

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION**

ROKIOT USA, LLC,

Plaintiff

v.

**SAMSUNG ELECTRONICS CO.,
LTD. and SAMSUNG
ELECTRONICS AMERICA, INC.,**

Defendants

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CIV. A. NO. 6:18-cv-00062

JURY TRIAL REQUESTED

PATENT CASE

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Rokiote USA, LLC (“Rokiote USA”) files this suit against Samsung Electronics Co., Ltd. (“SEC”) and Samsung Electronics America, Inc. (“SEA”) (collectively “the Samsung Defendants”) for infringement of U.S. Patent Nos. 7,895,257 and 8,631,063 (collectively the “Asserted Patents”).

The Samsung Defendants infringe the Asserted Patents by providing, among other things, the Samsung Internet-of-Things (“IoT”) platform and system used to connect, monitor, communicate with, and command devices in smart homes and buildings.

THE PARTIES

1. Plaintiff and patent owner Rokiote USA, LLC (“Rokiote USA”) is a

Delaware limited liability company headquartered in Winters, Texas.

2. SEC is a corporation organized and existing under the laws of the Republic of Korea with a principal place of business at 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-Do, Korea 443-742.

3. SEA is a corporation organized and existing under the laws of New York with a principal place of business at 85 Challenger Rd, Ridgefield Park, NJ 07660 and having an office at 1301 East Lookout Drive, Richardson, Collin County, Texas 75082. SEA may be served through its registered agent, CT Corporation System, located at 1999 Bryan Street, Suite 900, Dallas, Texas 75201.

4. Upon information and belief, SEA is a wholly-owned subsidiary of SEC and is involved in the sale, marketing and distribution of certain Samsung-branded and/or SmartThings-branded electronics in the United States, including those accused of infringement in this case.

JURISDICTION AND VENUE

5. This is a patent suit brought under the United States Patent Act, namely 35 U.S.C. §§ 271, 281, 283, 284, and 285, among other laws. This Court has subject-matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338.

6. This Court has personal jurisdiction over SEC and SEA because they have substantial, systematic, and continuous contacts within this judicial district. The Samsung Defendants have offices and facilities in this judicial district, including

facilities in Richardson, Collin County, Texas.

7. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1400(b). Defendant SEC resides in this district and the Samsung Defendants have a regular and established place of business in Richardson, Collin County, Texas, and have committed acts of infringement in this judicial district.

8. Upon information and belief, SEC and SEA place the products accused of infringement in this case in the stream of commerce with the knowledge, understanding, and expectation that such products will be sold in the state of Texas and in this judicial district.

9. Upon information and belief, SEC and/or SEA maintain authorized service centers in this district with the expectation, among others, that the products accused of infringement in this case will be sold and used in this judicial district.

10. Upon information and belief, a substantial part of the events giving rise to the claims alleged herein have occurred in this district in that SEC and/or SEA have committed acts of infringement and/or acts that are accused of infringement in this case including marketing, selling, and/or offering for sale the products accused of infringement in this case.

BACKGROUND

A. ROKIOT USA

11. Rokiot USA is controlled by Abdelsalam (“Sumi”) Helal, Ph.D, a

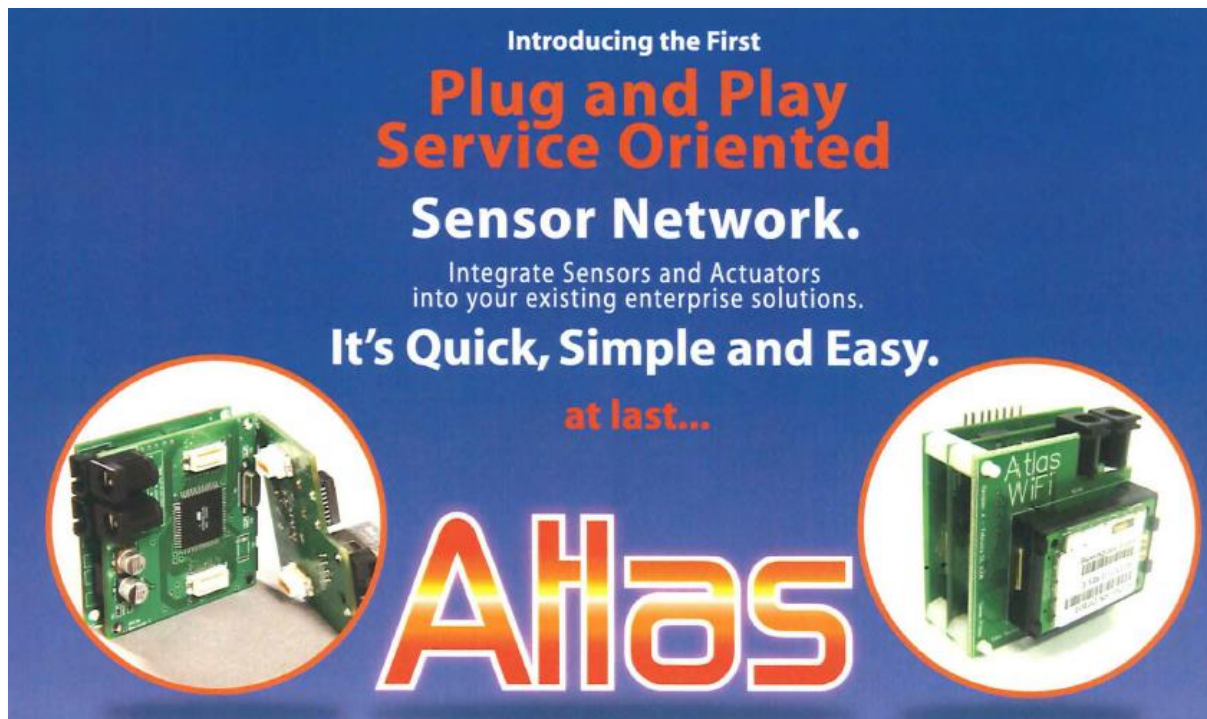
widely recognized pioneer of the Internet of Things and well known thought leader in mobile and pervasive computing. Professor Helal currently serves as Chair in Digital Health at Lancaster University leading interdisciplinary research and technology initiatives in the School of Computing and Communications and the Division of Health Research. Before joining Lancaster's faculty, Dr. Helal was a Computer and Information Science and Engineering Professor at the University of Florida. A prolific scholar, Dr. Helal currently serves as Editor-in-Chief of IEEE Computer, the flagship magazine of the IEEE Computer Society.

12. Dr. Helal's efforts have resulted in significant contributions to the advancement of smart spaces, assistive technology, and development of IoT-based enabling technologies for the elderly and hearing/visually impaired. At the University of Florida, Dr. Helal co-founded and directed the Gator Tech Smart House, an experimental facility for applied research, development, and validation of IoT technology in the domains of elder care and digital health.



13. The Gator Tech Smart House garnered widespread attention as a showcase of assistive technology developed by Dr. Helal and his co-inventors that was enabled by the inventions in the Asserted Patents, including a smart mailbox that sensed when mail arrived, window blinds that automatically controlled light and privacy, a smart bed that monitored sleep patterns, and a floor that tracked occupants' level of activity and that could detect falls.

14. In 2006, Dr. Helal co-founded Pervasa, Inc., a University of Florida technology startup focused on commercializing the modular architecture successfully proven in the Gator Tech Smart House. Pervasa's Atlas platform and middleware enabled a plug-and-play framework for sensor/actuator networks. Atlas devices appeared in the framework automatically as they were added and powered on. Atlas applications included smart homes, healthcare, and asset tracking.



15. In 2007, Pervasa won the Silver “Best of Sensor Expo Award” beating University of California Berkeley’s Crossbow, which took the Bronze.

16. The Patent Office recognized the pioneering efforts by co-inventors King, Bose, Pickles, Russo, Ploeg, Zabadani, Kouche and Helal by awarding patents covering their novel IoT platform technology.

17. The University of Florida assigned the patents-in-suit to the original inventors in 2013, and they assigned their interests to the Plaintiff in 2017.

B. THE ROKIOT USA PATENTS

18. Rokiot USA is the owner, by assignment, of U.S. Patent Nos. 7,895,257 (the “257 Patent”) and 8,631,063 (the “063 Patent”) both titled “Modular Platform Enabling Heterogeneous Devices, Sensors, and Actuators to Integrate Automatically

into Heterogeneous Networks.”

19. A true and correct copy of the '257 Patent is attached as Exhibit A.

20. A true and correct copy of the '063 Patent is attached as Exhibit B.

21. As the sole owner of the '257 and '063 Patents, Rokiot USA holds all substantial rights in and under the patents, including the right to grant sublicenses, exclude others, and to enforce, sue, and recover damages for past, present, and future infringement.

22. The United States Patent Office issued the '257 Patent on February 22, 2011, and issued the '063 Patent on January 14, 2014.

23. The '257 and '063 Patents are valid, enforceable, and were duly issued in full compliance with Title 35 of the United States Code.

24. The Asserted Patents generally are directed to a platform for integrating heterogeneous devices (e.g., sensors and actuators) and applications. In pervasive computing spaces such as a smart home, industrial facility, or manufacturing plant, deployed actuators and sensors monitor an environment, condition or state, send and receive data, and respond to control signals typically sent remotely over a wireless network.

25. The specification of the Asserted Patents describes the applicability of the patented technology to remotely controlled appliances, lights, doors, coffee machines, temperature controls, home theater systems, communication systems,

security cameras, surveillance equipment, and the like. '063 at 1:21-27.

26. Home automation systems, or “smart homes,” provide the convenience of controlling systems in a home or business from a central or remote location. '063 at 1:41-45.

27. The Asserted Patents address problems related to deploying such systems and integrating new devices.

28. Previously, when a new component was added, developers had to undertake the tedious task of learning and accounting for characteristics related to operating, interfacing, communicating, and configuring the device. '063 at 2:30-33. New devices (e.g., sensors and/or actuators) were physically integrated, configured, and tested within an overall system. Computer applications for the new device had to be written with knowledge of the resources assigned to connect the device, signals required to query the device, and the meaning of any signals returned to a centralized system from the device. '063 at 2:35-38. Any changes in the deployed device required repeating the configuration process. Moreover, once application software was developed, changes may require modification along the entire communication path from device to data repository to ensure interoperability.

29. In short, previous systems lacked a refined way of achieving “modularity” where the devices could be added to a system without configuration overhead. In addition, previous systems that attempted to provide scalable solutions

focused heavily on sensors (e.g., temperature sensors, pressure sensors) without sufficient regard for scaled integration of actuators.

30. The claimed subject matter of the Asserted Patents describes, among other things, scalable, reliable, and secure data ingestion (e.g., from sensors) and command and control messaging (e.g., to actuators).

31. Accordingly, the Asserted Patents relate to platforms that provide a uniform interface to any type of sensor, actuator, or connected device. '063 at 5:20-23.

32. By providing the capability to represent connected devices automatically as software services to programmers and users, a larger number of devices may be supported. '063 at 4:8-30.

33. The inventors recognized a “need for a modular, service-oriented sensor and actuator platform specifically designed to support the development of scalable pervasive computing spaces.” '063 at 4:28-30.

34. They further recognized that “development of smart spaces is very different in goals and requirements from the typical sensor network application.” '063 at 5:21-22.

35. Describing generally an embodiment of the claimed subject matter, the inventors noted that “manual integration of sensors and actuators is preferably replaced by a scalable, plug-and-play mechanism . . . [such that] the smart space is

preferably assembled programmatically by software developers instead of hard-wired by engineers and system integrators . . . allow[ing] for cost-effective development, enabl[ing] extensibility, and simplif[ying] change management.” ’063 at 5:21-29.

36. In a preferred embodiment described in the specification, “a pervasive space exists as both a runtime environment and a software library.” ’063 at 5:32-3.

37. Benefits provided by the claimed inventions include: (i) interchangeability of various sensors and actuators without the need for cumbersome reworking of the platform and/or associated software; (ii) enabling users of the platform to control, and interact with, the sensors and actuators in a higher level language without the need to program at the hardware level of the devices; and (iii) interchangeability of the hardware modules (e.g., one communication module can be interchanged with another to allow for the use of different networking technologies without reworking of other modules). ’063 at 5:52-63.

38. Components of a disclosed embodiment include a hardware platform, a middleware module, and one or more “software services” that represents an active object. In the normal operation described in the Asserted Patents, the hardware platform communicates with at least two active objects, where at least one active object is an actuator and one active object is a sensor.

39. Those skilled in the art understand that the Internet-of-Things generally

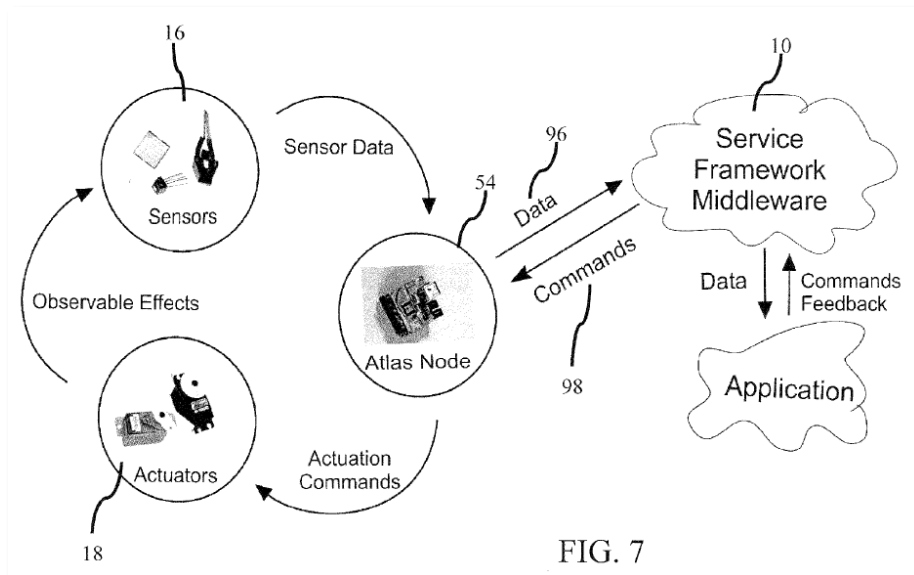
categorizes “Things” as sensors or actuators.

40. Sensors provide information about a particular domain, supplying data to the system about the current state of the space. In general, sensors create data, usually by providing measurements or telemetry.

41. Actuators are active objects that alter a space. Typically, actuators accept commands to perform certain functions.

42. The specification of the Asserted Patents describes sensors and actuators as “the foundations of a pervasive space, as they provide the means for gathering information about the state of the space and for controlling devices that can modify the state of the space.” ’063 at 6:47-53.

43. In one embodiment described in the Asserted Patents, the platform connects numerous and heterogeneous sensors and actuators to the services and applications that monitor and control the space. As shown in Figure 7 of the Asserted Patents (below), information flows through nodes 54 and middleware 10. Each node is given a unique identifier, and when a node comes online it sends its identification or other data 96 to the middleware 10. When this is acknowledged, it sends the driver bundle 98 for the attached devices 16, 18, and, after this, the application function loops, handling any incoming network packets, periodically sampling the sensors 16, sending signals to actuators 18, transmitting sensor data, and sleeping.



44. As illustrated in Figure 7, commands flow to actuators and data flows from sensors.

45. As expressed in claim 1 of the '063 Patent, an embodiment of the claimed subject matter includes a middleware module that generates one or more software services for each of at least two active objects, receives commands from one or more applications written in a high-level language via the software services, converts commands into low-level commands (capable of controlling the active objects and that can be understood by the active objects), and transmits low-level commands to active objects via a hardware platform.

46. Further according to '063 Patent claim 1, a hardware platform receives raw data from at least one active object and passes it to a middleware module. In turn, the middleware module converts raw data into useable data and passes it to the software service for that active object.

47. The specification of the Asserted Patents describes higher-level application software receiving useable data from a particular active object's software service.

48. According to the specification of the Asserted Patents, interchangeability of sensors and actuators without the need for cumbersome reworking of the platform or associated software is a benefit of the claimed subject matter. '063 at 5:52-63. In an exemplary embodiment, hardware platforms, connected devices, and associated software services appear as a single, homogeneous environment even if the actual environment comprises heterogeneous networks or devices. '063 at 7:36-40.

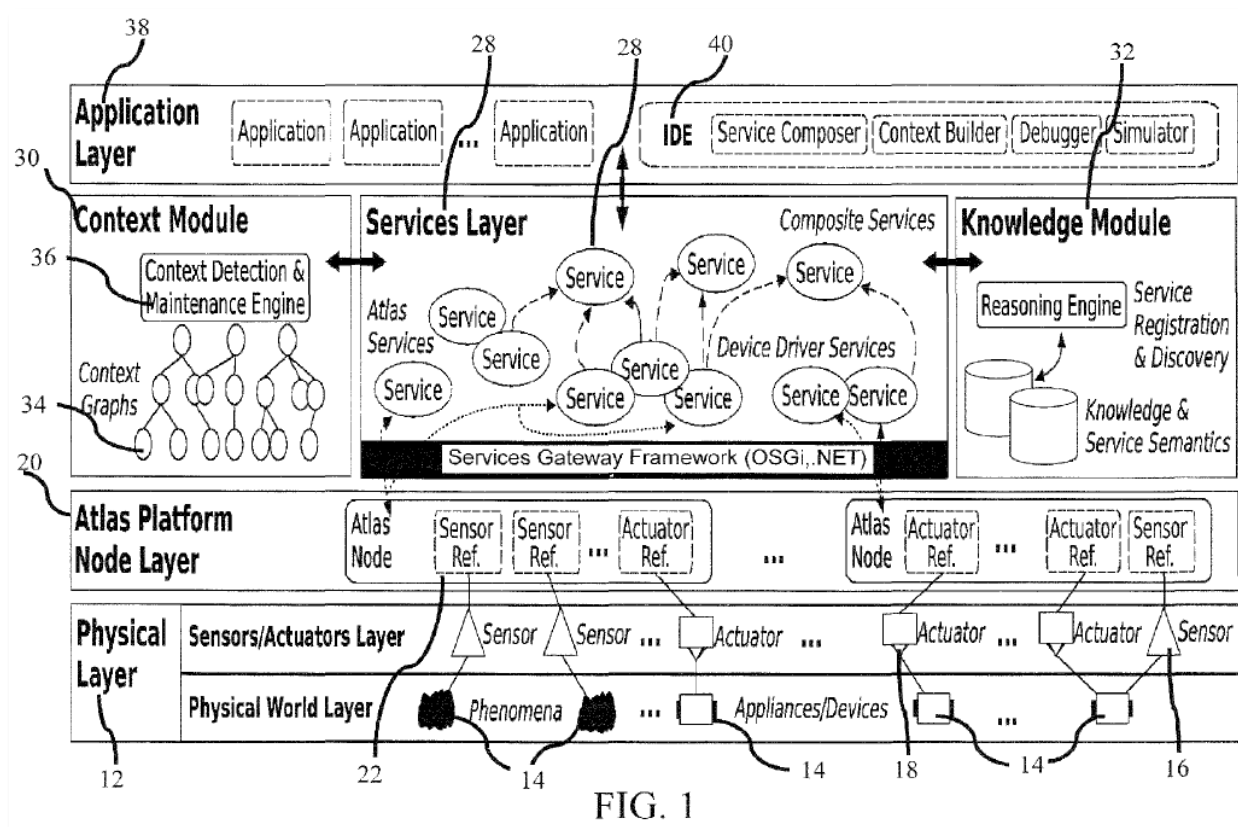
49. This functionality enables users of the platform to control and interact with "Things" in a higher-level language, obviating the need to program (or communicate with) each Thing at the device's hardware level.

50. Another described advantage lies in the interchangeability of hardware modules. For example, one communication module can be interchanged with another to allow for the use of one networking technology or another without reworking other modules. '063 at 5:52-63.

51. As described in the Asserted Patents, programming an intelligent space involves at least three activities: (i) context engineering, which involves interpreting sensory data; (ii) software engineering, which includes describing various software

component's behavior; and (iii) associating behavior with context, which includes defining which pieces of software can execute in a particular context and which pieces the system should invoke upon a contextual change. '063 at 6:14-21. As discussed below, the Samsung Defendants' IoT System adheres to this same development framework.

52. In the Asserted Patents, Figure 1 is a schematic view of one embodiment of a middleware architecture for programmable pervasive spaces built using the platform of the claimed subject matter:



53. Referring to Figure 1, the specification describes an embodiment of a middleware architecture 10. '063 at 7:48-8:38.

54. In the physical layer, various phenomena, appliances, and devices are active objects captured through actuators and sensors into the smart space for observation and control.

55. Above the physical layer in the representation of Figure 1, the Platform Node Layer contains sensor and actuator platform nodes that automatically integrate the sensors and actuators and hence their respective active objects and export their service representations to the layers above.

56. The platform layer represents sensors/actuators in the physical environment as one or more software services that can be programmed or composed into other services. Thus, the physical world is represented as a set of software services to programmers.

57. Above the platform layer in Figure 1 is the services layer, which holds the registry of software service representations of the sensors and actuators. In one embodiment, the services layer runs on a centralized server and contains a context management module and knowledge representation and storage module. These provide remote management functionality including registration, context creation, and device management generally.

58. The specification of the Asserted Patents describes an exemplary embodiment comprising an application layer sitting above the platform layer. The application layer includes a runtime environment that provides access to a software

library of sensors, actuators, and other services.

59. In a disclosed embodiment of the Asserted Patents, the application layer also includes actual IoT applications and composed services that monitor and control elements of the pervasive space.

60. In another disclosed embodiment, the platform represents any attached object in an IoT space as a Java program and the object is represented as an OSGi service bundle. The middleware framework in such an embodiment is shown in Figure 8 of the Asserted Patents.

61. With reference to the embodiment of Figure 8 (below), the specification describes registering and hosting software services in an industry-standard service framework such as the Open Services Gateway initiative (OSGi) standard specifications that are governed by the OSGi Alliance.

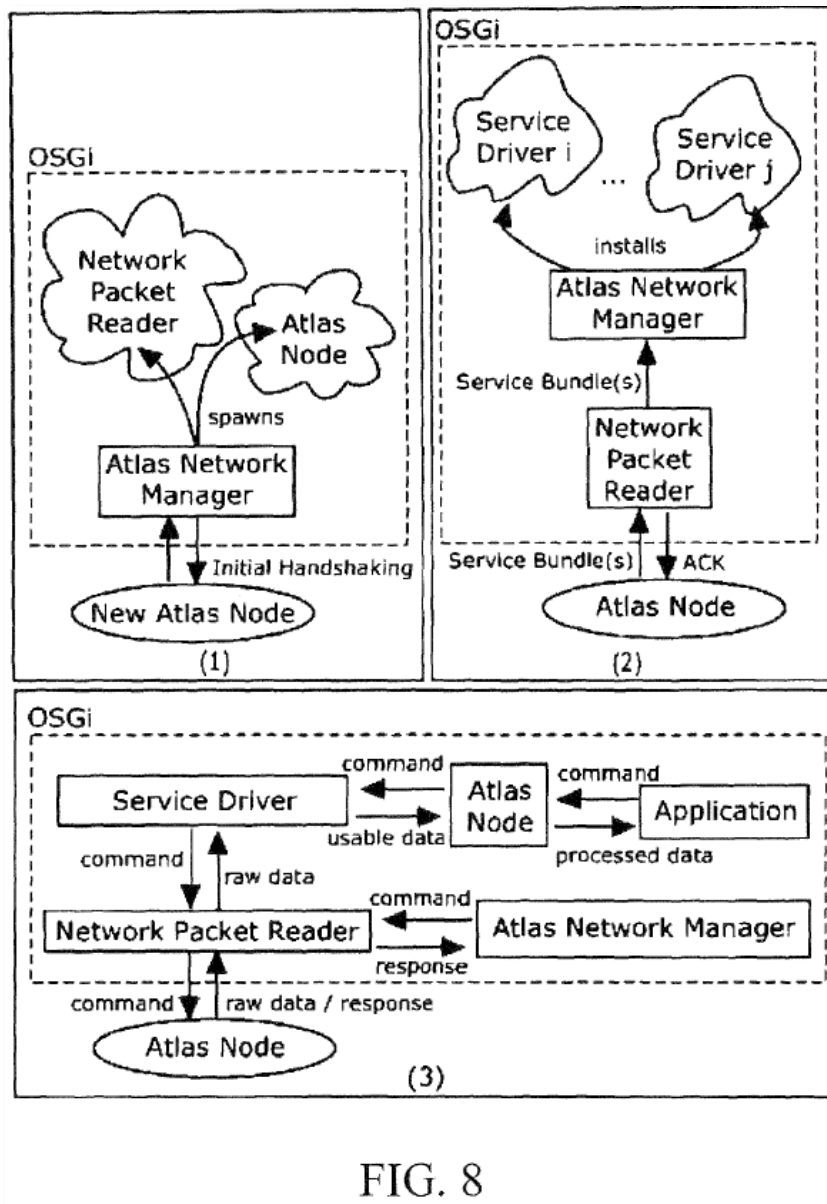


FIG. 8

62. The OSGi Alliance develops and promotes open specifications that enable the modular assembly of software built with Java technology.

63. In an exemplary embodiment of the Asserted Patents, a driver represents each of the hardware sensors, actuators, or other devices connected to the platform as one or more software services on a software interface such as the

middleware. These services are then made available to client programs or users through the middleware, for example, by applications or other services. '063 at 13:53-58.

64. Thus, in such an embodiment, each software service, regardless of the type of associated device, complies with a standard interface, such as the middleware, and can be discovered and accessed through this interface by applications and other services using standard mechanisms such as those provided by the standards-based service framework.

C. DEFENDANTS

65. SEC is one of the world's largest electronics companies and designs, manufactures and provides to the United States and world markets a wide variety of products and services, including consumer electronics, mobile phones, tablets, laptops and other personal computers.

66. SEA is a subsidiary of SEC.

67. "Samsung is committed to growing the IoT data economy," according to SEC's global head of ARTIK, Samsung's end-to-end, integrated IoT platform.

68. In 2014, SEC acquired SmartThings in a transaction reportedly valued in the hundreds of millions of dollars. SmartThings was founded in 2012, began selling IoT products in 2013, and is now a wholly-owned subsidiary of SEC.

69. SEC provides SmartThings-branded and Connect-branded products,

systems, and services in the United States.

70. SEA provides SmartThings-branded and Connect-branded products, systems, and services in the United States.

71. The Samsung Defendants provide products and services for home and business/industrial automation and other IoT functionality and connectivity as described herein.

72. Defendants' products are used to, among other things, make "smart" homes, business, and industrial sites where lights, locks, appliances, and so on are computer controlled.

73. The Samsung Defendants market the SmartThings app, a SmartThings Hub, Samsung Connect, Samsung ARTIK (an "integrated Smart Internet of Things (IoT) platform," *see* <https://www.artik.io/overview/>), sensors (e.g., temperature sensors, humidity sensors, etc.), and actuators (e.g., automated locks, thermostats, etc.).

74. Many of Defendants' products include Internet of Things (IoT) functionality.

75. The Samsung Defendants provide SmartThings-branded and Connect-branded sensors, actuators, and home appliances that are enabled for network connectivity. This connectivity allows the objects to communicate and exchange data locally and remotely.

76. Defendants provide the infrastructure for such products to communicate. Example infrastructure includes cloud-based servers, local hubs, and associated platforms (e.g., Samsung ARTIK, SmartThings Cloud, and the Samsung IoT System).

77. Defendants provide SmartThings, Connect, and Artik products, infrastructure and services including servers, cloud-server infrastructure, IoT gateways, hubs, middleware, software, hardware, drivers, and interfaces to facilitate communication between IoT devices (e.g., user equipment) and software applications in various infringing combinations for uses such as those described herein. For convenience, these accused instrumentalities (e.g., including any combination of SmartThings, Artik, Samsung Connect, and SmartThings Cloud components) may be referred to herein as the Samsung (or Defendants') IoT System or Defendants' IoT products or systems.

78. Defendants make, use, sell, offer for sale, license, test, develop, import and/or distribute systems including the SmartThings, Connect, and/or Artik products and infrastructure (e.g., hardware platform, IoT cloud products and service), hubs, apps, kits, automation systems, alarm systems as described herein.

79. Defendants' IoT systems embody the asserted claims of the '063 and '257 patents.

80. SEC and/or SEA own, operate, maintain, and/or control (either directly

or through a wholly-owned subsidiary) the www.samsung.com domain.

81. Content relating to the Samsung IoT System published on the www.samsung.com domain accurately describes the Samsung IoT System.

82. SEC and/or SEA own, operate, maintain, and/or control (either directly or through a wholly-owned subsidiary) the www.smarthings.com domain.

83. Content relating to the Samsung IoT System published on the www.smarthings.com domain accurately describes the Samsung IoT System.

84. Defendants publish accurate information about their IoT products and services at: <http://docs.smarthings.com>.

85. Defendants publish accurate information about their IoT products and services at: <https://smarthings.developer.samsung.com>.

86. Defendants publish accurate information about their IoT products and services at: www.samsung.com/us.

87. Defendants publish accurate information about their IoT products and services at: <https://news.samsung.com/us>.

88. Defendants publish accurate information about their IoT products and services at: <https://www.smarthings.com/use>.

89. Defendants publish accurate information about their IoT products and services at: <http://docs.smarthings.com/en/latest/architecture/>.

90. Defendants publish accurate information about their IoT products and

services at: <http://docs.smarthings.com/en/latest/architecture/>.

91. Defendants publish accurate information about their IoT products and services at: <http://docs.smarthings.com/en/latest/device-type-developers-guide/overview.html>.

92. Defendants publish accurate information about their IoT products and services at: <http://docs.smarthings.com/en/latest/device-type-developers-guide/quick-start.html>.

93. Defendants publish accurate information about their IoT products and services at: <http://docs.smarthings.com/en/latest/smartapp-developers-guide/anatomy-and-life-cycle-of-a-smartapp.html>.

94. Defendants publish accurate information about their IoT products and services at: <http://docs.smarthings.com/en/latest/cloud-and-lan-connected-device-types-developers-guide/building-cloud-connected-device-types/division-of-labor.html#service-manager-responsibilities>.

95. Defendants publish accurate information about their IoT products and services at: <https://smarthings.developer.samsung.com/develop/api-ref/capabilities.html#Carbon-Dioxide-Measurement>.

96. Defendants publish accurate information about their IoT products and services at: <https://smarthings.developer.samsung.com/develop/api-ref/capabilities.html#Carbon-Monoxide-Detector>.

97. Defendants publish accurate information about their IoT products and services at: <https://smarthings.developer.samsung.com/develop/api-ref/capabilities.html#Consumable>.

98. Defendants publish accurate information about their IoT products and services at: <https://smarthings.developer.samsung.com/develop/api-ref/capabilities.html#Contact-Sensor>

99. Defendants publish accurate information about their IoT products and services at: <https://www.samsung.com/us/explore/connect/>.

100. Defendants publish accurate information about their IoT products and services at: <https://www.samsung.com/us/support/owners/app/samsung-connect>.

101. Defendants publish accurate information about their IoT products and services at: <http://www.samsung.com/global/galaxy/apps/samsung-connect/>.

102. Defendants publish accurate information about their IoT products and services at: <https://news.samsung.com/us/samsung-shares-vision-open-connected-iot-experience-samsung-developer-conference-2017/>.

103. Defendants publish accurate information about their IoT products and services at: <http://developer.samsung.com/artik>. Such information includes at least the following diagram and text concerning the Artik modules:



Samsung ARTIK provides a range of modules to drive your IoT products. From the lowest level (the things) to controlling/monitoring hubs to display-based kiosks, there's an ARTIK module that's tailored for your needs.

104. Defendants publish accurate information about their IoT products and services at: <http://readthedocs.org/projects/smarthings/>.

105. Defendants publish accurate information about their IoT products and services at: <http://docs.smarthings.com/en/latest>.

106. Defendants publish accurate information about their IoT products and services at: <https://www.samsung.com/us/smart-home/smarthings/>.

107. Defendants publish accurate information about their IoT products and services at: https://www.samsung.com/us/smart-home/smarthings/all-smarthings/s/_n-10+11+hv1x9/.

108. Defendants publish accurate information about their IoT products and services at: <https://www.artik.io/overview/>.

109. Defendants publish accurate information about their IoT products and services at: http://static.artik.io/files/Samsung_ARTIK_Overview.pdf.

110. Defendants publish accurate information about their IoT products and services at: <https://news.samsung.com/global/samsungs-smarthings-cloud->

[bringing-the-iot-dream-to-life](#).


111. Defendants publish accurate information about their IoT products and services at: [developer.artik.cloud](#).

112. Defendants publish accurate information about their IoT products and services at: [developer.artik.cloud/documentation](#).

113. Rokiot USA hereby incorporates by reference the Samsung IoT System-related content of the domains and web pages referenced in paragraphs 80-113 above.


114. According to Defendants, “SmartThings can teach your home a few new tricks and make life a little bit easier.” <https://www.smarthings.com/uses>.

Defendants instruct customers of various benefits of Samsung IoT products:




When you leave home

When you're ready to leave home, SmartThings can lock all the doors, turn off all the lights, turn down the thermostat, and turn on the security camera.




While you're away

While you're away from home, SmartThings can send you video alerts if there's unexpected activity, warn you if there's a water leak, and much more.



When you arrive home

When you arrive home in the evening, SmartThings can open your garage door automatically, adjust the color of your lights, turn on your favorite music, and control your home appliances.



When you go to sleep

And when you're ready to go to sleep, SmartThings can warn you if doors or windows have been left open, before then turning off all the lights and turning down the thermostat.

115. Similarly, Samsung Connect automates homes:

Samsung Connect lets you easily control, monitor, and automate your home from anywhere in the world. You can connect your Samsung home appliances, TVs, and speakers to the app. With a SmartThings Hub, or compatible device with SmartThings Hub functionality like the upcoming Samsung Connect Home, you can connect with a wide range of connected devices, including lights, cameras, locks, thermostats, sensors, and more. Just look for the Works with SmartThings label next time you're buying a connected device for your home. *

<https://www.samsung.com/us/support/owners/app/samsung-connect>

116. Defendants provide hubs and kits including but not limited to the Samsung SmartThings Link for NVIDIA SHIELD TV, Samsung Connect Home, Samsung Connect Home Pro, Samsung SmartThings Hub, Samsung SmartThings ADT Security Hub, starter kits, and home security systems.

Samsung Connect App

Samsung Connect puts you in control of your Smart Home by combining the best of Quick Connect and Samsung SmartThings into one app!

<https://www.samsung.com/us/support/owners/app/samsung-connect>

117. Defendants provide IoT “Integrations” including SmartThings for iPhone and Android, SmartThings for Garmin Watches, SmartThings for Google Assistant, SmartThings for Amazon Alexa, SmartThings for Apple Watch, and Samsung Connect for Android.

118. In October 2017, Samsung announced it was simplifying its IoT platform by combining its IoT services (SmartThings, Samsung Connect, and Artik)

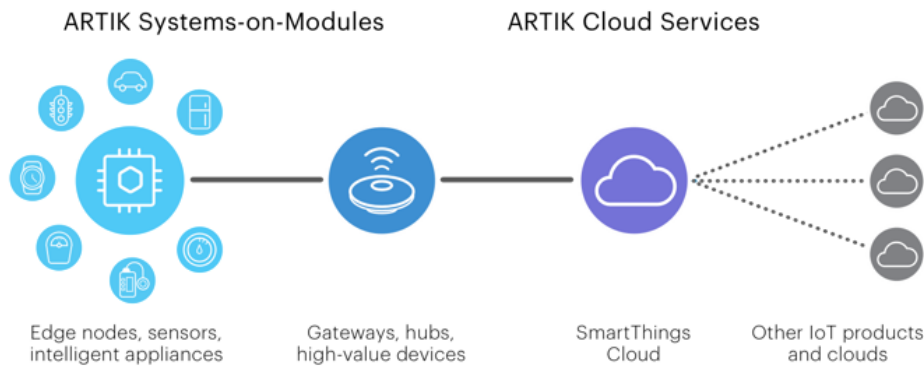
into a central platform, SmartThings Cloud: “Samsung is combining its existing IoT services—SmartThings, Samsung Connect, and ARTIK—into one united IoT platform: SmartThings Cloud, which will provide a single, powerful cloud-based hub that can seamlessly connect and control IoT-enabled products and services from a unified touchpoint. SmartThings Cloud will build one of the world’s largest IoT ecosystems, and will provide the infrastructure for a connected consumer experience that is innovative, versatile and holistic. With SmartThings Cloud, developers will have access to one cloud API across all SmartThings-compatible products to build their connected solutions and bring them to more people. It will also provide secure interoperability and services for business developing commercial and industrial IoT solutions.” ([https://news.samsung.com/us/samsung-shares-vision-open-connected-iot-experience-samsung-developer-conference-2017/.](https://news.samsung.com/us/samsung-shares-vision-open-connected-iot-experience-samsung-developer-conference-2017/))

One cloud. Many options.

On October 18, 2017, Samsung announced the consolidation of Samsung cloud services — including Samsung Connect Cloud and ARTIK Cloud — into a single IoT cloud platform called SmartThings Cloud. This seamless, open ecosystem will allow better and easier connectivity across an expanded set of devices and services including home, automotive, and industrial applications.

Everything changes. And nothing changes.

Existing ARTIK and SmartThings Cloud functionality is unaffected and all ARTIK-based products and services will continue to work as before. Our goal is to make the transition of ARTIK and SmartThings cloud features as seamless as possible.

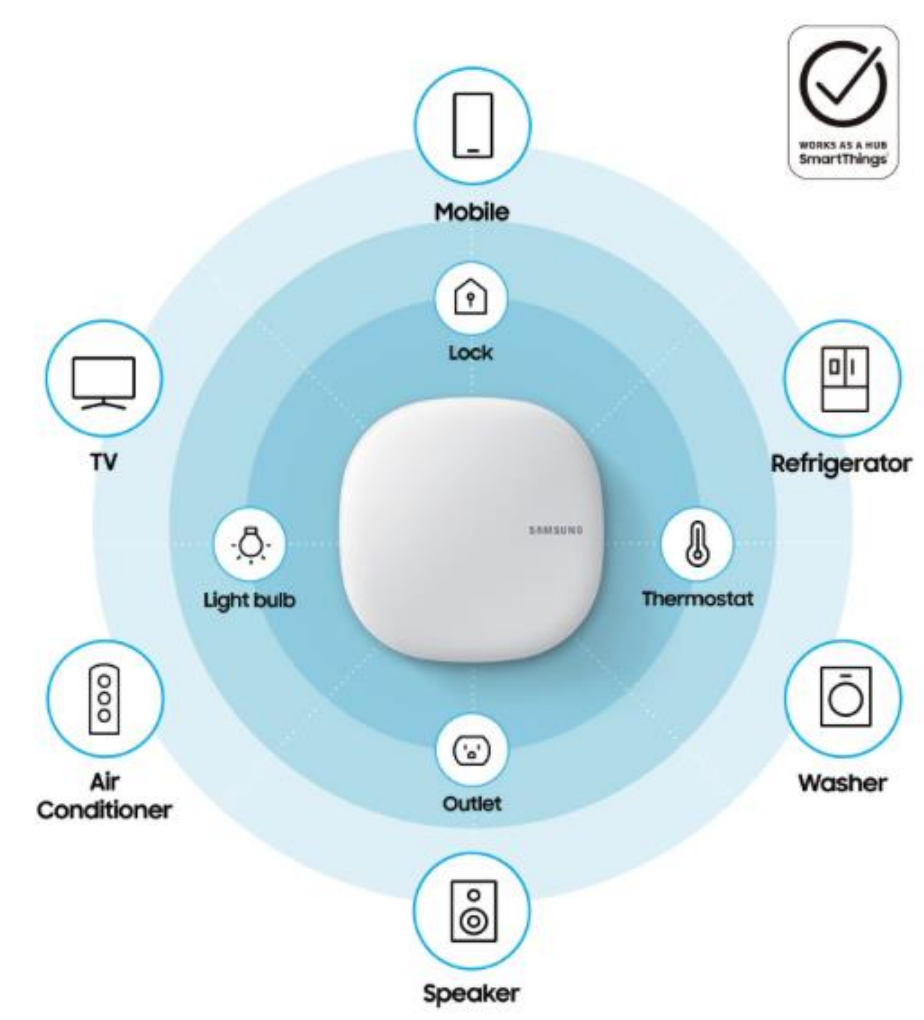


<https://artik.cloud/integration/>

Hardware Platform with Middleware Module

119. Defendants’ IoT System platforms (and related systems) include servers, cloud-server infrastructure, IoT gateways, hubs, middleware, software, hardware, drivers, and interfaces.

120. The following image exemplifies a Samsung IoT System home environment:



<http://www.samsung.com/global/galaxy/apps/samsung-connect/>

- Connect and control smart devices through Bluetooth, Wi-Fi, a SmartThings Hub, or compatible device with SmartThings Hub functionality like the upcoming Samsung Connect Home *

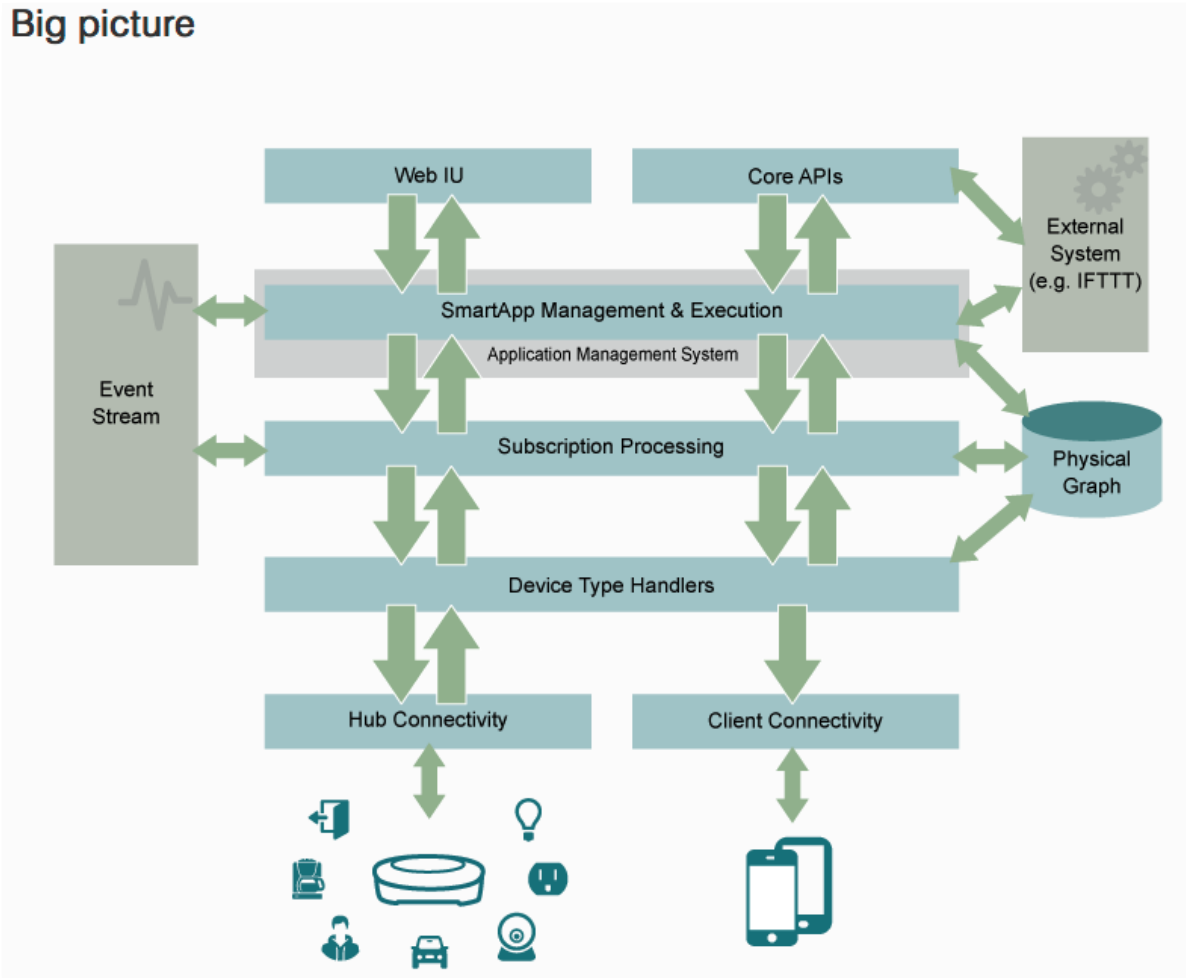
<https://www.samsung.com/us/support/owners/app/samsung-connect>

121. Claims 1, 16 and 20 of the '063 Patent and claims 1 and 17 of the '257 Patent relate to systems with a middleware module (e.g., software module) executing on a hardware platform. Hardware platforms covered by these claims communicate

with active objects (e.g., devices that have sensors and/or actuators).

122. The accused Samsung IoT System comprises a hardware platform (e.g., server, gateway, and computing infrastructure) on which at least one middleware module executes to enable communication with active objects having sensors and/or actuators. Specific instances and examples of these structures are described above and throughout this complaint and include, for example, SmartApp Management & Execution, Application Management System, and Device Type Handlers executed on the SmartThings platform, which includes “cloud” server infrastructure and hub(s).

123. Samsung IoT System infrastructure includes software executing on SmartThings servers and hardware. Examples of such software include “SmartApp Management & Execution,” “Subscription Processing,” “Device Type Handlers,” “Hub Connectivity,” and “Client Connectivity” shown below in the “Big picture” architecture diagram.



<http://docs.smarthings.com/en/latest/architecture/>

124. SmartThings Service Manager enables functionality with third-party cloud services. <http://docs.smarthings.com/en/latest/architecture/>.

125. The accused hardware platform includes, at least, the SmartThings Hub and SmartThings servers.

The SmartThings Hub connects directly to your broadband router. The Hub provides communication between all connected devices, the SmartThings cloud and the SmartThings mobile application. With a SmartThings Hub you:

- Simply plug it into your Ethernet router and provide power.
- Connect any SmartThings or SmartThings-ready device to your SmartThings account.
- Build your own SmartThings kit by combining with other SmartThings devices.
- Work with a variety of standard ZigBee and Z-Wave devices, such as GE Z-Wave in-wall switches and outlets.

The new Samsung SmartThings Hub also supports the ability to execute certain automations locally on the Hub itself, and ships with four AA batteries. This allows for certain automations to continue, even without AC power. It also ships with USB ports and is Bluetooth Low Energy capable. While not active at launch, this allows for greater expansion in the future without requiring new hardware.

<http://docs.smartthings.com/en/latest/architecture/>

Active Objects – Actuators and Sensors

126. The SmartThings Hub and SmartThings servers are adapted to be communicably connected to active objects (e.g., devices).

127. The following information accurately describes SmartThings “Devices” and platform:

Devices are the building blocks of the SmartThings infrastructure. They are the connection between the SmartThings system and the physical world. There's a huge variety in the devices you can use; some are created by SmartThings, but most are not.

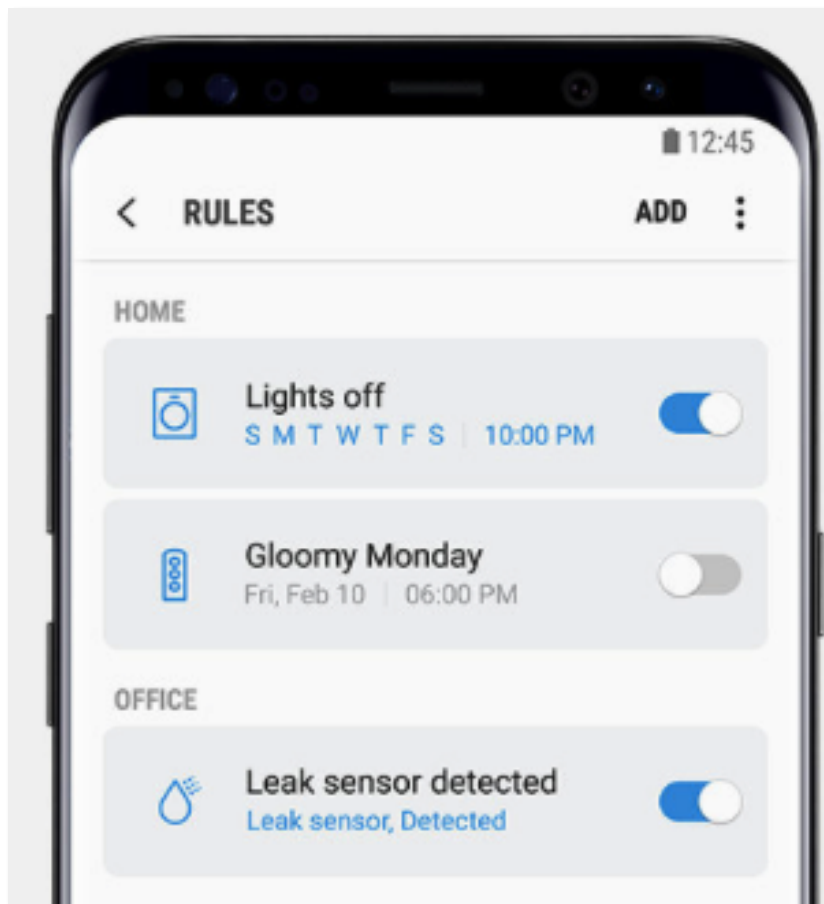
The real power of SmartThings is that the platform works with most home automation devices already on the market. We believe in a fully integrated approach, where you aren't tied into a particular technology or protocol. SmartThings offers compatibility with standards such as ZigBee, Z-Wave, LAN, and Cloud-to-cloud integrations. This allows SmartThings platform to work with hundreds of off the shelf third-party devices.

<http://docs.smartthings.com/en/latest/architecture/>)

128. Systems embodying claim 1 of the '063 Patent interact with active objects that have actuators including, for example, light switches.

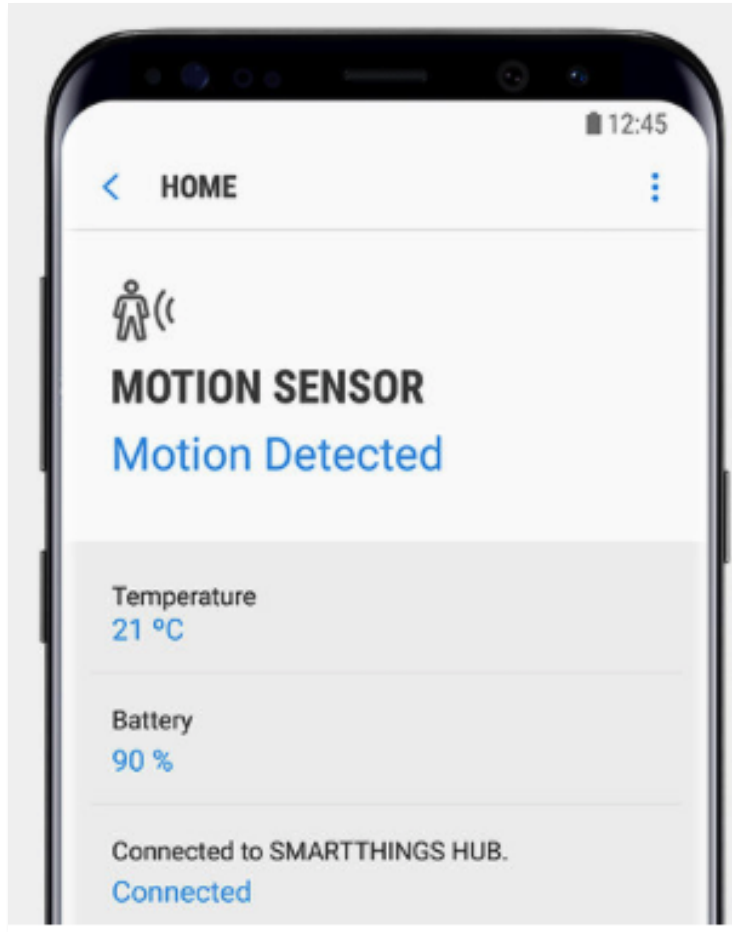
129. Systems embodying claim 1 of the '257 Patent are adapted to communicate with or interact with an active object with a sensor and another active object with an actuator, and the systems of claim 16 of the '063 Patent interact with active objects having both sensors and actuators.

130. As described at <https://www.samsung.com/us/explore/connect/>, Defendants' IoT products work with numerous IoT lights, switches and outlets including but not limited to dimmer light switches, toggle switches, LED bulbs, light strips, duplex receptacles, SmartPlugs, Smart Switches and so on.



Schedule

Set your air purifier to turn on at 8 AM and all your lights to turn off at 10 PM every day. Keep working wherever you go with the Microsoft Office mobile apps.



Sensors and more

Establish triggers based on data like weather, humidity and sensors so the sprinklers will automatically turn on when the temperature reaches 90°F.

<https://www.samsung.com/us/explore/connect/>

Software Service

131. In systems embodying claims 1, 16, and/or 20 of the '063 Patent or claim 1 of the '257 Patent, for each active object, middleware generates software

services that represent active objects.

132. Similarly, in systems embodying claims 16 or 20 of the '063 Patent or claims 1 or 17 of the '257 Patent, software services are generated to represent active objects, where generating the software services is based on a received driver that includes information and behavioral components of the active objects.

133. Claim 20 of the '063 Patent and claim 17 of the '257 Patent similarly cover, for additional active objects, generating additional software services based on additional drivers that are received.

134. The Samsung IoT System generates Device Handlers for SmartThings Devices.

135. SmartThings Devices have “capabilities,” which are “interactions that a device allows.”

136. These statements accurately describe SmartThings functionality;

When a SmartApp interacts with the virtual representation of a device, it knows that the device supports certain actions based on its capabilities. A device that has the “switch” capability must support both the “on” and “off” actions. In this way, all switches are the same, and it doesn't matter to the SmartApp what kind of switch is actually involved.

Capabilities are the interactions that a device allows. They provide an abstraction layer that allows SmartApps to work with devices based on the capabilities they support, and not be tied to a specific manufacturer or model.

<http://docs.smarthings.com/en/latest/device-type-developers-guide/overview.html>)

137. In the Defendants' IoT systems, a Device Handler represents a software service generated by the middleware module.

138. The following is an accurate description:

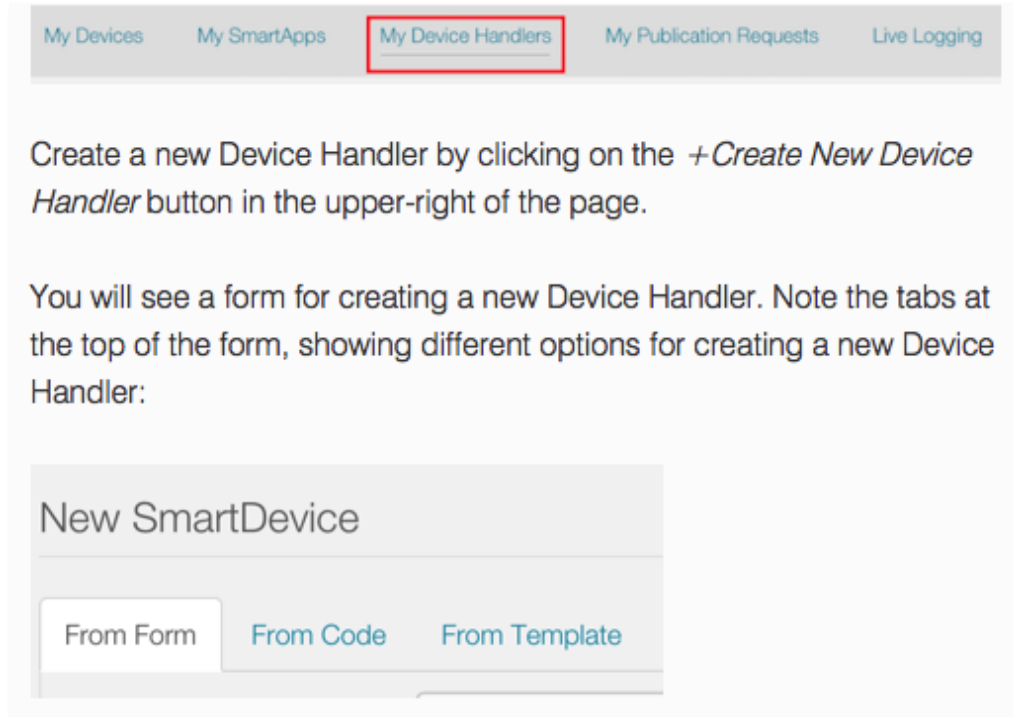
A Device Handler is a representation of a physical device in the SmartThings platform. It is responsible for communicating between the actual device and the SmartThings platform.

Alternately, a Device Handler can also be associated with a Virtual Device when a physical device is not yet available. This section will walk you through creating your first custom Device Handler and testing it with a Virtual Device.

<http://docs.smarthings.com/en/latest/device-type-developers-guide/quick-start.html>)

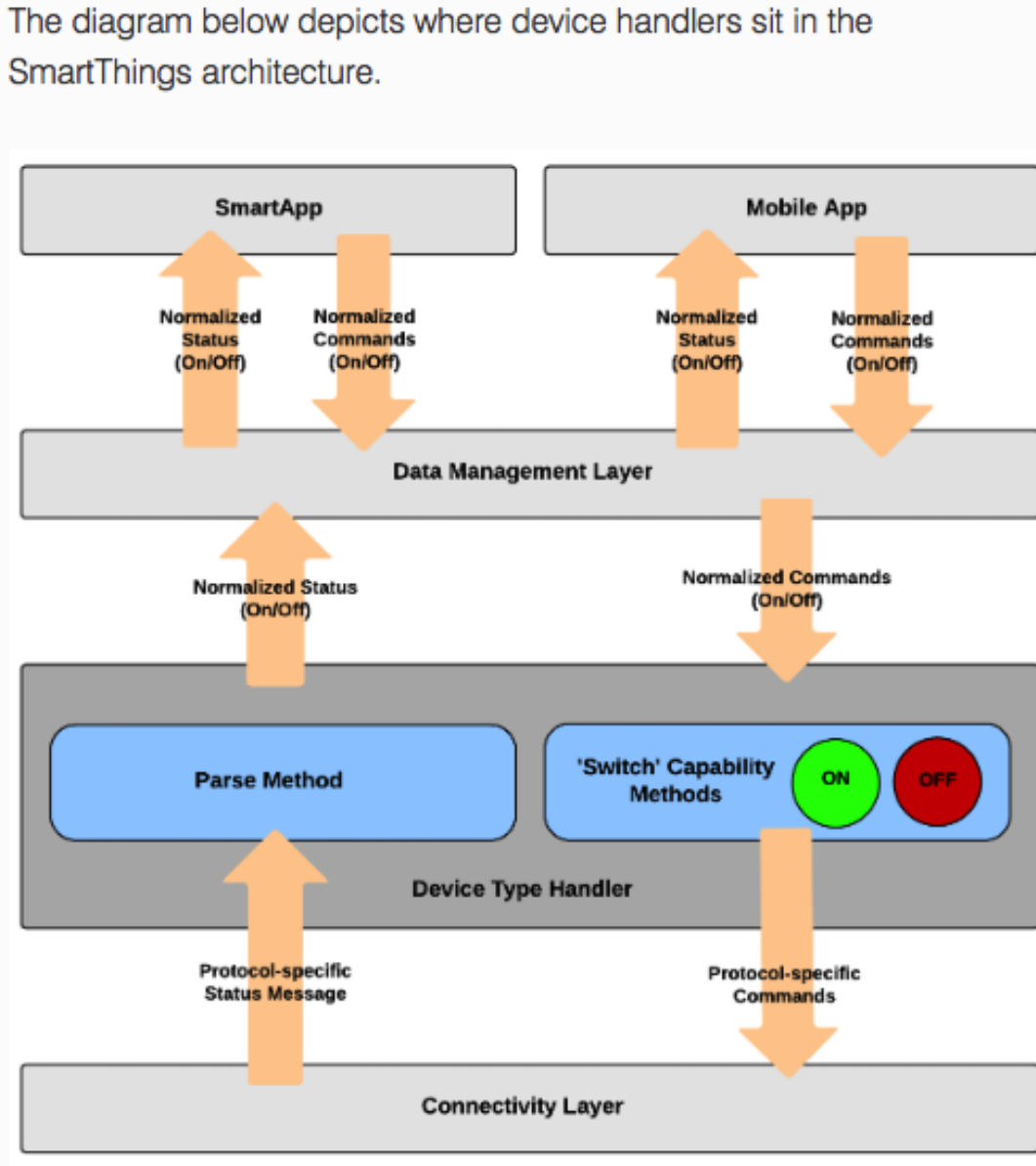
139. The Samsung IoT System infrastructure generates a Device Handler.

140. The following instructions accurately describe how to initiate creation of a new Device Handler:



<http://docs.smartthings.com/en/latest/device-type-developers-guide/quick-start.html>

141. The diagram below depicts a Device Handler in a SmartThings architecture:



<http://docs.smarthings.com/en/latest/device-type-developers-guide/overview.html>

142. The Samsung IoT System, including the Samsung Connect system, creates a Software Service for compatible devices.

Discover and install new smart devices in your home. Samsung Connect scans your network, recognizes your compatible devices and then pairs them with your phone and each other.

<https://www.samsung.com/us/explore/connect/>

Drivers

143. Claim 16 of the '063 Patent, claim 20 of the '063 Patent, and claim 17 of the '257 Patent relate to embodiments that include method steps or instructions for receiving a driver that has information and behavioral components for interacting with an active object (e.g., actuator and/or sensor device) connected to a hardware platform.

144. Claim 20 of the '063 Patent covers embodiments that receive (or have instructions for receiving an additional driver (that includes information and behavioral components required to interact with an additional active object).

145. In the accused systems, the Samsung IoT System provides standard Device Handlers (a.k.a., Device Types or Device Type Handlers) for SmartThings Devices that are drivers as well as specialized Device Handlers for devices on a “Works with SmartThings” list.

Applications Written in Higher Level Language

146. Claim 1 of the '257 Patent relates to systems with one or more applications written in a higher-level language. The applications are configured to

receive useable data from at least one software service.

147. In systems that embody claim 1 of the '063 Patent or claim 1 of the '257 Patent, middleware receives a command from an application (written in a higher level language) via the software service that represents the active objects.

148. Similarly, an embodied system of claim 16 of the '063 Patent or claim 2 of the '257 Patent receives (via the software service) one or more commands from an application written in a higher-level language.

149. The Samsung IoT System infrastructure receives commands from SmartApps, including those written in the high-level language Groovy (<http://docs.smarthings.com/en/latest/smartapp-developers-guide/anatomy-and-life-cycle-of-a-smartapp.html>):

SmartApps are Groovy-based programs that allow a user to tap into the capabilities of their devices to automate their lives.

SmartApps take the form of a single Groovy script. A typical SmartApp script is composed of four sections: *Definition*, *Preferences*, *Predefined Callbacks*, and *Event Handlers*. There is also a *Mappings* section that is required for Cloud-connected SmartApps that will be described later.

Convert to Low-Level Commands

150. In a system embodying '063 Patent claim 1 or claim 1 of the '257 Patent, middleware converts the commands into low-level commands that can be

understood by the active objects.

151. Similarly, a system embodying claim 16 of the '063 Patent converts commands received from a higher-level language application into more low-level commands capable of controlling the operation of the active object.

152. The Samsung IoT System infrastructure converts commands into low-level commands that can be understood by the active object.

153. Operation of the Samsung IoT System and related devices is accurately described at:

<http://docs.smarthings.com/en/latest/cloud-and-lan-connected-device-types-developers-guide/building-cloud-connected-device-types/division-of-labor.html#service-manager-responsibilities>

and

<http://docs.smarthings.com/en/latest/device-type-developers-guide/overview.html>

The Device Handler is responsible for creating and receiving device specific messages, and allowing them to work within the SmartThings infrastructure. It takes in a SmartApp specific command and outputs device specific commands to be passed to the cloud. It also allows you to subscribe to responses from the device and trigger other commands as needed.

Commands are the actions that your device can do. For example, a switch can turn on or off, a lock can lock or unlock, and a valve can open or close. In the example above, we issue the "on" and "off" command on the switch by invoking the `on()` or `off()` methods.

Commands are implemented as methods on the Device Handler. When a device supports a capability, it is responsible for implementing all the supported command methods.

154. The Samsung IoT System transmits low-level commands to an active object via the hardware platform, wherein the low-level commands are capable of controlling the active object.

155. Operation of the Samsung IoT System and related devices is accurately described at: <http://docs.smarthings.com/en/latest/architecture/>; <http://docs.smarthings.com/en/latest/device-type-developers-guide/overview.html>; and <http://docs.smarthings.com/en/latest/device-type-developers-guide/overview.html>.

Device Handler execution

The SmartThings system determines what type of device you are using based on Device Handlers. Once the Device Handler is selected, the incoming messages are parsed by that particular Device Handler. The input to the Device Handler is a set of device-specific messages, and the output of the Device Handler is normalized SmartThings Events. Note that one message can lead to many SmartThings Events.

For example, for a Z-Wave compatible on-off switch, the incoming status messages used by the device to report an "on" or "off" state are as shown below:

Device Command	Protocol-Specific Command Message
on	command: 2003, payload: FF
off	command: 2003, payload: 00

Whereas the device status reported to the SmartThings platform for the device is literally just a simple "on" or "off".

Similarly, when a SmartApp or the mobile app invoked an "on" or "off" command for a switch device, the command that is sent to the Device Handler is just that simple: "on" or "off". The Device Handler must turn that simple command into a protocol-specific message that can be sent down to the device to affect the desired action.

The table below shows the actual Z-Wave commands that are sent to a Z-Wave switch by the Device Handler.

Device Command	Protocol-Specific Command Message
On	2001FF
Off	200100

Sensor: Raw Data Receipt and Conversion

156. Claim 2 of the '063 Patent and claim 1 of '257 Patent relate to systems in which an active object includes a sensor. For claim 2 of the '063 Patent and claims 1 and 3 of the '257 Patent, the hardware platform receives raw data from

active objects and passes the raw data to the middleware module. In turn, for claim 2 of the '063 Patent and for claim 1 of the '257 Patent, the middleware module converts the raw data into useable data (useable by higher-level language applications) and passes the useable data to the software service for the active object.

157. For claim 16 of the '063 Patent and/or claim 17 of the '257 Patent, systems embodying one or both claims, receive raw data from an active object via the hardware platform, converts the raw data into useable data, and passes the useable data to a second software service (which is written in a higher level language). For claim 16 of the '063 Patent and claim 17 of the '257 Patent, the useable data can be used by a second application (which is configured to receive the useable data from the second software service).

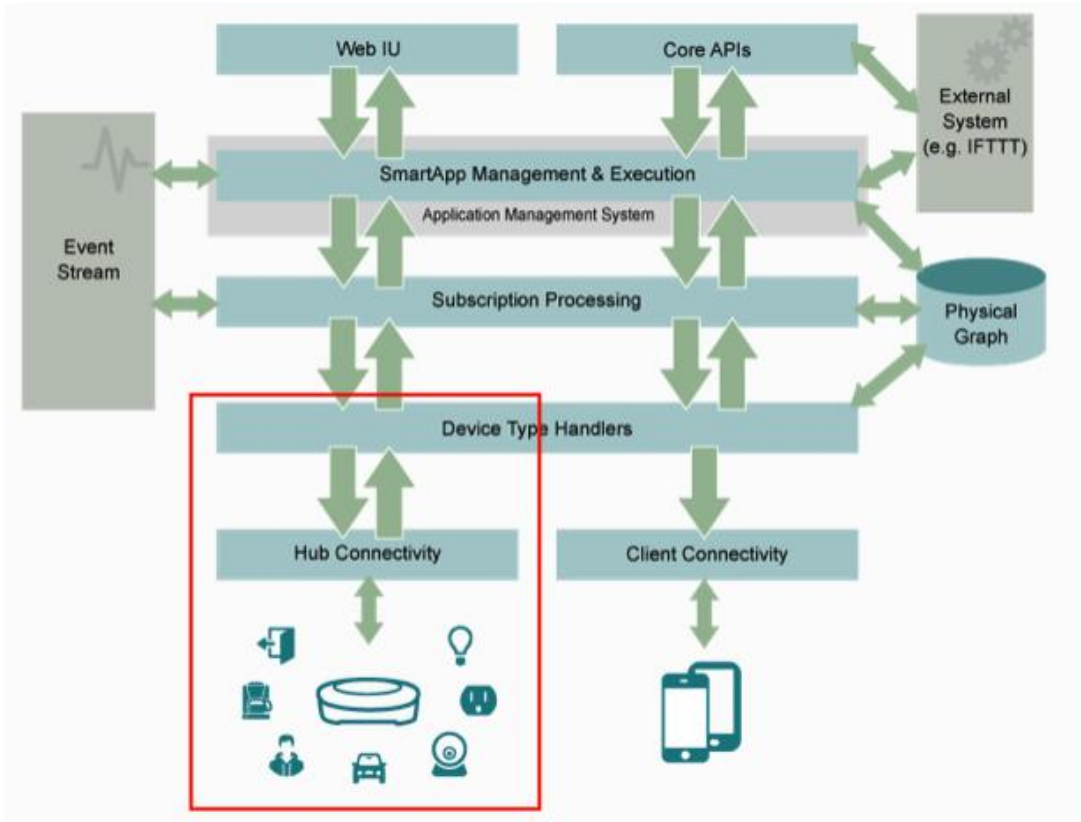
Further Raw Data Receipt and Conversion

158. For claim 20 of the '063 Patent, an embodying system receives raw data from an additional active object via the hardware platform, converts the second raw data into second useable data, passes the second useable data to the additional software service. In turn, the second useable data can be used by the second application written in a higher-level language. The second application is configured to receive a second useable data from the additional software service.

159. SmartThings (and other Samsung IoT System) sensors receive raw data (e.g., CO level measurement, CO presence detection, contact data, energy

consumption, illuminance measurement, image capture, motion detection, pH data, power consumption, presence data, etc.).

160. Operation of the Samsung IoT System and related devices with respect to the receipt and conversion of raw data is accurately described in the following images and screenshots and at: <http://docs.smarthings.com/en/latest/architecture/>; <https://smarthings.developer.samsung.com/develop/api-ref/capabilities.html#Carbon-Dioxide-Measurement>; <https://smarthings.developer.samsung.com/develop/api-ref/capabilities.html#Carbon-Monoxide-Detector>; <https://smarthings.developer.samsung.com/develop/api-ref/capabilities.html#Consumable>; and <https://smarthings.developer.samsung.com/develop/api-ref/capabilities.html#Contact-Sensor>.



Carbon Dioxide Measurement

Measure carbon dioxide levels

Definition

```

name: Carbon Dioxide Measurement
status: live
attributes:
  carbonDioxide:
    schema: PositiveInteger
    type: NUMBER
commands: {
}
public: true
id: carbonDioxideMeasurement
    
```

Attributes

carbonDioxide

The level of carbon dioxide detected

Type: NUMBER Required: Yes

Commands

None.

Carbon Monoxide Detector

Measure carbon monoxide levels

Definition

```
name: Carbon Monoxide Detector
status: live
attributes:
  carbonMonoxide:
    schema: CarbonMonoxideState
    type: ENUM
    values:
      - clear
      - detected
      - tested
  commands: {
  }
public: true
id: carbonMonoxideDetector
ocfResourceType: x.com.st.carbonmonoxidedetector
```

Attributes

carbonMonoxide

The state of the carbon monoxide device

Type: ENUM Required: Yes

Possible values:

- `clear` - No carbon monoxide detected
- `detected` - Carbon monoxide detected
- `tested` - Carbon monoxide device test button was activated

Commands

None.

Consumable

For devices with replaceable components

Definition

```
name: Consumable
status: live
attributes:
  consumableStatus:
    schema: ConsumableState
    type: ENUM
    values:
      - good
      - maintenance_required
      - missing
      - order
      - replace
  commands:
    setConsumableStatus:
      arguments:
        - name: status
          schema: ConsumableState
          type: STRING # TODO: this should be ENUM
public: true
id: consumable
```

Attributes

consumableStatus

The status of replaceable components

Type: ENUM Required: Yes

Possible values:

- `good` - The component is in good health
- `maintenance_required` - The component needs maintenance
- `missing` - The component is missing
- `order` - A replacement component should be ordered
- `replace` - The component should be replaced

Commands

`setConsumableStatus(status)`

Set the consumable status

Arguments:

- `status`
 - Type: STRING
 - Required: Yes
 - Description: Should be one of `good`, `maintenance_required`, `missing`, `order`, or `replace`

Contact Sensor

Allows reading the value of a contact sensor device

Definition

```
name: Contact Sensor
status: live
attributes:
  contact:
    schema: ContactState
    type: ENUM
    values:
      - closed
      - open
commands: {
}
public: true
id: contactSensor
ocfResourceType: oic.r.sensor.contact
```

Attributes

contact

The current state of the contact sensor

Type: ENUM Required: Yes

Possible values:

- `closed` - The value if closed
- `open` - The value if open

Commands

None.

COUNT I INFRINGEMENT OF U.S. PATENT NO. 7,895,257

161. Rokiot USA incorporates paragraphs 1 through 160 herein by reference.

162. Defendants jointly and individually practice the '257 Patent by providing, testing, using, distributing, developing, making, selling, offering for sale,

licensing, and/or importing the accused instrumentalities without consent or authorization.

163. The facts alleged above including the referenced publicly available materials published by Defendants show that Defendants practice each and every element or step of at least claims 1, 2, 3, 4, 13, 14, 16, 17, 18, 27, 28, 32, 33, 34, and 35 of the '257 Patent.

164. Defendants have known about the '257 Patent and how the accused instrumentalities infringe since before the filing date of this complaint. Rokiot and Samsung engaged in pre-filing licensing discussions.

165. Defendants directly infringe each and every asserted claim literally, and to the extent an element or step is found not to be literally met by or in the accused instrumentalities, it is met under the doctrine of equivalents.

166. Defendants individually and jointly infringe the '257 Patent. To the extent all steps or limitations of any asserted claim are not practiced by a single defendant entity, then all steps or limitations, as the case may be, are practiced by or attributable to SEC or SEA, as the case may be.

167. Defendants' continued acts of infringement including inducing, encouraging, aiding, abetting, directing, and instructing others, namely their customers, developers, and end users of the accused instrumentalities, including by providing user guides, instruction materials and customer support, to practice the

'257 Patent constitutes indirect infringement under 35 U.S.C. 271(b) and 271(c).

168. Defendants provide, make, sell, use, license, offer to sell, and promote the Samsung IoT System and platform and the specifically accused products having features and functionality described herein with the specific intent that end users and customers use the accused instrumentalities in an infringing manner on and in conjunction with the Samsung IoT System and platform.

169. As alleged herein, the Samsung IoT System and components are material to practicing the '257 Patent, have no substantial non-infringing use, and are known to Defendants by notice provided in this complaint to be especially made or adapted for use in infringing the '257 Patent.

170. Defendants have notice and knowledge of the '257 Patent by this complaint.

171. Rokiot USA has been harmed as a result of Defendants' infringing conduct. Defendants are liable to Rokiot USA in an amount that adequately compensates it for their infringement, which compensation cannot be less than a reasonable royalty together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. 8,631,063

172. Rokiot USA incorporates paragraphs 1 through 171 herein by reference.

173. Defendants jointly and individually practice the '063 Patent by

providing, testing, using, distributing, developing, making, selling, offering for sale, licensing, and/or importing the Accused Instrumentalities without consent or authorization.

174. The facts alleged above and publicly available materials published by Defendants show that Defendants practice each and every element or step of at least claims 1, 2, 3, 9, 12, 13, 16, 17, 18, 19, 20, 21, 24, 30, 31, 35, 37, 38 of the '063 Patent.

175. Defendants have known about the '063 Patent and how the accused instrumentalities infringe since before the filing date of this complaint. Rokiot and Samsung engaged in pre-filing licensing discussions.

176. Defendants directly infringe each and every asserted claim literally, and to the extent an element or step is found not to be literally met by or in the accused instrumentalities, it is met under the doctrine of equivalents.

177. Defendants individually and jointly infringe the '063 Patent. Defendants are related companies. To the extent all steps or limitations of any asserted claim are not practiced by a single defendant entity, then all steps or limitations, as the case may be, are practiced by or attributable to SEC or SEA, as the case may be.

178. Defendants' continued acts of infringement including inducing, encouraging, aiding, abetting, directing, and instructing others, namely their

customers, developers, and end users of the accused instrumentalities, including by providing user guides, instruction materials and customer support, to practice the '063 Patent constitutes indirect infringement under 35 U.S.C. 271(b) and 271(c).

179. Defendants provide, make, sell, use, license, offer to sell, and promote the Samsung IoT System and platform and the specifically accused products having features and functionality described herein with the specific intent that end users and customers use the accused instrumentalities in an infringing manner on and in conjunction with the Samsung IoT System and platform.

180. As alleged herein, the Samsung IoT System and components are material to practicing the '063 Patent, have no substantial non-infringing use, and are known to Defendants by notice provided in this complaint to be especially made or adapted for use in infringing the '063 Patent.

181. Rokiot USA has been harmed as a result of Defendants' infringing conduct. Defendants are liable to Rokiot USA in an amount that adequately compensates it for their infringement, which compensation cannot be less than a reasonable royalty together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

NOTICE OF REQUIREMENT OF LITIGATION HOLD

182. Defendants are hereby notified they are legally obligated to locate, preserve, and maintain all records, notes, drawings, documents, data,

communications, materials, electronic recordings, audio/video/photographic recordings, and digital files, including edited and unedited or “raw” source material, and other information and tangible things that one of both Defendants know, or reasonably should know, may be relevant to actual or potential claims, counterclaims, defenses, and/or damages by any party or potential party in this lawsuit, whether created or residing in hard copy form or in the form of electronically stored information (hereafter collectively referred to as “Potential Evidence”).

183. As used above, the phrase “electronically stored information” includes without limitation: computer files (and file fragments), e-mail (both sent and received, whether internally or externally), information concerning e-mail (including but not limited to logs of e-mail history and usage, header information, and deleted but recoverable e-mails), text files (including drafts, revisions, and active or deleted word processing documents), instant messages, audio recordings and files, video footage and files, audio files, photographic footage and files, spreadsheets, databases, calendars, telephone logs, contact manager information, internet usage files, and all other information created, received, or maintained on any and all electronic and/or digital forms, sources and media, including, without limitation, any and all hard disks, removable media, peripheral computer or electronic storage devices, laptop computers, mobile phones, personal data assistant devices, Blackberry devices, iPhones, Samsung-branded mobile phones, Samsung-

manufactured mobile phones, video cameras and still cameras, and any and all other locations where electronic data is stored. These sources may also include any personal electronic, digital, and storage devices of any and all of the Samsung Defendants' agents, resellers, or employees if any of the Samsung Defendants' electronically stored information resides there.

184. Defendants are hereby further notified and forewarned that any alteration, destruction, negligent loss, or unavailability, by act or omission, of any Potential Evidence may result in damages or a legal presumption by the Court and/or jury that the Potential Evidence is not favorable to any Samsung Defendants' claims and/or defenses. To avoid such a result, Defendants' preservation duties include, but are not limited to, the requirement that Defendants immediately notify its agents and employees to halt and/or supervise the auto-delete functions of Defendants' electronic systems and refrain from deleting Potential Evidence, either manually or through a policy of periodic deletion.

NOTICE

185. Rokiot USA has complied with the notice requirements of 35 U.S.C. § 287.

JURY DEMAND

186. Rokiot USA hereby demands a trial by jury on all claims, issues, and damages so triable.

PRAYER FOR RELIEF

Rokiot USA prays for the following relief:

- a. That Defendants be summoned to appear and answer;
- b. That the Court enter an order declaring that Defendants have infringed the '257 and '063 Patents;
- c. That this is an exceptional case under 35 U.S.C. § 285;
- d. That the Court grant and award Rokiot USA judgment against Defendants for all actual, consequential, special, punitive, exemplary, increased, and/or statutory damages, including any applicable additional damages pursuant to 35 U.S.C. § 284, and, if necessary, an accounting of all damages; pre and post-judgment interest as allowed by law; and reasonable attorneys' fees, costs, and expenses incurred in this action; and
- e. That Rokiot USA be granted such other and further relief as the Court may deem just and proper under the circumstances.

Filed: February 8, 2018

Respectfully submitted,

CONNOR KUDLAC LEE PLLC



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