UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TANKLOGIX, LLC,
Petitioner

v.

SITEPRO, INC.,
Patent Owner

____

Case No. IPR2025-00761

U.S. Patent No. 12,019,461

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PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 12,019,461

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PETITIONER'S EXHIBIT LIST

EXHIBIT	DESCRIPTION
EX1001	U.S. Patent No. 12,019,461
EX1002	Declaration of Dr. Gary Wooley
EX1003	Curriculum Vitae of Wooley
EX1004	U.S. Patent No. 12,019,461 File History Notice of Allowance
EX1005	U.S. Patent No. 7,424,399 to Kahn
EX1006	U.S. Patent No. 8,667,091 to Almadi
EX1007	U.S. Patent No. 9,709,995 to Gutierrez
EX1008	SCADA: Supervisory Control and Data Acquisition, 4th Edition (2010)
EX1009	Modbus Application Protocol Specification V1.1b3 (Apr. 26, 2012) available at https://www.modbus.org/docs/Modbus_Application_Protocol_V1_1b3.pdf
EX1010	Fast Ethernet Consortium Physical Medium Dependent (PMD) Test Suite Version 3.5 (Sep. 13, 2011) available at https://www.iol.unh.edu/sites/default/files/testsuites/ethernet/CL25_PMD/PMD_Test_Suite_v3.5.pdf
EX1011	Western District of Texas – Time to Trial Statistics
EX1012	U.S. Patent No. 12,019,461 Side-by-Side Listing of Claims 1 and 17

I. INTRODUCTION

Petitioner requests *Inter Partes* Review ("IPR") of claims 1-17 (the "Challenged Claims") of U.S. Patent No. 12,019,461 (the "'461 Patent").

II. MANDATORY NOTICES

A. Real Parties-in-Interest (37 C.F.R. § 42.8(b)(1))

The real party-in-interest is TankLogix, LLC ("Petitioner").

B. Related Matters (37 C.F.R. § 42.8(b)(2))

The '461 Patent is related to two district court cases pending in the United States District Court for the Western District of Texas. SitePro, Inc. ("Patent Owner") asserted the '909 Patent, '504 Patent, '078 Patent, '014 Patent, '871 Patent, '680 Patent, '403 Patent, and '461 Patent, against Petitioner in *SitePro, Inc. v. TankLogix*, LLC, No. 6:24-cv-00642; -643 (W.D. Tex.). The district court cases also involve IPR proceedings IPR2025-00647, IPR2025-00648, IPR2025-00649, IPR2025-00650, IPR2025-00651, IPR2025-00652, and IPR2025-00653, filed February 28, 2025. Accordingly, this IPR is related to the foregoing earlier-filed seven IPRs.

C. Counsel (37 C.F.R. § 42.8(b)(3)) and Service Information (37 C.F.R. § 42.8(b)(3)-(4))

Petitioner designates Robert D. Katz (Reg. No. 60,704) as lead counsel and designates Dr. Gregory J. Gonsalves (Reg. No. 43,639) as backup counsel for this matter.

Postal mailings and hand-deliveries for lead and backup counsel should be addressed to: Robert D. Katz, Katz PLLC, 8350 N. Central Expressway, Suite 1900, Dallas, TX 75206 (Telephone: 214.865.8000; Fax: 888.231.5775).

Pursuant to 37 C.F.R. §42.8(b)(4), Petitioner consents to e-mail service at: rkatz@katzfirm.com and gregoryjosephgonsalves@gmail.com. In compliance with 37 C.F.R. §42.10(b), a Power of Attorney is filed concurrently herewith.

III. CERTIFICATION AND FEES

Petitioner certifies that the ’461 Patent is available for IPR and that the Petitioner is not barred or estopped from requesting *inter partes* review of Claims 1-17 of the ‘461 Patent identified in this Petition. Any additional fees for this IPR may be charged to Deposit Account No. DA603042.

IV. BACKGROUND

The ’461 Patent relates to the remote operation of fluid-handling devices. In the oil and gas industry, fluid handling systems direct, measure, and maintain the flow of fluids—liquid chemicals or condensed gases—across a manufacturing plant or factory. EX1001, 1:44-54. Because of the potential hazards posed by the fluids they manage, where possible, industrial oil and gas producers manage operations remotely to keep personnel out of harm’s way. To enhance operational performance and improve worker safety, the oil and gas industry long ago adopted technologies for remote monitoring and control of fluid handling systems. *See generally*, EX1008.

The typical operation of industrial fluid handling systems places sensor and actuator functions on-site, supported by a remote controller that receives information from the sensors and transmits instructions to the actuators. *See generally*, EX1008.

V. THE ALLEGED INVENTION OF THE '461 PATENT

The '461 Patent, entitled "Remote Control of Fluid-Handling Devices," describes a process, comprising: receiving, via a network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state. The process optionally includes translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state. The process further comprises sending the translated command to the local controller. EX1001, Abstract. The '461 Patent also includes claim elements including checking the user's credentials to ensure that a user is authorized to interact with a remote site. '461 Patent, claims 1, 17.

A. Summary of Prosecution History (EX1004)

The application resulting in the '461 Patent was filed on June 20, 2023 and is entitled Remote Control of Fluid-Handling Devices. On May 23, 2024, the Examiner mailed a Notice of Allowability, allowing Claims 21-37, and indicating that the prior art describes some of the claimed steps of claim 1, specifically, "receiving, … information comprising one or more properties … of … one or more fluid-handling devices…" and "providing, … remote control of a first fluid-handling device…" and that the prior art describes some of the claimed steps of claim 17, specifically, "measuring, … one or more properties of a first fluid," "receiving … information associated with the one or more properties associated with the first fluid," and "providing, … remote control of a first fluid-handling device…". EX1004, pp. 6-8.

The Notice of Allowability further indicated the reason for allowance, stating that, according to the Examiner, the prior art in the prosecution history does not describe "receiving, with a server system, from the first computer system, via a network, a first fluid property ...obtaining, with the server system, credentials ... determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact ... after the determination, providing, with the server system, via the network, information by which the first client computing device presents a user interface indicating the first fluid property ... receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command ....". *Id*.

The Notice of Allowability further indicated prior art made of record and not relied upon, including Kahn and Almadi, identified below.

VI. OVERVIEW OF THE PRIOR ART

A. Kahn (EX1005)

U.S. Patent No. 7,424,399 to Kahn was filed on June 9, 2006, and claims priority to Provisional U.S. Patent Application No. 60/689,257 filed on June 10, 2005. Kahn was published on March 1, 2007, issued on September 9, 2008, and is prior art under pre-AIA §§102(a), (b), and (e).

Kahn teaches a remote monitoring and control fluid delivery system permitting authorized users from different entities to view data and control designated fluid delivery devices. EX1005.

B. Almadi (EX1006)

U.S. Patent No. 8,667,091 to Almadi was filed July 22, 2011, published April 5, 2012, issued March 4, 2014, and claims priority to Provisional Patent Application No. 61/367,207 filed on July 25, 2010. Almadi is prior art under pre-AIA §102(e).

Almadi teaches an integrated node used to interface between a remote host server and a plurality of remote subsystems in a process automation environment to provide, in turn, for a single point of control for data collection, monitoring, and restoration. EX1006.

C. Gutierrez (EX1007)

U.S. Patent No. 9,709,995 to Gutierrez was filed December 22, 2014 and published April 16, 2015. Gutierrez is a continuation of U.S. Patent Application No. 12/794,898 filed on June 7, 2010, published on December 9, 2010, and claiming the benefit of Provisional U.S. Patent Application No. 61/184,890 filed on June 8, 2009. Gutierrez is prior art under pre-AIA § 102(e).

Gutierrez describes a chemical injection system with a pump driven by a motor, controlled by a motor controller, and managed via a central controller with remote communication capabilities. EX1007, Abstract.

D. SCADA (EX1008)

SCADA: Supervisory Control and Data Acquisition, 4th Edition was published in 2010 and is prior art under pre-AIA §§102(b). SCADA teaches enabling a human operator, in a location central to a widely distributed process-such as a pipeline system, oil or gas field, hydroelectric generating complex, or irrigation network to make set point changes on distant process controllers, to open or close valves or switches, to monitor alarms, and to gather measurement information. EX1008, at 10.

VII. CLAIM CONSTRUCTION

No terms need to be construed to resolve the issues raised in this Petition because the prior art discloses all limitations under the plain meaning as well as under any plausible construction.

VIII. GROUNDS FOR PETITION

A. Ground 1: The Combination of Kahn and Gutierrez in Further View of Almadi and SCADA renders obvious Claims 1-17

Independent claims 1 and 17 and dependent claims 2-16 are rendered obvious under 35 U.S.C. §103 over the combination of U.S. Patent No. 7,424,399 ("Kahn") and U.S. Patent No. 9,709,995 ("Gutierrez") in further view of U.S. Patent No. 8,667,091 ("Almadi") and Supervisory Control and Data Acquisition, 4th Edition ("SCADA").

1. Motivation to Combine

A POSITA would be motivated to combine Kahn, Almadi, Gutierrez, and SCADA. *See Allergan, Inc. v. Sandoz, Inc.*, 726 F.3d 1286, 1292 (Fed. Cir. 2013); *Alza Corp. v. Mylan Labs., Inc.*, 464 F.3d 1286, 1294 (Fed. Cir. 2006) (motivation to combine may be implicitly stated in the prior art and supported by testimony of an expert witness regarding knowledge of a POSITA). As Dr. Wooley explains, combining Kahn, Almadi, and Gutierrez would have been obvious to try because each reference describes similar systems for remote monitoring and control of fluid handling facilities. EX1002, ¶40.

A POSITA would have referred to Kahn, and its disclosure of specific user differentiation features for fluid handling facilities, with different components and controls over a plurality of remotely monitored and controlled fluid handling devices. A POSITA would also recognize that Kahn's disclosure similarly relates to gas facilities. EX1002, ¶41, EX1005, 17:67-18:2.

A POSITA would have referred to Gutierrez for its disclosure of a general fluid handling system for oil and oil extraction waste water storage and transport, which allows remote users to monitor and control fluid handling facilities. EX1002, ¶42; EX1007, 1:26-27. A POSITA would understand that the pipelines and transport systems of Gutierrez would involve multiple operators and geographically dispersed site locations, each responsible for efficient and safe operation of the fluid handling systems.

A POSITA would have referred to Almadi for its disclosure of modern industrial operations, found in modern oil and gas field applications, which allows remote users to monitor and control fluid handling facilities. EX1002, ¶43; EX1006, 1:26-27. A POSITA would understand that the automation architecture of Almadi would involve a large plurality of devices remotely monitored and controlled by an integrated node.

A POSITA would recognize that SCADA provides specific details of fluid processing systems and remote control of fluid handing devices of Gutierrez and Kahn to process instrumentation, various communication methods, and computer applications. EX1002, ¶44.

A POSITA would have been motivated to combine Kahn, Almadi, Gutierrez, and SCADA because Almadi or Gutierrez provide additional detailed disclosure regarding the operation of oil and gas facilities (Gutierrez) or modern oil and gas field automation technologies (Almadi), while SCADA provides specific details of fluid processing systems and remote control of fluid handing devices, which a POSITA would consider when implementing any remote systems disclosed by Kahn. The detailed descriptions of general systems described in Kahn, would have motivated a POSITA to combine the more detailed disclosures of Almadi and Gutierrez to achieve the efficiency and safety benefits automating fluid handling systems provided across the system. EX1002, ¶45.

Combining Kahn, Almadi, Gutierrez, and SCADA would lead to predictable results of the disclosures of a plurality of devices in Kahn with the specific modern oil and gas field automation technologies disclosed in Almadi and Gutierrez. A POSITA would not have difficulty combining Kahn with Almadi and Gutierrez and/or SCADA, because these references do not describe alternative systems or methods, but rather the disclosures of Almadi and Gutierrez provide additional details rather than a different approach to solving problems in the underlying technology addressed by Kahn. EX1002, ¶46.

2. Claim 1

As explained above under "Prosecution History," the Examiner found that Elements [1.1]-[1.3] below were described in the prior art.

a. [1.1] A fluid processing method, comprising:

To the extent that the Board finds the preamble limiting, Kahn, Gutierrez, Almadi, and SCADA disclose fluid processing methods. A POSITA would recognize that the method for fluid sensing, quality sensing, data sharing, and data visualization is a method frequently deployed in the processing of various types of fluids. EX1002, ¶47; EX1005, Title, 1:28-36, Claims 1-29. Similarly, regarding Gutierrez, a method of injecting chemicals into a hydrocarbon pipeline is a fluid processing method. EX1002, ¶47; EX1007, 14:5-16, Claim 1. Further, Almadi discloses a fluid processing method, i.e., the control of, and acquisition of data from, remote and in-plant industrial processes. EX1006, 1:18-22. This includes measurement of fluid and flow, including oil and gas. *Id*., 1:28-35; 12:19-23. SCADA explains that the processes applicable to SCADA technology include oil or gas production facilities, including wells, pipelines, and fluid measurement equipment. EX1008, pp. 10-11.

Thus, each of Kahn, Gutierrez, Almadi, and SCADA disclose this element.

b. [1.2] receiving, with a first computer system disposed at a first fluid-handling site, information comprising one or more properties of a first fluid from one or more sensors disposed at a first fluid tank itself disposed at the first fluid-handling site, the fluid-handling site comprising one or more fluid-handling devices, the one or more fluid-handling devices comprising one or more of a first pump, a first filter, and a first valve;

Kahn discloses a computer system disposed at a first fluid-handling site. Kahn Fig. 6 below (annotated) depicts "Computer System 4" on the "site" side of the

Internet, indicating that the disclosed computer system is at or near the site sensors.

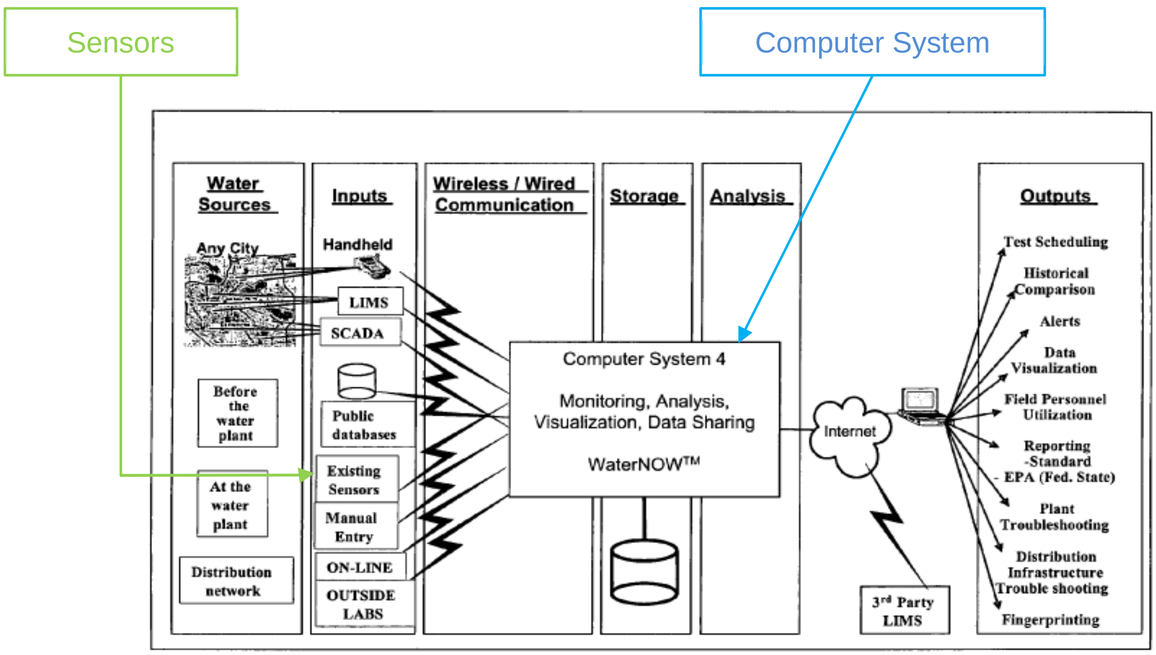

FIG. 6

Kahn explains that the "water sources" on the left side of Fig. 6 are fluid-handling sites, in that they may include "an internal chemistry laboratory of a municipal water authority," "a physical power plant or other industrial plant." EX1005, 27:1-15. Kahn also discloses the use of sensor units. EX1005, 11:14-19.

Kahn also discloses information about properties of a fluid from sensors at a fluid tank. EX1005, 25:25-34. Kahn also discloses that a fluid-handling site comprising fluid-handling devices, such as a filter (EX1005, 11:19-24) and a first pump, a first filter, and a first valve. EX1005, 8:6-7, 8:19-30; 10:62-67, 11:2-5, 11:18-13:58, 13:34-36, 15:50-16:5, 16:56, 20:64-67, 21:1, FIG. 1C-FIG. 1D., FIG. 1F, FIG. 1G.

A POSITA would understand that Kahn discloses receiving information comprising fluid level properties from one or more sensors disposed at a first fluid-handling site through its disclosure of a computer system that receives first fluid test data from sensors. EX1002 ¶49.

Kahn discloses "[m]easures have been taken for monitoring the quality of drinking water including placing monitors at various points in the source water, in water treatment plants, and/or at selected distribution points of water distribution pipe networks." EX1005, 1:53-58. A POSITA would understand that monitoring the quality of drinking water inherently requires measuring fluid properties. EX1002, ¶49.

A POSITA would understand that the systems involving water treatment plants and distribution systems disclosed in Kahn include tanks through its disclosure of distribution systems that includes reservoirs, water treatment plants, and contain water, all of which includes tanks. EX1002 ¶49.

Gutierrez discloses "a chemical injection system for a hydrocarbon transmission system." EX1007, 1:54-56. A POSITA would understand that, in oil and gas, chemical injection systems (e.g., for corrosion inhibitors, demulsifiers) rely on tank level monitoring to ensure continuous operation. EX1002, ¶50. Measuring fluid in the chemical reservoir tank is a common practice to optimize injection and avoid downtime. EX1002, ¶50.

Additionally, Almadi discloses that field devices connected to the integrated node measure fluid-related properties (e.g., pressure, temperature, flow rate), which are typical fluid measurements in industrial processes involving "modern oil and gas field applications." EX1006, 1:28-39, 41-44.

Almadi further discloses intelligent oilfield systems for oil and gas extraction and handling. EX1006, 11:18-12:59; *see also* Abstract; 1:18-22, 1:28-35; EX1006, 12:27-35 (explaining "intelligent field systems"). The field devices perform sensor and actuator functions, at the process level, supported by a controller or a number of controllers, at the system level, which receive information from the sensors and transmit information to the actuators. EX1006, 1:41-52. The sensors measure temperature, pressure, pH, flow rate, tank level, and deliver that information to the system-level controller devices. EX1006, 1:41-45, 12:27-32, 25:11-25. Almadi thus discloses the use of sensors at a fluid tank. EX1006, 25:11-16

Almadi discloses the first tank having a first fluid-level sensor with which the first computer system is configured to communicate to obtain a level of the first fluid in the first tank through its disclosure of a plant-wide model 704, that defines a mass balancing loop for the plant based on crude switches, operation scenarios, and open and closed transactions ("for example, when there is a change in the level status of tanks or the operation of pumps"). EX1006, 25:11-17. Almadi discloses the first valve through its disclosure of intelligent field systems include PDHM systems, ESP systems, SWC systems, and flow meter systems, and any of the types of IED. EX1006, 1:45-49, 12:27-59, Claim 3.

Almadi discloses detection and analysis of key performance indicators, including loss identification, oil accounting, performance monitoring, loss management, i.e., for calculating an amount of losses incurred at the unit or plant level. EX1006, 27:11-23; *see also id*., 27:61-28:10 ("Reports may be generated, for example, according to yield and loss accounting (i.e., charge/feed balancing); environmental compliance of drainage, tank vaporization, and percentage of unaccountable or accountable losses; performance monitoring; and data/model analysis"); 25:38-26:20 (discussing data libraries such as "Standard Volume," "Mass and Heat Balance Optimization Calculations," and "Pressure and Molecule Balance").

A POSITA would understand that Almadi discloses a first computer system that is configured to communicate to obtain a tank fluid level through its disclosure of remote subsystems 120, intelligent field devices which include tank level sensors that can detect changing the level status of tanks. EX1002 ¶51.

SCADA discloses a first computer system disposed at a first fluid-handling site, information comprising one or more properties of a first fluid from one or more sensors disposed at a first fluid tank itself disposed at the first fluid-handling site. EX1008 at 12, Figure 2-1 (disclosing remote terminal units (RTUs aka computer systems) at a fluid-handling site). SCADA also discloses monitoring a sensor disposed at a fluid tank. EX1008 at 153 ("The SCADA system should … be able to present analog values, representing such things as level in tanks"). SCADA also discloses fluid-handling devices including pumps (EX1008 at 11, 17) and valves (EX1008 at 10-12).

Thus, each of Kahn, Gutierrez, Almadi, and SCADA disclose or suggest this element.

c. [1.3] providing, with the first computer system disposed at a first fluid handling site, remote control of a first fluid-handling device of the one or more fluid-handling devices;

Gutierrez discloses providing, with a computer system disposed at a first fluid handling site, remote control of a fluid-handling device. Gutierrez discloses a "[c]ontroller… communicably coupled to the motor controller… provid[ing] microprocessor-based control of the motor controller [] and thus motor and pump." EX1007, 8:16-19. A POSITA would understand that a microprocessor is a computer. EX1002 ¶54. A POSITA would further understand that a pump is a fluid-handling device. EX1002 ¶54. Gutierrez discloses the computer (microprocessor) being disposed at the fluid-handling site. EX1007, 8:26-30 ("Generally, controller 130 receives inputs and/or instructions and commands *from a remote source* and, according to the commands, controls the operation and/or speed of the motor 110 and pump 105 to inject chemicals into the pipeline 120.") (emphasis added). In addition, Gutierrez discloses "[m]onitoring module 225 ... may detect the relative amount of chemical additives injected into the pipeline 205 by the one or more chemical injection systems 210. Such data may be wirelessly transmitted directly to each chemical injection system 210 and/or the remote control center 220. ... The remote control center 220 may then wirelessly issue commands to one or more of the chemical injection systems 210. Such commands may include a command to stop injecting chemical additive into the pipeline 205 and/or a command to inject a specified amount of chemical additive into the pipeline 205 ... Upon receipt of such data, the chemical injection systems 210 may process the data and inject more or less chemical additive into the pipeline 205, as appropriate..." EX1007, 10:40-67 – 11:1-3. Thus, Gutierrez discloses the claim element "*providing, with the first computer system disposed at a first fluid handling site, remote control of a first fluid-handling device of the one or more fluid-handling devices*".

Almadi discloses that "intelligent field devices" (i.e. remote subsystems 120) include the ability to process data, self-monitor, self-regulate, self-calibrate, or provide early warnings with respect to malfunctions or predictive maintenance.

EX1006, 1:18-57, 3:4-9, 12:27-32.

Almadi discloses processing by remote subsystems … including a processor. EX1006, 4:6-16, 4:51-57, 6:49-53, 7:3-9, 11:18-21, 18:57. Remote subsystems can also be adapted to be programmed so as to communicate with other field devices that a processor is required. EX1006, 12:35-43.

Almadi further discloses commands used by the local controller to drive the fluid handling device to a particular target state, e.g., "field devices can perform actuator functions to receive information, such as commands, from the system level to thereby affect or control the operation of an automated process, for example, through motors and pumps." EX1006, 1:45-49, 12:27-59; *see also id*., 25:26-37 ("switching a pump off if the flow is below a certain limit or activating some bounds or streams based on some readings/conditions").

A POSITA would understand that Almadi discloses a first computer system that is configured to communicate to obtain a tank fluid level and provide remote control of a pump or valve of the '461 Patent through its disclosure of remote subsystems 120, intelligent field devices. EX1002 ¶55. Thus, Almadi discloses this claim element.

SCADA provides, with the first computer system disposed at the fluid handling site, remote control of one or more of the fluid-handling devices. SCADA discloses that the remote RTUs communicate with sensors or actuators at the fluid handling site. EX1008 at 12; EX1002 ¶56.

Thus, each of Kahn, Gutierrez, Almadi, and SCADA disclose or suggest this element.

d. [1.4] receiving, with a server system, from the first computer system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors;

Kahn discloses receiving, with a server system, from the first computer system, via a network, fluid properties. EX1005, 23:24-37 ("Raw fluid quality data and/or processed food quality data can then be communicated from the wireless transceivers 416A-416B to a centralized data collection system 418 (e.g., an internet server) via suitable communication channels 419 (e.g., existing wireless, wired, optical networks, power-grid networks, or combinations thereof). Raw fluid quality data and/or processed fluid quality data and/or fluid quality measures derived therefrom can then be communicated to interested parties 420A-420D other than the separate entities 412A-412D via any suitable communication channel 421."). A POSITA would understand that "[r]aw fluid quality data" is a fluid property. Kahn discloses that "fluid quality data can be measured using portable sensor units." EX1005, 22:50-51, EX1002 ¶58. Thus, Kahn discloses a fluid property sensed by a sensor.

Kahn discloses a data collection network with centralized data collection points. EX1005, 8:51-59, 9:53-58, 17:18-30, 18:48-52, 63-65, 19:5-23, 19:58-65, 23:27-31.

Kahn discloses that the centralized data collection points receive sensor information via a network from a facility interface module, Sensor unit 110. EX1005, 5:62-6:2, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3.

In addition, Kahn discloses receiving, with a server system, from the first computer system, the fluid property from the sensors (as shown below in the annotated FIG. 3). EX1002 ¶59.

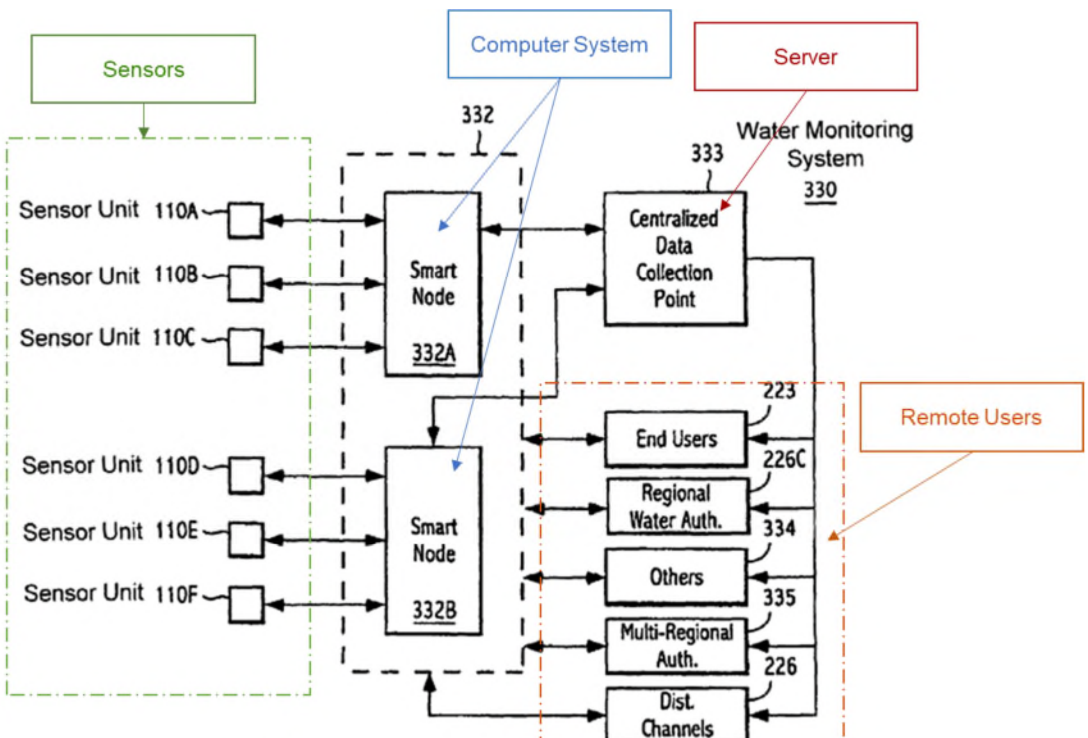

FIG. 3

Kahn discloses that sensor units 110 detect breakage of a pipe, for example the level of a first fluid, based on reduced water pressure in the pipe. EX1005, 10:8-

16. Kahn discloses that its method can be applied to monitor any fluid (gas or liquid) including those present in a distribution system, reservoir, or feed source in need of monitoring. EX1005, 4:4-7, 4:12-48.

A POSITA would understand from the above disclosure and figures that Kahn discloses receiving, with the server system, from the first computer system, via a network, a first fluid property associated with the first fluid sensed by a first sensor of one or more sensors. EX1002 ¶60.

In addition, Gutierrez discloses "... the controller 130 is communicably coupled to a communication bus 155 at the communication module 140. The communication bus 140, generally, is a wired communication connection operable to carry data between the communication module and a remote source, such as one or more electronic sensors monitoring the pipeline 120..." EX1007, 9:4-10. Further, Gutierrez discloses "...the computer 305 may be located at a remote monitoring station, such as the station 220. Further computer 305 may be one of several computers at the remote monitoring station, where each computer 305 may monitor, receive data from, and/or generate commands transmitted to a single chemical injection system 310 or multiple chemical injection systems 310. Each chemical injection system 310 may be positioned at or near a wellsite and/or a pipeline transporting hydrocarbon fluid." EX1007, 11:55-64. Thus, Gutierrez discloses the claim element "*receiving, with a server system, from the first computer* *system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors*." EX1002 ¶61.

Almadi discloses integrated node 100, as illustrated in FIGS. 1A-1B, having a central processing unit 105 and a memory 160 to allow a remote host 110 to interface with a plurality of remote subsystems 120. EX1006, 11:18-21. Integrated node 100 is a programmable logic controller ("PLC"), meaning any PLC, remote terminal unit ("RTU"), computer, server, system, node, or unit. EX1006, 11:18-28. Almadi discloses that the integrated node 100 collects data from remote subsystems 120. EX1006, 11:51-55; 13:47-14:9. Integrated node 100 has memory storing instructions that, when executed, effectuate operations. EX1006, 4:55-57, 6:49-53, 17:42-49, 18:54-60.

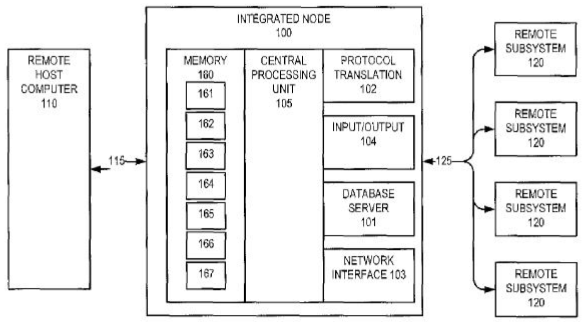

FIG. 1A

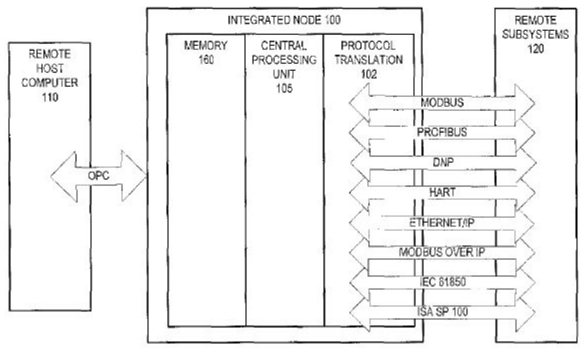

FIG. 1B

EX1006, FIGS 1A, 1B.

The field devices perform sensor functions to sense operational information and variables such as temperature, pressure, pH, flow rate, tank level, and deliver that information to the system-level controller devices. EX1006, 1:41-45, 25:11-25. Almadi discloses the first tank having a first fluid-level sensor with which the first computer system is configured to communicate to obtain a level of the first fluid in the first tank through its disclosure of a plant-wide model 704, that defines a mass balancing loop for the plant based on crude switches, operation scenarios, and open and closed transactions (for example, when there is a change in the level status of tanks or the operation of pumps). EX1006, 25:11-17.

Almadi discloses that the integrated node 100 collects data from remote subsystems 120. EX1006, 11:51-55; 13:47-14:9. The level status of the tank is sent to the remote subsystems where it is then transmitted to the server. EX1006, Figures 1A, 1B; EX1002 ¶62.

Almadi also discloses a first fluid level sensed by the fluid-level sensor, as discussed above, and incorporated herein by reference. A POSITA would understand that Almadi discloses receiving a first fluid level sensed by the fluid level sensor of the '461 Patent. EX1002 ¶63.

SCADA discloses a server system that receives fluid properties from a sensor via the first computer system. Specifically, SCADA discloses that an operator interfaces with a master terminal unit (MTU aka server system) that communicates with a remote terminal unit (RTU aka computer system) which communicates with sensors. EX1008 at 12; EX1002 ¶64.

Thus, each of Kahn, Gutierrez, Almadi, and SCADA disclose or suggest this element.

e. [1.5] obtaining, with the server system, credentials from a first client computing device;

Kahn discloses the server system obtaining credentials from a client computing device. EX1005 25:48-53 (explaining that a user may be authorized via the Internet at a user's computer). A POSITA would recognize from its disclosure that any suitable technique can be used to verify that the identity of a present user is an authorized user of the device. EX1005, 25:1-2; 28:35- 37 ("After the user has "logged in" to the service by inputting a username and password in a conventional manner"). Kahn further discloses that an authorized Account A (first user 5 a) can be authorized by a first entity. EX1005, 25:48-51. Finally, Kahn discloses that an authorized Account B (second user 5 b) second user can be authorized by a second entity. EX1005, 25:55-58; EX1002 ¶66.

A POSITA would understand from Kahn's disclosure of authenticated accounts and suitable techniques for verification of the identity of present users as authorized users that Kahn discloses that credentials can be obtained from a first client computer. EX1002 ¶67.

Gutierrez discloses receiving, at a remote server system, via a network, user credentials from a user device through its disclosure that the base transceiver 325 may communicate with the computer 305 over a communications network 330, which is an enterprise or secured network, as well as a VPN (virtual private network) between computer 305 and other computing devices communicably coupled to the base transceiver 325. EX1007, 12:53-64. A POSITA would recognize Gutierrez's disclosure of a secured network and a VPN that user credentials are required to access a user device. EX1002, ¶68.

Almadi discloses obtaining, with the server system, credentials from a first client computing device through its disclosure of an embodiment of an integrated node 100, as illustrated in Figures 1A, 1B, having a central processing unit 105 and a memory 160 to allow a remote host 110 to interface with a plurality of remote subsystems 120. EX1006, 11:18-21.

Almadi discloses a system intended to serve in various networking operating environments, including, for example, intelligent fields for oil and gas, substations/power grid, and remote security, and can be utilized and can be extended for enterprise applications. EX1006, 12:48-59, 13:20-25. Almadi further discloses "[t]hose having skill in the art will appreciate various techniques to ensure no file access violations during the process of accessing the file, for example, by the remote host 300." EX1006, 16:65-67.

A POSITA would understand that Almadi discloses obtaining credentials from a first client computing device of the '461 Patent through its disclosure of the integration node's application in secure enterprise network environments ensuring that no file access violations occur. EX1002 ¶69.

Thus, each of Kahn, Gutierrez, and Almadi disclose or suggest this element.

f. [1.6] determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site, wherein the server system hosts data about other fluid handling sites the user is not authorized to interact;

Kahn discloses determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site through its disclosure that an authorized Account A (first user 5a) can be authorized by a first entity. EX1005, 25:48-26:67. Kahn further discloses that an authorized Account B (second user 5b) second user can be authorized by a second entity. EX1005, 25:55-58. Kahn discloses that "separate entities provide their fluid test data to the computer system 4 controlled by the service provider (an entity different from the first and second entities), and the first and second entities can control access to data generated by their respective sensors." EX1005, 25:63-66.

Kahn discloses that the server system hosts data about other fluid handling sites the user is not authorized to interact through its disclosure that only fluid test measurements which the user is authorized to see are displayed. EX1005, 28:43- 45, 25:48-26:67, *see also id*., 2:50-60, 19:58-65, 21:50-22:44, 22:62-23:50, 24:44-25:2, 25:5-12, 27:39-28:7.

A POSITA would recognize that Kahn discloses determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site from its disclosure of multiple-user accounts which only permits access to certain aspects of test data and the computer system. EX1002 ¶71. A POSITA would further understand that the server system hosts data about other fluid handling sites with which the user is not authorized to interact. *Id.*

Almadi discloses determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site through its disclosure that an embodiment of an integrated node 100 can be shown, as illustrated in FIGS. 1A-1B, having a central processing unit 105 and a memory 160 to allow a remote host 110 to interface with a plurality of remote subsystems 120. EX1006, 11:18-21. Integrated node is a server system. *Id*.

Almadi discloses a system intended to serve in various networking operating environments, including, for example, intelligent fields for oil and gas and can be utilized and can be extended for enterprise applications. EX1006, 12:48-59, 13:20-25. Almadi discloses that "those having skill in the art will appreciate various techniques to ensure no file access violations during the process of accessing the file, for example, by the remote host 300." EX1006, 16:65-67.

A POSITA would understand that Almadi discloses determining whether a user is authorized to interact with the fluid-handling device of the '461 Patent through its disclosure of the integrated node 100 and the various techniques to ensure no file access violations occur during the process of accessing the file by the remote host. EX1002 ¶72. Thus, Almadi discloses this element.

Thus, each of Kahn and Almadi disclose or suggest this element.

g. [1.7] after the determination, providing, with the server system, via the network, information by which the first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system;

Kahn discloses, after the authorization determination, providing, with the server system via the network, a graphical user interface showing the fluid property. EX1005, 26:3-7 ("the computer system **4** permits Account A to visualize first information associated with the first fluid test data overlaid on a geographical map displayed on the graphical computer interface (e.g., a web browser) of Account A's computer. "). EX1002 ¶74.

Kahn discloses the first client computing device being remote from the server system and the first computer system, as depicted below in annotated FIG. 3, FIG. 5, and Fig. 6.

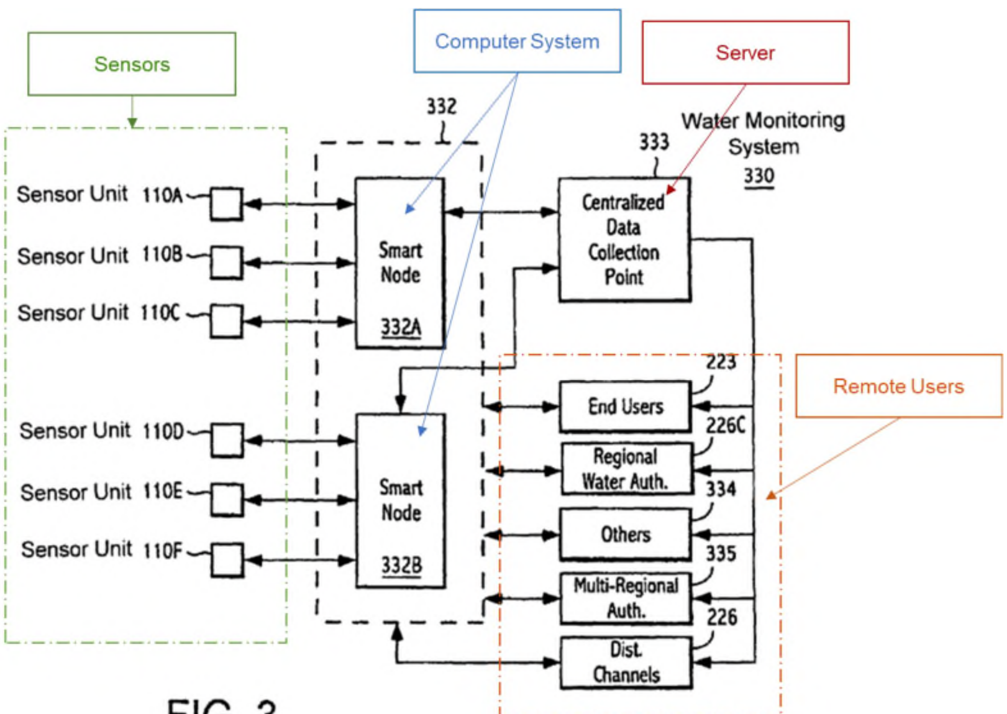

FIG. 3

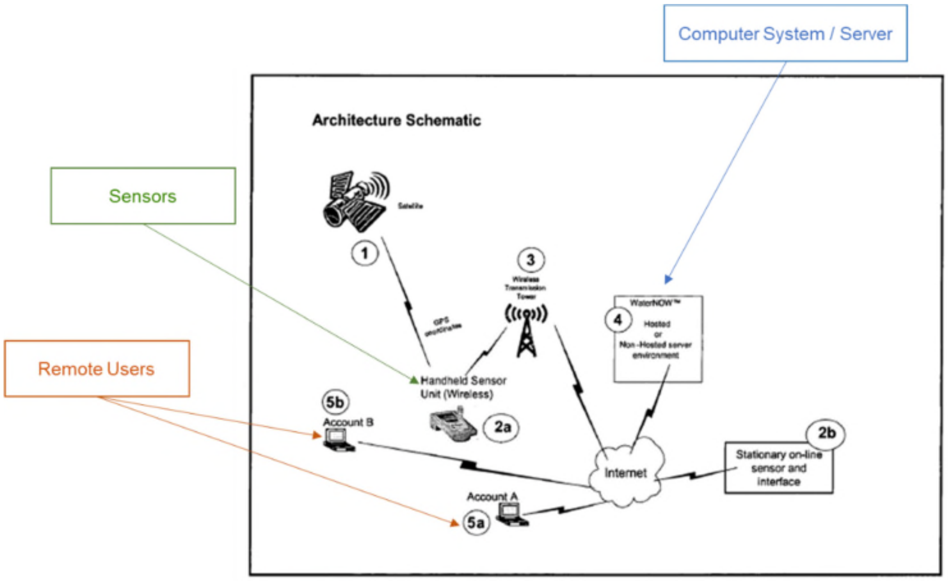

FIG. 5

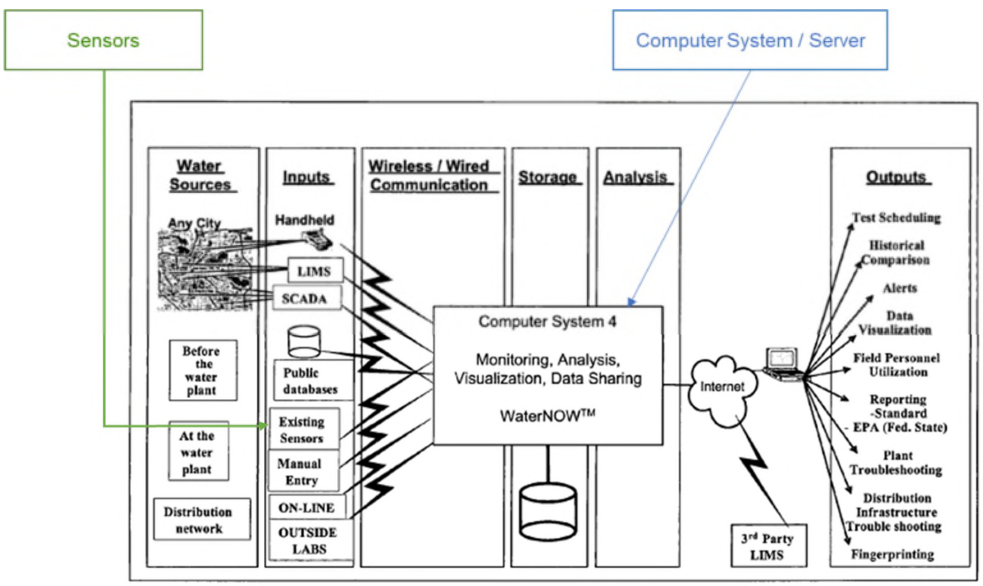

FIG. 6

Kahn discloses a system that includes a remote computing system with a processor displaying a graphical user interface (GUI) showing data from the system's sensors. EX1005, Abstract, 1:28-36, 2:50-3:2, 25:5-25, 25:48-26:19, 28:8-

25, 29:5-37. Kahn discloses that sensor unit 110 connects via a network to centralized data collection points. EX1005, 5:62-6:2, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3. Kahn discloses that the centralized data collection points are a server. EX1005, 10:54-56, 23:29-30. Kahn discloses that users log into the system on respective user computing devices. EX1005, 2:50-45, 25:5-12, 28:35-37, 30:45-49. Kahn discloses a variety of users and entities having different levels of authorized access. EX1005, 25:48-26:67, *see also id.*, 2:50-60, 19:58-65, 21:50-22:44, 22:62-23:50, 24:44-25:2, 25:5-12, 27:39-28:7.

Kahn further discloses that sensor unit 110 includes communication equipment with actuators configured to manipulate fluid flow at respective fluid-handling facilities, to facilitate the measurement of data requested through the graphical user interface. EX1005, 10:62-67; *see also id.*, 14:35-15:2, 15:62-16:32.

Kahn discloses that sensor units 110 detect breakage of a pipe, i.e., level of a first fluid, based on reduced water pressure in the pipe. EX1005, 10:8-16. Kahn discloses that its method can be applied to monitor any fluid (gas or liquid) including those present in a distribution system, reservoir or feed source in need of monitoring. EX1005, 4:4-7, 4:12-48.

The sensor outputs are presented to the user through the GUI on the remote user's computer. EX1005, 2:50-54, 2:61-65, 25:5-12, 26:3-7, Claim 36, FIG. 5,

FIG. 6.

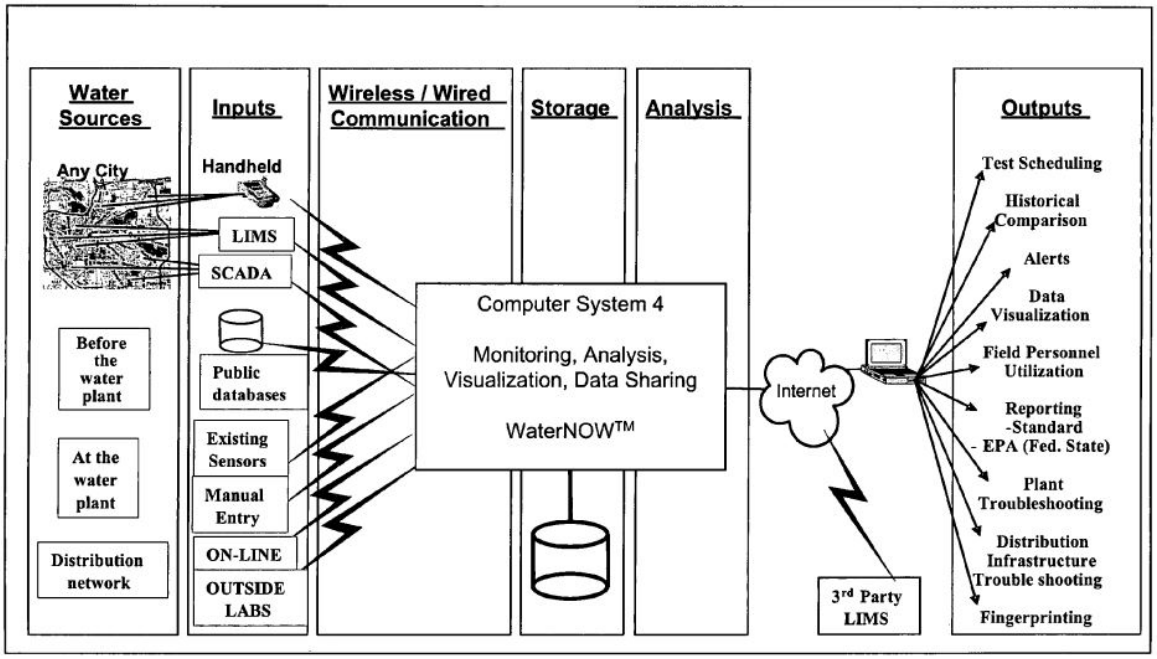

FIG. 6

A POSITA would recognize Kahn discloses providing, a user interface indicating the first fluid level, the first client computing device being remote from the server system and the first computer system through its disclosure of a graphical user interface for monitoring fluid quality. EX1002 ¶78.

Furthermore, a POSITA would recognize that Kahn's claim 36 discloses providing, with the server system, via the network, information by which a first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system. EX1005, 2:50-54, 2:61-65, 25:5-12, 26:3-7, Claim 36, FIG. 5, FIG. 6. EX1002 ¶79. Thus, Kahn discloses this claim element.

Almadi discloses the first client computing device being remote from the server system and the first computer system through its disclosure that the DRM 166 can output any of the measurements or values by storing to a storage medium such as memory 160 or database 101, by transmitting to remote host computer 110, or by transmitting to any other computer or interface in communication with the integrated node 100 over the input/output unit, such as the local interface 190 or any computer terminal having a graphical user interface. EX1006, 27:2-11.

More specifically, Almadi discloses the configuration interface 190, an object-oriented *graphical user interface* ("GUI") having a built-in library of objects required to develop unit models and plant-wide models. EX1006, 24:32-53. Almadi discloses that the configuration interface identifies routing and process streams between plants and different numbers and types of process units, such as tanks, crude switches, and other process units. *Id*. The configuration interface also allows a user to assign to a model various types of data, including reconciled readings, key performance indicators, confidence/accuracy factors, and unreconciled data (real- time and historical). *Id*. The model is also configured for any group of units and can define a mass balancing loop for the plant based on crude switches, operation scenarios, and open and closed transactions (for example, when there is a change in the level status of tanks or the operation of pumps). EX1006, 25:11-17.

A POSITA would understand that Almadi's user interface indicates the first fluid property. EX1002 ¶80. Thus, Almadi discloses this claim element.

SCADA discloses a server system that receives fluid properties from a sensor via the first computer system over the network. EX1002 ¶81. Specifically, SCADA discloses that an operator interfaces with a master terminal unit (MTU aka server system) using some form of input/output device (I/O aka user interface) that communicates with a remote terminal unit (RTU aka computer system) which communicates with sensors. EX1008 at 12, and Fig. 2-1.

Thus, each of Kahn, Almadi, and SCADA disclose or suggest this element.

h. [1.8] receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and

Gutierrez discloses receiving, with the server system, from a client computing device, a command to change a state of a fluid-handling device. Gutierrez discloses "[t]he computer 305 and/or a user operating the computer 305 may then issue commands to one or more of the chemical injection systems 310. Such commands may include a command to stop injecting chemical additive into the pipeline and/or a command to inject a specified amount of chemical additive into the pipeline." EX1007, 13:21-26. Thus, a POSITA would understand that a user may change the state of a fluid-handling device. EX1002 ¶83.

The "central controller" disclosed in Gutierrez is a server. Gutierrez's central controller performs server functions, such as receiving commands, processing them, executing actions, and sending feedback. EX1007, 2:18-25. Gutierrez's central controller is "communicably coupled to the remote computing system and the sensor." EX1007, 2:39-41. Gutierrez's "remote computing device," i.e., a client computing device, acts as a client in interactions with the central controller. Gutierrez's "base transceiver" receives commands destined for the chemical injection systems from Gutierrez's "computer 305," the client computing device. EX1007, 12:48-55. A POSITA would understand from Gutierrez that a user command is received to change a state of the first fluid-handling device. EX1002 ¶84. Thus, Gutierrez discloses receiving, with the server system, from a client computing device, a command to change a state of a fluid-handling device.

Almadi discloses that integrated node 100 supports a local programming interface over a computer, such as through computer terminals having one or more input devices and one or more display devices that are accessible to a human user by using the remote host computer 110. EX1006, 11:18-21, 12:10-15. The remote host 110 can be any type of remote host computer for management or hosting of process automation functions, for example, a SCADA host. EX1006, 12:55-59.

Almadi discloses that the PLC or RTU functions of the integrated node 100 enable data processing in the integrated node 100 and also enable data collection from, and control of, the plurality of remote subsystems 120. EX1006, 11:51-63; 22:32-36 ("The DVRM 164 enhances the accuracy of data acquired by the integrated node 100, which also enhances the effectiveness of the integrated node 100 in controlling the plurality of remote subsystems 120.”).

As explained for Element [1.3] above, Almadi discloses commands used by the local controller to drive the fluid handling device to a particular target state. EX1002 ¶85. A POSITA would understand from Almadi that a user command is received to change a state of the first fluid-handling device. EX1002 ¶86.

SCADA discloses a server system (MTU aka server system) that receives commands from some form of input/output device (I/O device aka a client computing device) to change a state of a fluid-handling device. EX1008 at 12-14, and Fig. 2-1. SCADA discloses that the user can control actuators, which include fluid-handling devices. EX1008 at 42 (disclosing that the MTU sends commands for control of valves and motors). SCADA further explains that “when the MTU instructs, the RTU sends signals to open and close valves, or turn switches on and off, outputs analog or digital signals that may represent set points, and outputs pulse trains to move stepping motors.” EX1008 at 91.

Thus, each of Gutierrez, Almadi, and SCADA disclose or suggest this element.

i. [1.9] causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time.

Gutierrez discloses that its central controller receives operational commands or data signals from the remote computing device, processes them by translating protocols and analyzing data, and provides responses by issuing commands to the motor controller or sending feedback. EX1007, 2:41-47. This aligns with server functions, such as receiving client requests (commands), processing them, and executing actions (controlling the system). For example, it can adjust the motor's rotational speed based on remote commands, which is akin to a server managing and responding to client requests in real-time. EX1002 ¶89.

Gutierrez also discloses that the motor controller may include a variable frequency drive ("VFD"), which varies the frequency of electrical power to the motor, allowing for variable rotational speeds. EX1007, 8:6-12; 12:18-22. A POSITA would understand that VFDs are standard in industrial applications for smooth speed control, including ramping up and down to prevent mechanical stress. EX1002 ¶90. Gutierrez also discloses reducing the speed of the motor, i.e., to a different target state, when the sensed pressure in a pipeline falls below a minimum threshold indicative of a pipeline break. EX1007, 10:8-16.

In addition, Kahn discloses that sensor unit 110 includes communication equipment with actuators configured to manipulate fluid flow at respective fluid-handling facilities. EX1005, 8:3-11, 8:19-21, 10:62-67; *see also id.*, 14:35-15:2, 15:62-16:32. Kahn discloses first sensor having actuators controlling valves and pumps to manipulate fluid flow. *Id.* Kahn discloses sensors having actuators controlling valves and pumps to change the target states (sensing, recalibrating) over time. *Id*.

A POSITA would recognize from Kahn's disclosures that Kahn discloses the limitation regarding changing the state of the first fluid-handling device. EX1002 ¶¶91-92.

As explained for Element [1.3] above, Almadi discloses commands used by the local controller to drive the fluid handling device to a particular target state. EX1006, 1:45-49, 12:27-59; *see also* EX1006, 25:26-37.

A POSITA would understand that changing the state of the first pump of the '461 Patent is disclosed by Almadi's disclosure of changing the state of the pump based on readings/conditions including switching a pump off (from on) if the flow is below a certain limit. EX1002 ¶93. Thus, Almadi discloses this claim element.

SCADA discloses a server system (MTU aka server system) that receives commands from some form of input/output device (I/O device aka a client computing device) to change a state of a fluid-handling device. EX1008 at 12-14, and Fig. 2-1. SCADA discloses that the user can control actuators, which include fluid-handling devices. EX1002 ¶94; EX1008 at 42 (disclosing that the MTU sends commands for control of valves and motors). In SCADA, the "target states" are known as "set points" and are sent from the server system (MTU). EX1008 at 89, 237. SCADA further explains that "when the MTU instructs, the RTU sends signals to open and close valves, or turn switches on and off, outputs analog or digital signals that may represent set points, and outputs pulse trains to move stepping motors." EX1008 at 91.

Thus, each of Gutierrez, Almadi, and SCADA disclose or suggest this element.

Claim 1 is rendered obvious by the combination of Kahn and Gutierrez in further view of Almadi and SCADA.

3. Claim 2

a. [2] The method of claim 1, wherein: the sequence of different target states that change over time are configured to ramp up or down a speed of the first fluid-handling device.

As explained for Element [1.9] above, Gutierrez discloses a motor controller including a variable frequency drive ("VFD"), which varies the frequency of electrical power to the motor, allowing for variable rotational speeds. EX1007, 8:6-12; 12:18-22. A POSITA would understand that VFDs are standard in industrial applications for smooth speed control, including ramping up and down to prevent mechanical stress. EX1002 ¶97. Gutierrez also discloses reducing the speed of the motor, i.e., to a different target state, when the sensed pressure in a pipeline falls below a minimum threshold indicative of a pipeline break. EX1007, 10:8-16.

SCADA discloses the use of pulse control outputs, that can be used to instruct a stepping motor to increase or decrease a valve's openness by steps. EX1008 at

100, 243; EX1002 ¶98.

Thus, each of Gutierrez and SCADA disclose or suggest this element.

4. Claim 3

a. [3] The method of claim 1, wherein: the sequence of different target states that change over time are determined with steps for mitigating shocks to up-stream or down-stream fluid-handling devices relative to the first pump.

As explained for Element [2] above, Gutierrez discloses a motor controller including a variable frequency drive ("VFD"), which varies the frequency of electrical power to the motor, allowing for variable rotational speeds, *as system operating conditions warrant*. EX1007, 8:6-12; 12:18-22 (emphasis added). A POSITA would understand that VFDs are standard in industrial applications for smooth speed control, including ramping up and down to prevent mechanical stress. EX1002 ¶100. Gutierrez also discloses reducing the speed of the motor, i.e., to a different target state, when the sensed pressure in a pipeline falls below a minimum threshold indicative of a pipeline break. EX1007, 10:8-16.

Kahn discloses the sequence of different target states that change over time are determined, as discussed above for Claim 1, and incorporated herein. Moreover, Kahn discloses that sensor unit 110 includes communication equipment with actuators configured to manipulate fluid flow at respective fluid-handling facilities. EX1005, 8:3-11, 8:19-21, 10:62-67; *see also id.*, 14:35-15:2, 15:62-16:32. Kahn also discloses mitigating shocks such as physical events in the distribution system.

EX1005, 10:8-13 ("Physical events, such as a breakage of a pipe might be detected through a pattern of sensor units 110 . . . reduced water pressure . . . thereby identifying the exact location or proximate location of the breakage."); 23:51-62; 10:62-67 ("shutting off the supply of fluid upon the detection of emergency events"). Kahn's sensor units can be upstream or downstream, and at multiple locations in the fluid supply. EX1005, 11:2-15; *see also id*., FIG. 2, 16:67-17:7. A POSITA would recognize from Kahn's disclosures that Kahn discloses the limitation regarding changing the state over time. Thus, Kahn discloses this claim element. EX1002 ¶101.

Thus, each of Kahn and Gutierrez disclose or suggest this element.

5. Claim 4

a. [4] The method of claim 1, wherein: at least some of the sequence of different target states that change over time are determined by the first computer system in response to a rate of change in the first fluid property, wherein the first fluid property corresponds to a level of the first fluid in the first tank.

In addition to the arguments provided for Element [2] above, Gutierrez discloses "the controller 130 may receive data representative of pipeline conditions, such as line pressure, amount of chemicals present in the pipeline 120, and motor operating conditions, and in turn, control the pump 105 to inject more or less chemicals into the pipeline 120." EX1007, 8:34-38.

In view of the disclosure of controlling the pump 105 based on pipeline conditions, a POSITA would understand that Gutierrez describes the claim element "at least some of the sequence of different target states that change over time are determined by the first computer system in response to a rate of change in the first fluid property, wherein the first fluid property corresponds to a level of the first fluid in the first tank". EX1007, 8:34-37; EX1002 ¶¶103-104.

As explained for Element [1.3] above, Almadi discloses commands used by the local controller to drive the fluid handling device to a particular target state. EX1006, 1:45-49, 12:27-59; *see also id*., 25:26-37, 12:27-59, 20:25, 23:20-25.

Almadi discloses different states corresponding to different times through its disclosures related to the collection, storage, and retrieval of time-stamped process data. EX1006, Abstract, FIG. 6, FIGS. 8-11; 4:30-34, 5:4-6:53, 7:26-34, 7:59-64, 8:6-45, 9:1-33, 15:38-16:50, 17:1-14, 17:29-35, 7:50-65, 19:8-14, 19:26-38, 21:23-27, 23:10-15.

A POSITA would understand that Almadi's disclosure of monitoring and collecting time-stamped process data can be done automatically or manually at different times to determine a plurality of different target states corresponding to different times, as claimed in the '461 Patent. EX1002 ¶¶105-106.

A POSITA would understand from Almadi's disclosure of the sequence of different target states that change over time are determined by the first computer system in response to a rate of change in the first fluid property, wherein the first fluid property corresponds to a level of the first fluid in the first tank. EX1002 ¶107.

Additionally, SCADA discloses the automatic control of water level in a tank, which is controlled automatically by the use of valves. EX1008 at 45, Example 4-6, and 46, Fig. 4-5. SCADA discloses that a fill valve can be cycled to opened and closed target states that change over time, in response to a rate of change in the first fluid property, wherein the first fluid property corresponds to a level of the first fluid in the first tank. EX1002 ¶107; EX1008 at 46, Fig. 4-5; depicting changes in the tank level and the fill valve position.

Thus, each of Kahn, Gutierrez, and SCADA disclose or suggest this element.

6. Claim 5

a. [5] The method of claim 1, wherein: the server system is configured to interface with both a web browser on the client computing device and a special-purpose application executing on the client computing device to present the user interface indicating the first fluid property, wherein the first fluid property corresponds to a first fluid level.

Kahn discloses that the computer system 4 permits Account A to visualize first information associated with the first fluid test data overlaid on a geographical map displayed on the graphical computer interface (e.g., a web browser) of Account A’s computer. EX1005, 26:3-13. Kahn discloses that the computer system 4 can provide either a hosted environment (e.g., act as an application service provider as known in the art such that Account A needs primarily only a suitable web browser) or a non-hosted environment wherein appropriate software issued by the service provider is run on Account A's computer to access computer system 4. *Id*. a POSITA would recognize Kahn discloses a system configured to interface with a web browser on an account's computing device indicating the first fluid level. EX1002 ¶110.

In addition, Gutierrez discloses a GUI executed using a special-purpose application. EX1007, 12:65-13:8. A POSITA could easily combine the capability of using a web-based GUI along with a special-purpose application running a GUI, to provide a user a choice of GUI platforms. EX1002 ¶111.

Thus, this element is disclosed by the combination of Kahn and Gutierrez.

7. Claim 6

a. [6] The method of claim 1, wherein: the first computer system is configured to communicate with the server system via a cellular wireless connection.

Gutierrez discloses communication via a cellular wireless connection. EX1007, 12:32-38 ("For example, in some embodiments, data may be transmitted between the communication station 320 and the chemical injection system… over a certain communication form (e.g., cellular, RF, satellite, or other type of communication form"). Kahn also disclosed communication via cellular. EX1005, 10:25-31 ("long-range communication over … cellular communication networks… .).

In addition, Almadi further discloses that each of the computer components, including integrated node 100, remote subsystems 120, and remote host computer 110, communicates through available wireless systems and services, including corporate Wi-Fi networks (IEEE 802.11a/b/g/n) in conjunction with cellular networks (GSM/TETRA). EX1006, 13:47-60, *see also* EX1006, Abstract.

A POSITA would recognize that Almadi discloses the first computer system is configured to communicate with the server system via a cellular wireless connection. EX1002 ¶¶113-115.

Thus, Gutierrez, Kahn, and Almadi disclose this element.

8. Claim 7

a. [7] The method of claim 1, wherein the first computer system is configured to translate a plurality of commands from the server system, including the command, from an input format to a plurality of different formats and protocols configured to effectuate changes in states of a plurality of different fluid-handling devices at the first fluid handling site.

Gutierrez discloses translating commands from one protocol to another. EX1007, 2:41-47. Gutierrez discloses performing the translation at the central controller. *Id*. However, the central controller is a client to the motor controller, which is a server in that it is a computing device that provides services to the central controller, such as in a client-server architecture. EX1007, 2:48-60. Thus, Gutierrez discloses a first computer (the central controller) that translates commands from one protocol to one or more other protocols (i.e., "transmitting the second operational command at the second communication protocol from the controller to the motor controller") configured to effectuate changes in states of a plurality of different fluid-handling devices (motors) at the first fluid handling site. EX1007, 2:48-60. A

POSITA would understand that the use of different protocols by the protocol translator requires that the protocols including command must be identified and translated to be used by various fluid-handling devices. EX1002 ¶117. Thus, Gutierrez discloses this claim element.

In addition, Almadi discloses that integrated node 100 includes a protocol translator or translation server 102 to translate communications with each of the remote subsystems 120 according to any one or more of a plurality of messaging protocols (as can be shown with reference to the arrows connecting protocol translator or translation server 102 and the plurality of remote subsystems 120). EX1006, 14:10-17, FIG. 1B; *see also* EX1006, 11:35-41.

Almadi discloses a command, from an input format to a plurality of different formats and protocols configured to effectuate changes in states of a plurality of different fluid-handling devices at the first fluid handling site, the different fluid-handling devices including the first pump or the first valve through its disclosure that the protocol translator or translation server 102 supports communications according to various protocols, including serial and Ethernet physical interfaces. EX1006, 14:17-28; *see also* FIG. 2D.

Almadi discloses translated commands used by the local controller to drive the fluid handling device to a particular target state. EX1006, 1:45-49, 12:27-59, 14:10-32, 25:26-37.

A POSITA would understand that the use of different protocols by the protocol translator requires that the protocols including command must be identified and translated to be used by various fluid-handling devices. EX1002 ¶¶118-120.

A POSITA would further understand that the translated protocols include commands to change the states in the fluid-handling devices including pump or valves as claimed in the ‘461 Patent. EX1002 ¶120.

Thus, both Gutierrez and Almadi disclose this element.

9. Claim 8

a. [8] The method of claim 7, wherein translating the plurality of commands comprises steps for translating commands.

In view of the arguments provided for Claim 7 above, a POSITA would understand that Gutierrez discloses steps for translating commands. EX1007, 2:48-60; EX1002 ¶122. Thus, Gutierrez discloses this element.

In addition, Almadi discloses translating the plurality of commands comprises steps for translating commands through its disclosure that integrated node 100 can further include a ***protocol translator or translation server 102 to translate communications*** with each of the remote subsystems 120 according to any one or more of a plurality of messaging protocols. EX1006, 14:10-17, FIG. 1B; *see also* EX1006, 11:35-41. Almadi discloses that the ***protocol translator or translation server 102*** can be configurable, such as being configured by a user. EX1006, 14:17-28; *see also* FIG. 2D.

As explained for Element [7] above, Almadi discloses translated commands used by the local controller to drive the fluid handling device to a particular target state. EX1006, 1:45-49, 12:27-59, 14:10-32, 25:26-37.

A POSITA would understand that use of different protocols by the integrated node and remote subsystems involves the protocol translator performing steps for translating commands as claimed in the '461 Patent. EX1002 ¶123.

SCADA discloses translating commands. EX1002 ¶124; EX1008 at 243, Exercise 7-3 ("Protocol drivers are programs written to instruct a computer about the order of steps that must be taken in order to complete some task. … Changing from the language that one instrument understands to a language that the RTU understands, requires a protocol driver to accomplish.").

Thus, each of Gutierrez, Almadi, and SCADA disclose this element.

10. Claim 9

a. [9] The method of claim 7, wherein the plurality of different formats and protocols comprise: modbus remote terminal unit protocol; and analog electrical signals.

Gutierrez discloses a translation module 145 that supports communications according to various protocols, including Modbus serial communication protocol, such as Modbus RTU, Modbus ASCII, Modbus TCP/IP, Modbus TCP, Modbus over TCP/IP, Modbus over TCP, and/or Modbus Plus. EX1007, 9:45-50.

A POSITA would understand that a plurality of different formats and protocols comprise: analog electrical signals as the Modbus serial communication protocol can be used for communicating both analog and digital data. Thus, Gutierrez discloses this element. EX1002 ¶126.

In addition, Almadi discloses that a protocol translator or translation server 102 can be configurable and supports communications according to various protocols, including ***Serial Modbus, Modbus*** over IP (Internet Protocol). EX1006, 14:17-28, FIG. 1B. Almadi also discloses remote terminal units (RTUs) as integral components. EX1006, 1:58-63, 2:22-33. A POSITA would understand that Modbus RTU is a primary protocol for RTUs in serial communication. EX1002 ¶127.

Almadi further discloses a plurality of different formats and protocols comprise: analog electrical signals through its disclosure that the input/output unit 104 can support, for example, any of ***analog inputs, analog outputs***, digital inputs, digital outputs, pulse inputs, and pulse outputs for both wired and wireless instrumentation interfaces. EX1006, 13:64-67. A POSITA would understand that Almadi discloses the modbus RTU protocol and analog electrical signals. EX1002 ¶128.

SCADA discloses the use of Modbus RTU. EX1008 at 140, Fig. 9-2. SCADA also discloses the use of analog electrical signals. EX1008 at 243, Exercise 7-1 ("Most RTUs, in addition to gathering discrete signals from electrical switches that show status or alarm conditions, can also accept analog signals that indicate the amount of level or pressure or temperature."). SCADA also provides examples explaining the proportional control of valve openness using analog signals. EX1008 at 243, Exercise 7-2 ("Analog signals can be sent to valve actuators instructing them to open to 65 percent or close to 33 percent."). A POSITA would understand that SCADA discloses the modbus RTU protocol and analog electrical signals. EX1002 ¶129.

Thus, each of Gutierrez, Almadi, and SCADA disclose this element.

11. Claim 10

a. [10] The method of claim 7, wherein at least some of the plurality of different fluid-handling devices comprise proportional-integral-derivative controllers configured to drive respective fluid-handing devices to different target setpoints determined by the first computer system responsive to corresponding commands from the server system.

A POSITA would understand that proportional-integral-derivative (PID) controllers are feedback-based control loop mechanisms that are commonly used in industrial systems to regulate temperature, pressure, and speed. EX1002 ¶131. A POSITA would further understand that PID controllers are standard in chemical process control to regulate variable such as those described in Gutierrez, i.e., flow and pressure. *See* EX1007, 10:1-7. Accordingly, it would have been obvious to a POSITA to combine Gutierrez with PID control. EX1002 ¶131.

Additionally, Almadi discloses that integrated node 100 is a PLC, meaning any programmable logic controller PLC, remote terminal unit (RTU), computer, server, system, node, or unit. EX1006, 11:18-28. Almadi also discloses that integrated node 100 supports proportional-integral-derivative control (PID), closed loop control, open loop control, and logic and sequence functions. EX1006, 12:15-17.

Almadi discloses that the fluid-handling devices also include PLC, meaning any PLC, RTU, PLC with RTU functionality, RTU with PLC functionality, or any type of computer, terminal, server, system, node, or unit that can incorporate PLC or RTU functionality or both. EX1006, 11:22-27. Almadi discloses that the local controller uses commands to drive the fluid handling device to a particular target state. EX1006, 1:45-49, 12:27-59, 14:10-32, 25:26-37.

A POSITA would understand that the fluid handling device's programmable logic controller of Almadi is a proportioned integrated derivative controller because they are used to regulate temperature, flow pressure, spool, and other process variables in the control system. EX1002 ¶¶132-133.

Thus, both Gutierrez and Almadi disclose this element.

12. Claim 11

a. [11.1] The method of claim 7, wherein: the first computer system is coupled to at least some of the plurality of different fluid-handling devices via a bus; and

Gutierrez discloses the first computer system coupled to fluid-handling devices via a bus. EX1007, 9:4-11 ("the controller … is … coupled to a communication bus … to carry data between the communication module and … the motor … pump … or other … apparatus.”); EX1007, 9:43-45 (disclosing Modbus, Fieldbus, and Profibus). Thus, Gutierrez discloses this element. EX1002 ¶135.

Additionally, Almadi discloses coupling through a bus through its disclosure that network communication links 125 includes a ***logical bus***. EX1006, 11:31-35, 13:26-30, FIG. 1A. Almadi also discloses that in addition to analog communications using the standard analog signal, digital networks can be used to communicate, such as the ***Field Bus type*** 61158. EX1006, 14:3-9. Thus, Almadi also discloses this element. EX1002 ¶136.

SCADA discloses the use of a bus through its disclosure of Fieldbus and Profibus, which inherently uses a bus topology. EX1008 at 86 (identifying Fieldbus and Profibus as “bus-based communication standards.”). Fieldbus and Profibus were designed for “communication between field instruments and control equipment.” *Id*.

In addition, a POSITA would understand that the choice between a protocol using a bus topology or a star topology is simply a design choice. EX1002 ¶¶137-138.

Thus, each of Gutierrez, Almadi, and SCADA disclose this element.

a. [11.2] the first computer system comprises means for controlling which fluid handling devices are permitted to transmit signals on the bus at a given point in time.

Kahn and Almadi disclose remotely communicating to control fluid handling devices in Element [1.7], above, herein incorporated by reference.

Gutierrez discloses the use of Modbus. EX1007, 9:43-45 (disclosing Modbus, Fieldbus, and Profibus). A POSITA would understand that Modbus is a master-slave protocol, where the master initiates all communication, controlling when slaves respond by polling slaves for data or sending commands, which inherently controls when the fluid-handling devices can transmit. EX1002 ¶140; *see also* EX1009, p. 2 ("MODBUS is a request/reply protocol"). Thus, Gutierrez discloses this claim element. EX1002 ¶140.

Additionally, Almadi discloses the first computer system comprises means for controlling which fluid handling devices are permitted to transmit signals on the bus at a given point in time through its disclosure that network communication links 125 may include a ***logical bus***; EX1006, 13:26-30; *see also id*., 14:3-9.

A POSITA would understand that commands can be sent via a bus at any given time and that Almadi's disclosure using analog signals and digital networks to communicate via a bus is the transmission of signals on a bus at a given time at the '461 Patent. EX1002 ¶141.

SCADA discloses that the RTU (computer system) controls which field device (fluid handling device) is permitted to transmit signals on the bus at a given point in time. This is because the RTU acts as a master, and signals the field devices to respond. EX1008 at 104. SCADA also discloses the HART communication system which uses a master-slave system to ensure that the sensor only talks in response to an order from the controller. EX1008 at 78. A POSITA would understand that SCADA discloses these master-slave protocols. EX1002 ¶142.

Thus, each of Gutierrez, Almadi, and SCADA disclose this element.

13. Claim 12

a. [12] The method of claim 7, wherein the plurality of different formats and protocols comprise three different protocols communicated over three different types of control busses to corresponding fluid handling devices among the plurality of different fluid-handling devices.

Kahn and Almadi disclose a plurality of different fluid handling devices. *See* Claim 1 (Kahn), above, and EX1006, 11:18-21, herein incorporated by reference.

Gutierrez discloses three different protocols communicated using three different protocols over three different types of control busses to corresponding fluid handling devices among the plurality of different fluid handing devices through its disclosure of various protocols, including over serial and Ethernet physical interfaces. EX1007, 9:41-53. A POSITA would understand that Gutierrez discloses at least three protocols communicated over at least three control busses to fluid-handling devices. EX1002 ¶144. Thus, Gutierrez discloses this element.

Additionally, Almadi discloses three different protocols communicated over three different types of control busses to corresponding fluid handling devices among the plurality of different fluid handing devices through its disclosure of various protocols, including over serial and Ethernet physical interfaces (including at least (1) serial Modbus, (2) Modbus over IP, and (3) TCP/IP, a network-based control bus). EX1006, 14:22-28, 3:16-17. A POSITA would recognize that Almadi discloses three different protocols over three different control busses in the above disclosure. EX1002 ¶145.

SCADA discloses three different protocols communicated over three different types of control busses, e.g., the HART, Fieldbus, and Profibus protocols. EX1008 at 77-78, 86. A POSITA would recognize that SCADA discloses three different protocols over three different control busses in the foregoing disclosures. EX1002 ¶146.

Thus, each of Gutierrez, Almadi, and SCADA disclose this element.

14. Claim 13

a. [13] The method of claim 7, wherein the plurality of different formats and protocols comprise command code format, an on-off signal format, and an application-program interface format.

As explained above for Element [11.2], Gutierrez discloses the use of Modbus. EX1007, 9:43-45 (disclosing Modbus, Fieldbus, and Profibus). A POSITA would understand that Modbus uses command code formats. EX1002 ¶148; *see also* EX1009, p. 2 (“MODBUS is a request/reply protocol and offers services specified by function codes.”). EX1002 ¶¶148-149. For example, function codes (e.g., 03 for read, and 06 for write) are confirmed by the Modbus specification (EX1009, p. 11):

MODBUS Application Protocol Specification V1.1b3 — Modbus

5.1 Public Function Code Definition

				Function Codes code	Sub code	(hex)	Section
Data Access	Bit access	Physical Discrete Inputs	Read Discrete Inputs	02		02	6.2
		Internal Bits Or Physical coils	Read Coils	01		01	6.1
			Write Single Coil	05		05	6.5
			Write Multiple Coils	15		0F	6.11
	16 bits access	Physical Input Registers	Read Input Register	04		04	6.4
		Internal Registers Or Physical Output Registers	Read Holding Registers	03		03	6.3
			Write Single Register	06		06	6.6
			Write Multiple Registers	16		10	6.12
			Read/Write Multiple Registers	23		17	6.17
			Mask Write Register	22		16	6.16
			Read FIFO queue	24		18	6.18
	File record access		Read File record	20		14	6.14
			Write File record	21		15	6.15
Diagnostics			Read Exception status	07		07	6.7
			Diagnostic	08	00-18,20	08	6.8
			Get Com event counter	11		OB	6.9
			Get Com Event Log	12		0C	6.10
			Report Server ID	17		11	6.13
			Read device Identification	43	14	2B	6.21
Other			Encapsulated Interface Transport	43	13,14	2B	6.19
			CANopen General Reference	43	13	2B	6.20

Gutierrez also discloses the use of Modbus, DeviceNet, Profibus, RS-232, RS-485, and Fieldbus. EX1007, 9:43-45. A POSITA would understand that each of these protocols uses binary high/low states for communication, which constitute on-off signal formats. EX1002 ¶150. Thus, Gutierrez discloses this claim element.

Additionally, Almadi discloses the plurality of different formats and protocols, including Modbus, as disclosed above in Claim 12 and incorporated herein by reference. *See* EX1006, 14:17-28. Accordingly, because Almadi discloses the use of Modbus, Almadi discloses this element for the same reasons as described above for Gutierrez. EX1002 ¶151.

Additionally, SCADA also discloses use of Modbus, and therefore discloses this element for the same reasons as described above for Gutierrez. EX1008 at 140, Fig. 9-2; EX1002 ¶152.

Thus, each of Gutierrez, Almadi, and SCADA disclose this element.

15. Claim 14

a. [14] The method of claim 7, wherein the first computer system is configurable to operate in an automatic mode, a mixed automatic mode, and a manual mode.

Kahn discloses manual and automatic mode for the reasons stated in Elements 1.3, 1.9, 2, and 3, above. The ’461 Patent explains that in a mixed automatic mode “the user selects which devices are manually controlled while other devices are automatically controlled.” EX1001, 10:18-23. A POSITA would understand that Kahn’s discloses manual and automatic mode and Kahn also discloses mixed automatic mode within the meaning of the ‘461 Patent because Kahn discloses a plurality of fluid handling devices that may be separately controlled. EX1002 ¶154.

Additionally, Gutierrez discloses manual and automatic modes. EX1007, 3:35-48. In the first mode, Gutierrez discloses “adjusting a rotational speed of the motor.” *Id*., 3:35-39. In the second mode, Gutierrez discloses “automatically adjusting the motor controller to adjust a rotational speed of the motor in response to receiving the signal representative of the operational parameter." *Id*., 3:40-48. A POSITA would understand that Gutierrez discloses manual and automatic mode and Gutierrez also discloses mixed automatic mode within the meaning of the '461 Patent because Gutierrez discloses a plurality of fluid handling devices that may be separately controlled. EX1002 ¶155; EX1007, claims 2 and 8, 14:49-54; 16:7-17.

Additionally, Almadi discloses the first computer system is configured to operate in an automatic mode, a mixed automatic mode, and a manual mode through its disclosure that field devices incorporate robust functionality, such as the ability to process data, ***self-monitor, self-regulate, self-calibrate***, or provide early warning with respect to malfunctions or predictive maintenance. EX1006, 1:53-57.

Almadi also discloses automatically acquiring data periodically (every second, per claim 11, EX1006, 32:66-33:11), detects exceptions, and issues commands (e.g., alarms, suspensions, per claims 1 and 20, EX1006, 28:54-29:67, 36:7-21) based on predefined criteria, forming an autonomous control loop (EX1006, 11:61-63).

A POSITA would understand that Almadi's disclosure of self-monitoring, self-regulating and self-calibrating is equivalent to the operation of the first computer system in an automatic mode of the '461 Patent. EX1002 ¶156.

Additionally, SCADA discloses the automatic control of water level in a tank, which is controlled automatically by the use of valves. EX1008 at 45, Example 4-

6, and 46, Fig. 4-5. SCADA discloses that a fill valve can be cycled to opened and closed target states that change over time, in response to a rate of change in the first fluid property, wherein the first fluid property corresponds to a level of the first fluid in the first tank. EX1002 ¶157; EX1008 at 46, Fig. 4-5; depicting changes in the tank level and the fill valve position.

Finally, a POSITA would further understand that a computer system configured to operate in an automatic mode can also be configured to operate in a manual mode and a mixed automatic/manual mode. EX1002 ¶158.

Thus, each of Kahn, Gutierrez, Almadi, and SCADA disclose this element.

16. Claim 15

a. [15] The method of claim 7, wherein translating the plurality of commands comprises steps for identifying protocols and control busses.

Gutierrez discloses that the translator can determine the protocol based on what is received, ensuring compatibility. For example, Gutierrez discloses that users can connect without knowing the protocol. EX1007, 9:54-64. A POSITA would understand that Gutierrez thereby provides auto-detection based on the device. EX1002 ¶160. A POSITA would further understand that this aligns with industry practices where protocol choice depends on factors such as location or power source. EX1002 ¶160. Thus, Gutierrez discloses this element.

Additionally, Almadi discloses steps for identifying protocols and control busses through its disclosure that a protocol translator or translation server 102 can be configurable, for example through a configuration tool interface, to support communications according to various protocols, including various protocols over serial and Ethernet physical interfaces. EX1006, 14:17-28.

A POSITA would understand that configuring the protocol translator includes steps for identifying protocols and control busses. Thus, Almadi discloses steps for identifying protocols and control buses. EX1002 ¶161.

SCADA also discloses identifying protocols. EX1008 at 243, Exercise 7-3 ("Protocol drivers are programs written to instruct a computer about the order of steps that must be taken in order to complete some task. … Changing from the language that one instrument understands to a language that the RTU understands, requires a protocol driver to accomplish."). Thus, SCADA expressly discloses protocol drivers, which are steps to be followed "if the message is to be decoded properly." *Id.*; EX1002 ¶162.

Accordingly, each of Gutierrez, Almadi, and SCADA disclose this element.

17. Claim 16

a. [16] The method of claim 1, wherein the first computing system is configured to receive and transmit data and commands via a remote terminal unit protocol wherein the data and commands comprise redundant bits.

Kahn and Almadi disclose remotely communicating to control fluid handling devices in Element [1.7] above, herein incorporated by reference.

Gutierrez discloses receiving and transmitting data and commands using remote terminal unit (RTU) protocol. EX1007, 9:45-50 (disclosing Modbus RTU). A POSITA would understand that Modbus RTU is a standard RTU protocol for serial communications in industrial systems. EX1002, ¶164. A POSITA would further understand that Modbus RTU includes a Cyclic Redundancy Check (CRC) for error detection. EX1009 at p. 5 (disclosing a 2-byte CRC used by Modbus PDU for serial line communication); EX1002, ¶164. A CRC consists of redundant bits, often appended to the end of a message, added to ensure data integrity. EX1008, at p. 112 (depicting 16 CRC bits added to the end of a message); EX1002, ¶164.; see also the Modbus protocol specification (EX1009, at p. 23):

12 (0C Hex) Return Bus Communication Error Count

The response data field returns the quantity of CRC errors encountered by the remote device since its last restart, clear counters operation, or power–up.

Sub-function	Data Field (Request)	Data Field (Response)
00 0C	00 00	CRC Error Count

Thus, this element is disclosed by Gutierrez.

Additionally, as explained for Element [9] above, Almadi discloses that a protocol translator or translation server 102 can be configurable and supports communications according to various protocols, including ***Serial Modbus, Modbus*** over IP (Internet Protocol). EX1006, 14:17-28, FIG. 1B. Modbus uses redundant bits for CRC as explained for Gutierrez above.

Almadi also discloses the use of 100BaseTX. EX1006, 13:26-27. A POSITA would understand that 100BaseTX includes a CRC for error detection, which are redundant bits added to ensure data integrity. EX1010 at p. 53; *see also* EX1008, at p. 112 (depicting 16 CRC bits added to the end of a message).

Almadi discloses the plurality of different formats and protocols comprise binary frames with redundant bits used to detect errors through its disclosure that the DRM 166 includes instructions to detect gross errors in reconciled measurements 715 to determine a confidence level for reconciled values and a probability of gross error existence and, further, can flag 716 values that exceed a preselected confidence level 713. EX1006., 26:41-49. Almadi further discloses that DRM 166 has instructions for eliminating gross errors by removing measurements 717 with detected gross errors according to a preselected priority scheme 718, which includes: (i) giving the priority to remove measurements with larger magnitude of corrections; or (ii) giving the priority to 60 remove measurements with highest impact on the total sum of reconciliation run penalty. EX1006, 26:50-61.

A POSITA would understand that Almadi's disclosure of the detection and elimination of errors in data suggests that the system disclosed in Almadi sends redundant bits with the reconciled measurement data, with the redundant bits added by the sender and removed by the receiver to allow the receiver to detect or correct corrupted bits. EX1002 ¶165.

SCADA discloses the addition of CRC bits at the end of a data message.

EX1008 at 112 (depicting 16 CRC bits added to the end of a message). Thus, SCADA discloses this element for the same reasons as those cited above.

Thus, each of Gutierrez, Almadi, and SCADA disclose this element.

18. Claim 17

Claim 17 closely tracks Claim 1, as shown in EX1012.

The minor differences between Claims 1 and 17 are addressed below.

As explained above under "Prosecution History," the Examiner found that Elements [17.2]-[17.4] below were described in the prior art

a. [17.1] A method, comprising:

Kahn, Gutierrez, Almadi, and SCADA disclose methods as explained in Element [1.1] above.

b. [17.2] measuring, with one or more sensors at a first fluid tank located at a first fluid-handling site, one or more properties associated with a first fluid;

As explained in Element [1.2] above, each of Kahn, Gutierrez, Almadi, and SCADA disclose or suggest the use of one or more sensors used with a fluid tank at a fluid-handling site, and the measurement of one or more properties using the sensors.

c. [17.3] receiving, with a first computer system disposed at a first fluid handling site, information associated with the one or more properties associated with the first fluid;

As explained in Element [1.2] above, and incorporated herein, each of Kahn, Gutierrez, Almadi, and SCADA disclose or suggest receiving, with a first computer system disposed at a first fluid handling site, information associated with the one or more properties associated with the first fluid.

As explained in Element [1.2], Kahn discloses a computer system disposed at a first fluid-handling site. As also explained in Element [1.2], Kahn discloses the use of sensor units, and information about properties of a fluid from sensors at a fluid tank. EX1005, 11:14-19, 25:25-34. As also explained in Element [1.2], Kahn discloses measuring the quality of drinking water, which inherently requires measuring fluid properties. As also explained in Element [1.2], a POSITA would understand that Kahn discloses receiving information associated with one or more properties associated with the first fluid site through its disclosure of a computer system that receives first fluid test data from sensors. EX1002 ¶49.

As explained in Element [1.2], Gutierrez discloses "a chemical injection system for a hydrocarbon transmission system" which relies on tank level (information about properties of a fluid) monitoring to ensure continuous operation and avoid downtime. EX1007, 1:54-56. EX1002, ¶50.

As explained in Element [1.2], Almadi discloses field devices that provide sensor functions to sense operational information and variables such as temperature, pressure, pH, flow rate, tank level, and deliver that information to the system-level controller devices. EX1006, 1:41-45, 12:27-32, 25:11-25. Almadi also discloses the use of sensors at a fluid tank. EX1006, 25:11-16. As also explained in Element

[1.2], a POSITA would understand that Almadi discloses a first computer system disposed at a first fluid handling site, that is configured to collect information associated with one or more properties associated with a first fluid through its disclosure of remote subsystems 120, intelligent field devices which include tank level sensors that can detect changing the level status of tanks. EX1002, ¶51. Thus, Almadi discloses this claim element.

As explained in Element [1.2], SCADA discloses receiving with a first computer system disposed at a first fluid-handling site, information comprising one or more properties of a first fluid from one or more sensors disposed at a first fluid tank itself disposed at the first fluid-handling site. EX1002, ¶52; EX1008 at 12, Figure 2-1 (disclosing remote terminal units (RTUs aka computer systems) at a fluid-handling site).

Thus, each of Kahn, Gutierrez, Almadi, and SCADA disclose this element.

d. [17.4] providing, with the first computer system, remote control of a first fluid-handling device of a plurality of fluid-handling devices, the first fluid-handling device comprising at least one of a first pump, a first filter, and a first valve;

Kahn, Gutierrez, Almadi, and SCADA disclose Element [17.4] for the reasons explained above in Elements [1.2] and [1.3], and incorporated herein.

More specifically, the limitation "providing, with the first computer system, remote control of a first fluid-handling device of a plurality of fluid-handling devices" is subsumed within Element [1.3] which recites "providing, with the first computer system disposed at a first fluid handling site, remote control of a first fluid-handling device of the one or more fluid-handling devices."

The limitation "the first fluid-handling device comprising at least one of a first pump, a first filter, and a first valve" is subsumed within Element [1.2] which recites, in relevant part, "the one or more fluid-handling devices comprising one or more of a first pump, a first filter, and a first valve."

Thus, each of Kahn, Gutierrez, Almadi, and SCADA disclose this element.

e. [17.5] receiving, with a server system, from the first computer system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors;

Kahn, Gutierrez, Almadi, and SCADA disclose Element [17.5] for the reasons discussed above in Element [1.4] and incorporated herein.

f. [17.6] obtaining, with the server system, credentials from a first client computing device;

Kahn, Gutierrez, and Almadi disclose element Element [17.6] for the reasons discussed above for Element [1.5] and incorporated herein.

g. [17.7] determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site, wherein the server system hosts data about other fluid handling sites the user is not authorized to interact;

Kahn and Almadi disclose Element [17.7] for the reasons discussed above for

Element [1.6] and incorporated herein.

h. [17.8] after the determination, providing, with the server system, via the network, information by which the first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system;

Kahn, Almadi, and SCADA disclose Element [17.8] for the reasons discussed above in Element [1.7] and incorporated herein.

i. [17.9] receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and

Gutierrez, Almadi, and SCADA disclose Element [17.9] for the reasons discussed above in Element [1.8] and incorporated herein.

j. [17.10] causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time.

Gutierrez, Almadi, and SCADA disclose Element [17.10] for the reasons discussed above in Element [1.9] and incorporated herein.

Thus, Claim 17 is rendered obvious by the combination of Kahn and Gutierrez in further view of Almadi and SCADA. EX1002, ¶¶168-184.

IX. DISCRETIONARY DENIAL UNWARRANTED

A. Discretionary Factors Favor Institution

1. Discretionary Denial Under *Fintiv* and 35 U.S.C. §314(a) Is Not Appropriate

The six *Fintiv* factors guide against discretionary denial. *See Apple Inc. v. Fintiv, Inc*., IPR2020-00019, Paper 11 (precedential).

a. Petitioner Will Seek a Stay

Petitioner will seek a stay of co-pending litigation. Thus, Factor 1 favors institution

b. Parallel Proceeding Trial Date

Factor 2 favors institution. No trial date has been set in co-pending litigation. The expected trial date based on the court's median time-to-trial date statistics is approximately September 2027. *See* EX1011 (showing the median time-to-trial date is approximately 33.1 months from the filing of the case (*i.e.*, December 20, 2024)). This date is substantially *after* the expected final written decision date, which is around September 2026.

c. Investment in Parallel Proceeding

Factor 3 favors institution. The co-pending litigation is in its early stages, and the investment in it has been minimal. The parties have not exchanged preliminary positions on claim construction, invalidity contentions have not been served, and discovery has not opened. *See PEAG LLC v. Varta Microbattery GmbH*, IPR2020-01214, Paper 8, 17 (Jan. 6, 2021).

d. Stipulation Favors Institution

Factor 4 weighs strongly against discretionary denial. Petitioner hereby stipulates that, if the IPR is instituted, Petitioner will not assert that any of the claims challenged in this proceeding are invalid on any ground that Petitioner raised or reasonably could have raised during this inter partes review. *Sotera Wireless, Inc. v. Masimo Corp*., IPR2020-01019, Paper 12, at 19 (Dec. 1, 2020)

e. Identity Of Parties

Factor 5 is neutral. Petitioner is the defendant in the co-pending litigation.

f. Other Circumstances, Including the Merits

Factor 6 guides against discretionary denial. Here, the evidence of unpatentability is compelling, as evidenced by Grounds laid out above.

X. CONCLUSION

Trial should be instituted, and the Challenged Claims should be canceled as unpatentable.

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U.S. PATENT NO. 12,019,461 – LISTING OF CHALLENGED CLAIMS

CLAIM NO.	**CLAIM ELEMENTS**
Claim 1	[1.1] A fluid processing method, comprising: [1.2] receiving, with a first computer system disposed at a first fluid-handling site, information comprising one or more properties of a first fluid from one or more sensors disposed at a first fluid tank itself disposed at the first fluid-handling site, the fluid-handling site comprising one or more fluid-handling devices, the one or more fluid-handling devices comprising one or more of a first pump, a first filter, and a first valve; [1.3] providing, with the first computer system disposed at a first fluid handling site, remote control of a first fluid-handling device of the one or more fluid-handling devices; [1.4] receiving, with a server system, from the first computer system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors; [1.5] obtaining, with the server system, credentials from a first client computing device; [1.6] determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site, wherein the server system hosts data about other fluid handling sites the user is not authorized to interact; [1.7] after the determination, providing, with the server system, via the network, information by which the first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system;

CLAIM NO.	**CLAIM ELEMENTS**
	[1.8] receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and [1.9] causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time.
Claim 2	[2] The method of claim 1, wherein: the sequence of different target states that change over time are configured to ramp up or down a speed of the first fluid-handling device.
Claim 3	[3] The method of claim 1, wherein: the sequence of different target states that change over time are determined with steps for mitigating shocks to up-stream or down-stream fluid-handling devices relative to the first pump.
Claim 4	[4] The method of claim 1, wherein: at least some of the sequence of different target states that change over time are determined by the first computer system in response to a rate of change in the first fluid property, wherein the first fluid property corresponds to a level of the first fluid in the first tank.
Claim 5	[5] The method of claim 1, wherein: the server system is configured to interface with both a web browser on the client computing device and a special-purpose application executing on the client computing device to present the user interface indicating the first fluid property, wherein the first fluid property corresponds to a first fluid level.
Claim 6	[6] The method of claim 1, wherein: the first computer system is configured to communicate with the server system via a cellular wireless connection.
Claim 7	[7] The method of claim 1, wherein the first computer system is configured to translate a plurality of commands from the server system, including the command, from an input format to a plurality of different formats and protocols configured to effectuate changes in states of a plurality of different fluid-handling devices at the first fluid handling site.

CLAIM NO.	**CLAIM ELEMENTS**
Claim 8	[8] The method of claim 7, wherein translating the plurality of commands comprises steps for translating commands.
Claim 9	[9] The method of claim 7, wherein the plurality of different formats and protocols comprise: modbus remote terminal unit protocol; and analog electrical signals.
Claim 10	[10] The method of claim 7, wherein at least some of the plurality of different fluid-handling devices comprise proportional-integral-derivative controllers configured to drive respective fluid-handing devices to different target setpoints determined by the first computer system responsive to corresponding commands from the server system.
Claim 11	[11.1] The method of claim 7, wherein: the first computer system is coupled to at least some of the plurality of different fluid-handling devices via a bus; and [11.2] the first computer system comprises means for controlling which fluid handling devices are permitted to transmit signals on the bus at a given point in time.
Claim 12	[12] The method of claim 7, wherein the plurality of different formats and protocols comprise three different protocols communicated over three different types of control busses to corresponding fluid handling devices among the plurality of different fluid-handling devices.
Claim 13	[13] The method of claim 7, wherein the plurality of different formats and protocols comprise command code format, an on-off signal format, and an application-program interface format.
Claim 14	[14] The method of claim 7, wherein the first computer system is configurable to operate in an automatic mode, a mixed automatic mode, and a manual mode.
Claim 15	[15] The method of claim 7, wherein translating the plurality of commands comprises steps for identifying protocols and control busses.

CLAIM NO.	**CLAIM ELEMENTS**
Claim 16	[16] The method of claim 1, wherein the first computing system is configured to receive and transmit data and commands via a remote terminal unit protocol wherein the data and commands comprise redundant bits.
Claim 17	[17.1] A method, comprising: [17.2] measuring, with one or more sensors at a first fluid tank located at a first fluid-handling site, one or more properties associated with a first fluid; [17.3] receiving, with a first computer system disposed at a first fluid handling site, information associated with the one or more properties associated with the first fluid; [17.4] providing, with the first computer system, remote control of a first fluid-handling device of a plurality of fluid-handling devices, the first fluid-handling device comprising at least one of a first pump, a first filter, and a first valve; [17.5] receiving, with a server system, from the first computer system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors; [17.6] obtaining, with the server system, credentials from a first client computing device; [17.7] determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site, wherein the server system hosts data about other fluid handling sites the user is not authorized to interact; [17.8] after the determination, providing, with the server system, via the network, information by which the first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system;

	[17.9] receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and [17.10] causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time.

CERTIFICATION OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Petition includes 13,816 words, as counted by Microsoft Word, and is therefore in compliance with the 14,000-word limit established by 37 C.F.R.§ 42.24(a)(1)(i). Accordingly, pursuant to 37 C.F.R. § 42.24(d), lead counsel for the Petitioner hereby certifies that this Petition complies with the type-volume limits established for a petition requesting IPR.

Dated: April 11, 2025

Respectfully Submitted,

/ *Robert D. Katz* /
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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(4) and 42.105, lead counsel for Petitioners hereby certifies that on April 11, 2025, copies of this Petition, Power of Attorney, and all supporting exhibits were sent via USPS Priority Mail to the correspondence address of record for the '461 Patent:

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A courtesy copy of this Petition and supporting exhibits was also served via email on Patent Owner's counsel of record in the district court litigation.

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