utility. Both assumptions are false.

220. Asset management systems are designed for particular applications and are not interchangeable. There are general asset management systems, and there are specialty asset management systems. They are designed differently, and particularly differ with respect to a) the purpose of that asset management system, e.g. what it is used for, by whom, and why; b) what data is captured to support that purpose, and how it is captured, stored, and retrieved.

221. For example, as discussed above, claim 8 is directed to managing the ITM of hydrants and related life safety systems. Hence, it is not a broad based “asset management system”; rather, it is directed to a specific, *specialized* application, as is apparent from the database shown in Fig. 4 and Figs. 7-23 depicting a “Hydrant Works Inspection System” and “Hydrant Scout” hand-held device. (EX1001.) In addition, the data schema shown in Fig. 4a illustrates the complex requirements for managing ITM for fire hydrants. (*Id.*) That database and schema is vastly more complex than flat file systems, such as database shown in Key. (EX1005, Fig. 7.)

222. Moreover, the primary purpose of the process recited in claim 8 is to improve fire safety infrastructure with real-time data and a greater degree of compliance for fire hydrants and other life safety systems, while making the real time data available to first responders so that they can respond more quickly and effectively to fires and other emergencies, essentially saving lives and avoiding preventable damage to buildings and other facilities. (EX1001, 10:10-21.) A POSA

would not look to Key (or Chauhan as discussed below) to manage ITM for fire hydrants and other life safety systems as those systems were not designed to be employed in emergency situations, like responding to a fire; and they are not focused on obtaining real-time data from all stakeholders and making the information available to first responders and others as emergencies arise.

223. Further, Mr. MacInnes ignores that claim 8 recites a process that employs a geographic information system (“GIS”) with respect to the location of fire hydrants and related life safety systems—not utilities. A POSA would readily understand that such systems are built upon layers of data that are specific to the intended application, what data is collected, and how it is used. The GIS layers in a complex system, as needed to manage ITM for fire hydrants, and related systems may exceed hundreds of thousands of layers. Those layers, the data collected, and the manner in which they interoperate is unique to a particular application. Hence, a POSA would not look to Key’s pressure vessel system or Chauhan’s public utility system, and it would not be obvious to combine them, to make the invention recited in claim 8.

224. MacInnes asserts that Chauhan teaches that devices to be monitored are interchangeable because it discloses a database with an integrated GIS suite of applications that manage information across the utility. (EX1003, ¶¶128-129.) He also notes that Chauhan describes a “new Security Manager” that allows access

based on the functionality of an application, where it explains that an administrator may give temporary access to a contractor inspecting a hydrant by providing that person a laptop that only allows him to view and edit a “HYDRANT theme” interface. (EX1003, ¶127 citing EX1016, [0207].) A POSA would not consider combining Key and Chauhan, GIS systems with different applications, merely because Chauhan discloses a user interface for hydrant inspections, for the same reasons as set forth above.

225. Still further, Chauhan discloses a system for a utility to improve its outage management systems. *See* EX1016, ¶0001-0002. Petitioners fail to explain why or how a POSA would combine Key, which describes a multi-jurisdictional system for managing the inspection of boilers and pressure vessels, with Chauhan, which describes a system for a utility to improve its outage management, to satisfy the above referenced limitations in Step [8a], which relates to a different technical field than both of those references. *See* Pet., pp. 29-33.

226. While Mr. MacInnes notes that Chauhan states that the same technology “has been tailored to the specific needs of public agencies, such as fire and police departments” (*see* EX1003, ¶130), Chauhan nowhere explains the needs of the fire department or how the utility outage management system was in fact modified to meet the needs of a fire department, especially where a fire department does not need a power outage management system, as described in Chauhan.

227. Petitioner contends that Key alone or in combination with Chauhan discloses or renders obvious limitation [8a]. Pet. 29 (citing Ex. 1003 ¶¶149–157). I disagree, for two reasons: a) Key does not disclose running fire hydrant management software, even using the Board’s construction of FHMS software (“management software that processes information about fire hydrant assets.”). And b) Chauhan also does not disclose running fire hydrant management software using the Board’s construction of such software (that it processes information about fire hydrant assets).

228. In arguing otherwise, the Petitioner’s alleged expert, Mr. MacInnis states that “More particularly, Key discloses the claimed limitation, except it does not specifically mention a “fire hydrant” (and correspondingly, “fire hydrant management software”). However, as I discussed above in Section XI.A.2, it would have been obvious to a POSA to apply Key’s teachings to fire hydrant as the regulated owned asset to be monitored and inspected to ensure the asset (fire hydrant) was in compliance.”

229. In other words, Mr. MacInnis seems to find it sufficient that since Key deals with “regulated owned assets to be monitored and inspected” that it could be easily extended to include fire hydrants as an additional asset type.

230. This logic is deeply flawed. With it, Key could be used to manage *any* sort of regulatory monitored asset, including planes, trains, and automobiles; nuclear

power plants; space launch vehicles; moon bases, and so forth, just to name a few top-of-the-head examples. In other words, in Mr. MacInnis' opinion what the asset and associated data elements involved, who are they used by, and what use cases do they support are *irrelevant*: if it is a regulatory monitored asset, with an associated inspection and compliance dimension, Key will work in managing it, no matter how different the assets are in purpose, range and type of use cases, who they are used by and how, and how incomplete the data might be and how different its associated data and systems that interact with the assets might be.

231. Further, such specialty assets would expect to have as at least “equal” stakeholders the owners of the assets, e.g. car manufacturers, plane makers, and even the (nuclear) utilities. They would not in effect place responsibility for the asset in the hands of the inspectors, insurers, nor even the regulatory agencies overseeing their operations. Instead, the owners would be the primary stakeholder, with the other stakeholders being collaborative partners. The owners are the most knowledgeable about the asset, living with it every day, and being the first to notice operational issues.

232. Indeed, the specifics of the data, and how it is used, and even by who can make a major difference in the quality of the “management software that processes information about fire hydrant assets.” But instead, the Petitioner argues its art (particularly Key) “can manage any regulated asset, so it can manage fire

hydrants” to paraphrase, which is belittling and even worse, incorrect, even dangerously incorrect.

233. As described earlier in the Background of Technology and Business section (particularly in the Chauhan GIS section), there was a discussion about the many different types of life safety assets, including various types of FHMS asset types (outdoor/public hydrants, indoor/private hydrants, sprinkler systems, extinguishers, fire pumps, etc.). There was a further discussion on how the state/status of the asset, and its operational readiness to use, by fire fighters during a fire is ultimately what a fire hydrant management system is all about. There are other benefits: generating some inspection revenue, ensuring that the proper types of inspections, tests, and maintenance/repairs are being done at the right time in the right way, and so forth, but they all at the end of the day are about being able to provide firefighters with the right—and most complete and accurate—data at the right time in the right format and in as high a quality and data “freshness” as possible.

234. Put another way, life safety/fire hydrant assets must be specially managed to recognize the unique kinds of data involved and the unique kinds of personnel and use cases that use them, which require special systems and processes. While this might be viewed as a “functional” argument, in reality it is much more of a “management of information about fire hydrant assets” argument. **Put still another way, if you don’t have the right data, and complete and comprehensive**

data, for the right fire hydrant (or related) asset, taking into account how that information could be (mis)used in an emergency, then you have failed to properly manage the information about the fire hydrant asset. Key fails in disclosing a FHMS that is “management software that processes information about fire hydrants,” because it says nothing about fire hydrants at all in the patent, asserting that it would be “obvious” to” include just because the system does regulatory compliance monitoring.

235. Mr. MacInnis *completely* ignores any of the above unique/different aspects of FHMS fire hydrant assets versus Key’s general assets—only that they both can be subject to compliance monitoring. A POSA would recognize the inadequacy, indeed the ridiculousness of saying that a system for “regulatorily monitored assets” would be fine for life safety or fire hydrants, or anything else for that matter: planes, trains, cars, nuclear power assets, military aircraft, etc. While this latter is a bit hyperbole, the concept is not: can one asset management system (with a compliance monitoring capability) manage any and all types of compliance-needing assets? A POSA would immediately say no—it would depend on the assets: what data is involved, who uses it, and how is it used and what for what purpose.

236. To illustrate: Plane assets are tightly managed through a variety of specialty asset management systems (regulatory and otherwise). So are trains. Cars have a variety of compliance mechanisms—sometimes redundant. Nuclear power

plants have special systems for tracking uranium-related assets. What do all these have in common? Numerous Use Cases that could go wrong and result in injury or death, and potentially large-scale destruction. Having a specialized asset system for life safety assets, including fire hydrant-related assets, would easily fall into this need for specialized asset management. Even more so: such emergency assets could be used for any and all of those accident use cases in other industries, planes, trains, cars, nuclear power, etc.—all need emergency responders who know what assets are available to fight fires, including the location, placement, state, and operational condition. So logically emergency assets, in their ability to be used for other clearly specialized asset emergencies, must be “special” assets themselves. “Bolting on” fire hydrant-type data onto a general compliance asset management program like Key would be grossly deficient conceptually and technically and would not provide a motivation to combine or have a reasonable expectation of success.

237. Petitioners seem to recognize these deficiencies and brings in Chauhan to address them, particularly using Chauhan’s “HYDRANT” theme in some hand-waving, non-specified way, other than an assertion that it “can be used for fire and police departments.” If this system had a theme called “URANIUM,” and said it could be used for Nuclear Power Management and the NEA (Nuclear Energy Agency) and Military as key stakeholders, a POSA would not be expected to say: Sure-That Will Work! Applying a general compliance asset management program

to life safety, fire hydrants, and other highly specialized asset data, use cases, and users whose lives literally depend on the ability of the system to collect, organize, verify, and present to a fire fighter when he/she most needs it would be an extremely poor (and dangerous) choice.

238. Instead, it would have the capabilities designed for from the start in knowing all the data to capture, how to organize it, how to provide access to all stakeholders, and ultimately provide that comprehensive, complete, verified, real-time data to key users: fire departments and personnel when they are fighting fires. For the foregoing reasons, Key and Chauhan do not disclose “granting remote access to a web-based registry system ... configured to run a fire hydrant management software, to at least three classes of user, wherein the three classes of user comprise: (1) an owner of an asset (2) an approval authority (3) an inspector” as claimed.

B. [8b] “retrieving, by a computer-based fire hydrant management software system, real time records of assets from a database, the database being accessible and augmentable by a classes of user”

239. Petitioner argues that Key alone, or Key in combination with Chauhan, discloses this limitation. I disagree, for multiple reasons: a) Key does not disclose records being “augmentable” by the “owner” class of user, and b) Key does not disclose “retrieving ... real-time records of assets from classes of users, as Key imposes a variety of approval filters before data/updates actually makes it into the database of record, thus preventing those records from being real-time, and c)

Chauhan does not enable asset owners to access and augment real-time records, as records access is restricted to utility employees. Each of these are discussed in detail, next.

Key does not disclose augmentation of records by the owner class of user

240. In its overall response to the claim limitation, Mr. MacInnis focuses on the hardware architecture characteristics, while mostly ignoring the requirement that **all** classes of users be able to access and augment the data, including the owners. He attempts to obscure this weakness:

Key discloses that each of the various classes of users can access and update and add to (augment) the database and information contained therein, for example, that “the inspector” can “input the inspection information.” Ex. 1005, [0088], FIG. 5, [0061] (“These steps generally require manipulations of quantities such as owner information data, location information data, scheduled dates, inspection data, review data, and other related information.”), [0081] (user enters information via web browser if authorized), [0070]-[0077] (inspectors, jurisdictional reviewers access and modify/update the information), [0017] (updates to the database), [0019] (“The controlling jurisdiction reviews the [inspection] result data online and any review data is stored in the system database.”), [0104] (“FIG. 7 illustrates a data file structure of information stored in the JOM database 350.

The information illustrated in FIG. 7 is organized logically in conventional data files in the known manner, associated with one or more owners of pressure vessels or boilers.”), [0114] (“The data stored in the database is not overwritten upon the storage of edit information. The new information is appended to the existing information”), [0115]-[0123], FIG. 8 (depicting user access process), FIG. 9 (providing payment information which payment is described as being made by the owner and stored in the database, as in [0055], [0075], [0108], [0113], [0125]-[0126]), claims 1, 1, 12; limitation [8a] above (user access and modification/updating of data for each class of user including owner, inspector and approval authority).

241. Despite all of Mr. MacInnis’ characterizations, the references themselves do not support him. Specifically, while the jurisdiction reviewers and inspectors can edit data in Key system, the owner cannot. Mr. MacInnis seems to rely on the Key citations about “the user” having this ability. **However, a POSA would not recognize that Key considers an asset owner as a “user.”** The owner is a distinct entity within Key primarily relegated to paying fees or other financial responsibility. While Key does have an “owner portal,” it is for viewing data, not modifying it.

242. Two passages in Key makes clear that a “user” is not the owner. The first is:

Before allowing a user to modify or add payment information, the unit 435 ensures the user has the proper authority to perform these actions. **Proper authority is a user authorized by the owner** of the object to perform these functions.

(EX1005, [0075].) By stating the user has to be authorized by the owner, the owner cannot be the user.

243. Further, Key describes the various types of users:

Typical user groups include chief inspector, data entry, accounting, work assignment, reviewer, and inspector.

(EX1005, [0078].) All of these users are persons clearly not the owner. Thus, the owner cannot augment the real time records of the database. Further, any augmenting of the database would be delayed while “proper authority to perform these actions” is verified, discussed next. Therefore, Key does not disclose “the database being accessible and augmentable by a classes of user.”

C. Key does not disclose real-time retrieval of records of assets from classes of users, as Key imposes a variety of approval filters before data/updates actually makes it into the database of record.

244. Further, any editing or augmenting (“modifying”) of data has to be done by a user with the appropriate authorization, **which by itself would introduce a delay in any data update(s) that need to be made, potentially causing dangerous**

inaccuracies in data if there is a fire before the updates can be made, as Key makes clear in its authentication requirements for augmenting data:

- **Before allowing a user to modify or add location information**, the unit 420 ensures the user has the proper authority to perform these actions. [0072]
- **Before allowing a user to modify or add information**, the unit 425 ensures the user has the proper authority to perform these actions. [0073]
- **Before allowing a user to modify or add location information**, the unit 430 ensures the user has the proper authority to perform these actions. [0074]

Before allowing a user to access or modify assignment information, the unit 430 ensures the user has the proper authority to perform these actions. [0076]

245. Further, the process used by Key requires a Reviewer to in effect approve any changes to the compliance records, which would include any data updates associated with the fire hydrant assets:

Reviewers 125 at each jurisdiction 120 evaluate each inspection, repair, and other data to ensure compliance with the jurisdiction's requirements.

(EX1005, [0047].) A Reviewer having to review, or even just sign-off on an inspection, would by definition introduce a delay into any database of record updates, thus preventing them from being real-time. Put another way, any updates

to the data through Key's management of the compliance process for fire hydrant assets has built-in not-insignificant delays, which would necessarily mean that at any given time the database does not have all updates in real-time reflected in the data, and thus any retrieval of actual compliance data would not be in real-time.

246. This is not a mere timing issue or unimportant patent claim nuance. As discussed before, a critical element of the '966 patent is to provide firefighters with complete, relevant, and accurate as possible. If data is not up-to-date, it is potentially dangerous. Therefore, it has to be as real-time as possible. A POSA would recognize that this does not mean that any updates to the data are done "eventually," but rather done immediately, or at least as close to that as possible.

247. **Further, besides introducing delays preventing real-time retrieval, Key teaches way from immediate data updates, particularly by the owner (if it does at all).** Rather, any updates by the Owner have to be submitted to the jurisdiction to be approved (or at least reviewed) before those updates are allowed to be actually updated in the database. As such, a POSA would recognize that such possible delays (or even rejection) of those updates could have very real consequences to firefighters by, in effect, providing them with incorrect/misleading data, particularly when there is a fire between the time an asset change of some sort requires an update, and the time that the jurisdiction processes actually allow the changes (even if immediately submitted to the jurisdiction) to be updated into the

actual database of record. Therefore, Key does not disclose “retrieving... real time records of assets from a database.”

Chauhan does not enable the owner to access and augment real-time records.

248. Chauhan is a system for utilities and their employees. Its purpose is to help identify and resolve outages. It is an internal system—not a customer facing one. There is one (1) reference to an owner in Chauhan, a single row in table (Figure 49). Regardless of who owns the pole, Chauhan does not teach that the owner has access to and authority to augment real time records in the database as recited in step [8d].. Thus, using Chauhan to try to supply that deficiency in Key fails.

249. Further, Chauhan’s use of this one table with owner in it (below) could be managed by a flat-file database, which is inconsistent with—indeed incompatible with—the ‘966’s complex data schema and associated Relational Database Management System (RDBS) described in the Background of Technology section. Further, there is no data elements in this table that has to do with fire hydrants or related systems.

COLUMN NAME	DATA TYPE	LENGTH
OWNER	VARCHAR	4
HEIGHT	INT	4
CLASS R	VARCHAR	1
MATERIAL	VARCHAR	10
ATTACHMENT	VARCHAR	10
DOB	INT	4
NUM_CKT	INT	4
RISER	VARCHAR	1
COMMENT	VARCHAR	30
ACCESIBLE	VARCHAR	1
TRANSCKTS	VARCHAR	1
UCID	INT	4
UNITS	VARCHAR	100
CONDUCTID	INT	4
RETIRED	BIT	1
DISTRICT	VARCHAR	30

SAMPLE CUSTOMIZED FIELDS FOR A POLE THEME IN EXISTING DATABASE

FIG. 49

250. I acknowledge there are many patents in the prior art that include the word “owner.” But the mere mention of that word in a totally different and incompatible context (as in Chauhan) does not mean that a POSA would be motivated to combine that reference with the method claimed in Claim 8. Therefore, a POSA would not have a reasonable expectation of success in attempting to graft this flat file structure onto Key’s flat file structure to support the ‘966 RDBS data requirements. Thus, Key teaches *away* from limitation 8[b].

251. Thus, in total the Petitioners prior art does not teach limitation 8[b]: “retrieving, by a computer-based fire hydrant management software system, real time records of assets from a database, the database being accessible and augmentable by a classes of user.”

D. Key does not disclose analyzing records of assets to identify notification events [8c], and based on that analysis, notifying an owner of the asset of the notification event and notifying the approval authority of the status of the asset, as recited in claim elements [8d] and [8e].

252. In particular, the references do not teach sending notices to the asset owner and Approval Authority in advance of an upcoming inspection.

253. As discussed above, steps [8b] and [8c] respectively recite retrieving and analyzing real time records of assets to identify notification events, then based on that analysis, step [8d] recites notifying an owner of the asset regarding the type and cost of the inspection, and based on the same analysis, step [8e] recites sending a standard format notice to an approval authority of the status of the asset. Thus this claim expressly recites a temporal sequence; the analysis precedes the notification. (See EX1001, 15:27-47.) As Petitioners' witness Mr. MacInnes acknowledged that those limitations collectively recite simultaneously sending a notice to the asset owner and approval authority regarding an upcoming inspection. (EX2021, pp. 62-63.)

254. Petitioners argue that step [8d] notifying the asset owner was obvious based on Key alone or combined with Sweeney, and that step [8e] notifying the approval authority was obvious in view of Key alone. Paper 1, pp. 42, 49. As discussed above, Key describes an inspection routine for boilers or other pressure

vessels, where the role of the asset owner therein is to pay fees before certificate issuance. (EX1003, Figs. 2, [0054], [0055].)

255. Consistent therewith, Key explains that jurisdictions delegate inspections to insurers, which provides the inspectors. (*Id.* at [0048]-[0050]) For such an inspection, Key describes a work assignment unit that places a task in the insurance company's scheduled inspection listing, and after an inspection when an inspection report is ready for review, it places a task in the jurisdiction's item task listing. (EX1005, [0076], [0184].) Hence, **Key does not disclose providing notice to the asset owner and jurisdiction of an upcoming inspection.** Rather, it teaches delegating inspections to *insurers*, then placing a listing in the jurisdiction task list, when an inspection report is ready for review – and not in advance of the inspection as recited in step [8e].

256. Further, this process and passive placement of tasks in only one stakeholder's task list require a separate logging-in process by the various stakeholders (excepting the owner, who is not part of this process at all in Key), which goes directly against best practices in task-related notifications as described in the Background of Technology section. Further, as a POSA would know, every additional “click” that is needed to access information decreases the likelihood that such access will be done, or at least risking introducing delays before the task gets completed.

257. Thus, a POSA would be less motivated to select Key poor notification practices in attempting to replicate the ‘966 patent’s best practice of proactive, complete, and self-sufficient notifications to various stakeholders, even if the lack of owner notification is waived away as obvious (which it is not). Further, a reasonable expectation of success by selecting Key would be diminished, as Key’s poor, passive task notification practices would go directly against the proactive collaborative notification best practices that are a major reason for the ‘966’s related systems commercial success. In any event, Key does not disclose “analyzing records of assets to identify notification events [8c], and based on that analysis, notifying an owner of the asset of the notification event and notifying the approval authority of the status of the asset” as claimed.

E. The References Do Not Disclose Step [8e], Sending a Standard Format Notice to An Approval Authority of an Upcoming Inspection Deadline.

258. Step [8e] recites sending a standard format notice to the approval authority of the status of an asset. (EX1001, 15:43-45.) Petitioners argue that Key discloses it or it would have been obvious to include as part of Key. (Paper 1, p. 49.) Petitioners make the same argument that Key discloses a notification system to notify users, while failing to identify any portion of Key that discloses sending the recited standard format notice to an approval authority. Petitioners also add the

general assertion that it would be obvious to provide relevant users with the relevant information. (Paper 1, pp. 49-50 citing EX1003, ¶¶197-199.)

259. In support of these positions, Mr. MacInnes makes a general statement that “the importance and logic of providing necessary information to the necessary stakeholder at the appropriate time” was known to a POSA. (EX1003, ¶ 199.) As discussed above, Key discloses that the jurisdiction online manager (“JOM”) places a task in the jurisdiction’s task list, when an inspection report or other action requires review by the jurisdiction. (EX1005, [0076].) Neither Petitioners nor Mr. MacInnes identified any portion of Key that teaches that it was necessary to notify the jurisdiction in advance of an upcoming inspection, nor any portion that describes “sending a standard format notice to the approval authority of the status of the assets,” as recited in step [8e].

260. Indeed, **Key teaches away from notifying an approval authority in advance of an inspection stating that jurisdictions delegated inspections to insurers.** (EX1005, [0044].)

261. Even in those instances where a jurisdiction may schedule and perform an inspection, as opposed to delegating it to an insurer, Key does not teach sending an email or other message using its notification unit. (*See* EX1005, [0071], [0083].) Rather, in the “Inspection Routine Process” shown in Fig. 5, the JOM at step 525 places a task in the jurisdiction task list for upcoming inspections, **as**

opposed to sending an email or other direct notice via the notification unit. (EX1005, [0083].) This is a “worst practice” in that not only does it not make the appropriate stakeholder(s) aware of the needed to-do or action, it requires additional effort (once the stakeholder becomes aware that a task awaits them) to find out the details of the task, including the need to login to the JOM or equivalent system. As a POSA would know, every additional “click” that is needed to access information decreases the likelihood that such assess will be done, or at least risking introducing delays before the task gets completed.

262. In short, Key does not disclose sending the approval authority in advance of a scheduled inspection a “standard format notice,” indicating therein the status of the asset, as recited in claim 8 step [8e].

F. The References Do Not Disclose the Asset Owner Selecting an Inspector, from a List of Inspectors, as cited in claim 8f.

263. Regarding claim 8 step [8f] the asset owner selecting the inspector from a list of available inspectors based upon attributes including the inspector’s proximity to the asset, Petitioners argue that it is disclosed by Key combined with McKinney and/or Sweeney. (Paper 1, pp. 58-59.)

264. There are multiple problems with Petitioners’ arguments. First, **Key nowhere discloses, but instead affirmatively teaches away from the asset owner selecting the inspector**, explaining that jurisdictions either perform inspections

themselves or delegate them to insurance companies, **not owners of assets**, as referenced above. (*See* EX1005, [0044], [0083].) Likewise, it does not disclose providing the asset owner (or insurer for that matter) with a list of inspectors from which to choose, indicating therein their proximity to the asset.

265. Further, with either the jurisdiction or the insurance company “dictating” the selection of the inspector, it flies in the face of a core collaboration aspect of the ‘966 patent regarding this limitation: to provide the owner with the ability to be a collaborator in the compliance process. **As asserted above, it is the enabling of the owner to be a full collaborator in the compliance process that makes the ‘966 patent and its real-life system succeed where traditional software did not.**

266. The jurisdiction (or insurer) in Key does nothing to ascertain if an inspector would be acceptable to the owner, or even ascertain if a minimum of convenience (by at least the inspector being in close proximity to the owner’s asset), helping with scheduling and coordination for example.

267. Petitioner also argues that Key teaches that an inspector must be qualified by a jurisdiction and be commission to perform inspections therein, and thus, it teaches that inspections are performed by inspectors located “within proximity of the asset.” Paper 1, p.57. The recited limitation requires that the asset

owner may select from a list that provides, in part, inspector's proximity to the asset.

268. Petitioners argue, without support, that this limitation should not be considered as inventive alleging that the '966 patent provides no details. Paper 1, p. 58. In the Abstract and Summary of the Invention, the '966 patent provides that a list of at least one qualified inspector is electronically transmitted to the asset owner in conjunction with a notice that an inspection is needed. (EX1001, Abstract, 3:8-12.) The '966 specification provides that an asset owner will use the system to find qualified inspection companies. (EX1001, 4:34-36.) It likewise provides that the owner may be sent a list of inspectors with the inspection notice. (EX1001, 8:24-29.)

269. Alternatively, the '966 patent asserts that the "owner may select their own inspector or use the web-based compliance registry to find a qualified inspector or inspectors," which also provides "a list of inspectors is available that includes licensed and bonded inspectors." (EX1001, 8:42-45.) The relational database described and depicted in the '966 patent allows an asset owner to view a specific hydrant or hydrants in a particular area, with links to lists of registered service providers. (EX1001, Fig. 4a *generally*, 1:7-15, 6:6-14; EX1009, pp. 23-24, U.S. Prov. App. 60/886,269 incorporated into the '966 specification.)

270. In short, Petitioner's assertion that the '966 fails to adequately describe providing the asset owner a list of inspectors from which to choose is baseless. Indeed, Petitioners acknowledge that the plain language of claim 8 step [8f] provides that the asset owner selects the inspector from a list qualified inspector indicating their proximity to the asset, and, apparently recognizing the weakness of Key, argue that it is disclosed by the combination of Key and McKinney and/or Sweeney. (Paper 1, pp. 58-59 citing EX1003, ¶ 217-222.)

271. While McKinney provides for online contracting between a home owner and a service company for waste water systems and provides that regulations may require that service personnel be "authorized representatives" (*see* EX1020, ¶¶[0063],[0064]), it does not disclose step [8f] providing an asset owner a list of service providers from which to choose for an inspection, where the selection is based in part on their proximity to the asset as recite. Further, as described above, a POSA would not be motivated to include McKinney in a combination, as it is a completely different field: enabling remote networks to collect and communicate wastewater systems data with remote servers.

272. Similarly, Sweeney is an inappropriate piece of art technically and does not supply the teachings missing from McKinney and Key, as Sweeney describes a system for contractors to submit bids on a construction project from which the asset owner can select winning bid. (*see* EX1006, [0043]) **It does not disclose the bidder**

proximity to the asset or that the bids are for *inspection*, as opposed to the *construction* bids disclosed in Sweeney. Among various material differences, inspections are almost exclusively human services focused, whereas construction bids, while there may be a labor component such as various services providers, is primarily with respect to building assets with other assets. As such a POSA would be less motivated to seek out art that does not focus on human services, particularly inspection services, versus services personnel within a broader asset construction bid.

273. Mr. MacInnis relied on McKinney for its teaching that service personnel may need to be authorized representatives and certified, and its disclosure of a scheduler function used to reduce the operating cost of a service provider managing its service personnel. (EX1003, ¶219 citing EX1020 [0063]-[0064], [0080].) On cross-examination, Mr. MacInnes acknowledged the scheduler in McKinney relates to coordinating service personnel and not an asset owner selecting an inspector from a list as recited in claim8 step [8f]. (EX2015, pp. 118-120.)

274. Indeed, McKinney does *not* disclose “providing an asset owner a list of service providers from which to choose for an inspection, where the selection is based in part on their proximity to the asset” as recited. This is unsurprising as McKinney in reality is about enabling wireless communications to a server by setting up remote communications nodes with nodes that are “in proximity” to remote

wastewater systems—it has *nothing* to do with enabling the identification of inspectors in proximity to owner assets. Further, if there is any “in proximity” element to McKinney, it is asset in proximity to asset, not a person (e.g. an inspector) being in proximity (or not) to an asset.

275. In fact, McKinney uses the term “proximity” only once, as part of Claim 13 (emphasis added):

positioning a plurality of **communication nodes in physical proximity with respect to said plurality of environmental equipment systems;**

276. A POSA would not equate proximity determination between a human and an asset the same as between an asset and another asset. Besides the more obvious differences (such as McKinney focusing on the status of wastewater systems), in the McKinney wastewater context the communications nodes and environmental equipment systems do not move, in general or in relation to each other. Whereas in the ‘966 patent, Inspectors can move, including where they are based and/or with respect to what jurisdictions they are qualified to provide service, as well as what assets they are qualified to inspect. A POSA would recognize this human-to-machine context to be much more dynamic (e.g. changeable) than McKinney’s node-to-wastewater system with their static (e.g. unchanging) locations and in turn proximity determination. Proximity detection in such dynamic

environments can be very different than static environments, with the need for much more frequent location-related updating and needs for variable definitions of what is “in proximity” for dynamic systems.

277. Perhaps recognizing McKinney’s (and Key’s) deficiencies, Sweeney also fails to disclose the proximity requirement. Mr. MacInnes relies on Sweeney for its construction bid submission process asserting: “Contractors authorized to submit bids may be limited by location (‘e.g., area, regional, or national’), that is, in proximity to the asset.” (EX1003, ¶220 citing EX1006, [0043].) This misstates Sweeney. As shown below, the reference merely describes contractors as “area, regional, or national” -- it does not limit bidding based on that designation or otherwise in proximity to the construction project, as MacInnes state. Sweeney provides:

Contractors (e.g., area, regional, or national contractors)
may be notified by email of the bidding for the project
and provided with access to the bid submission form and
bid information **38**.

(EX1006, [0043].)

278. Further, the ‘966 Patent also discloses an online bidding process (EX1001, 8:45-49) and separate functionality referenced above for providing a list of inspectors.

279. A POSA would recognize that not all bidding processes are equal, or even similar. An Inspector bidding is for a person's services, whereas a construction bid, while including services/labor, are for building something. Put another way, bidding for services versus product/production/building are two very different processes. Hence, the combination of Key with McKinney and Sweeney does not teach the limitations of step [8f].

X. Concluding Statements

280. For the foregoing reasons, Petitioners fail to show a reasonable likelihood of prevailing on Ground 1, as the cited prior art do not disclose all of the limitations of claim 8, as properly construed, and Petitioners fail to show that a POSA would be motivated to combine their disparate references to make the combined steps of claim 8 nor have a reasonable expectation of success when doing so.

281. I declare under the penalty of perjury that all statements made herein of my knowledge are true and correct. I also declare 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 18 U.S.C. § 1001.

A handwritten signature in black ink, appearing to read "David H. Williams". The signature is fluid and cursive, with the first name "David" being more prominent.

David H. Williams
President, E911-LBS Consulting
Executed on April 17, 2024