# Smartenit IoT Framework Documentation

Smartenit is a holistic, hardware and software provider of solutions that focus on electricity and water management, the two main sources of energy used around a home, farm or building. Our broad range of products and services cover many smart home and energy management areas such as lighting, irrigation, heating/cooling, environmental monitorings, hot water management, disaster mitigation, pool control and more. The application framework described in this document allows different types of devices to be set up and deployed uniformly and rapidly. This description is intended to enable anyone interested in using, integrating, or developing applications that use our gateway and/or cloud IoT services.

Smartenit Ecosystem

The Smartenit Ecosystem with the included APIs enable the building of applications that control and monitor physical devices such as lights, temperature sensors, door locks, thermostats, and other custom devices, using custom and established protocols such as ZigBee, LoRa, Insteon, X10. The framework is built to abstract communication layers, protocols, development languages and infrastructure into easy to use resources so developers and companies can focus on developing innovative solutions for new and existing customers.

The Ecosystem is composed of the following entities:

- Users
- Devices
- Client Applications
- Smartenit APIs
- Smartenit IoT Services
- Gateway/Hub
- Proprietary Cloud Service (or 3rd Party)
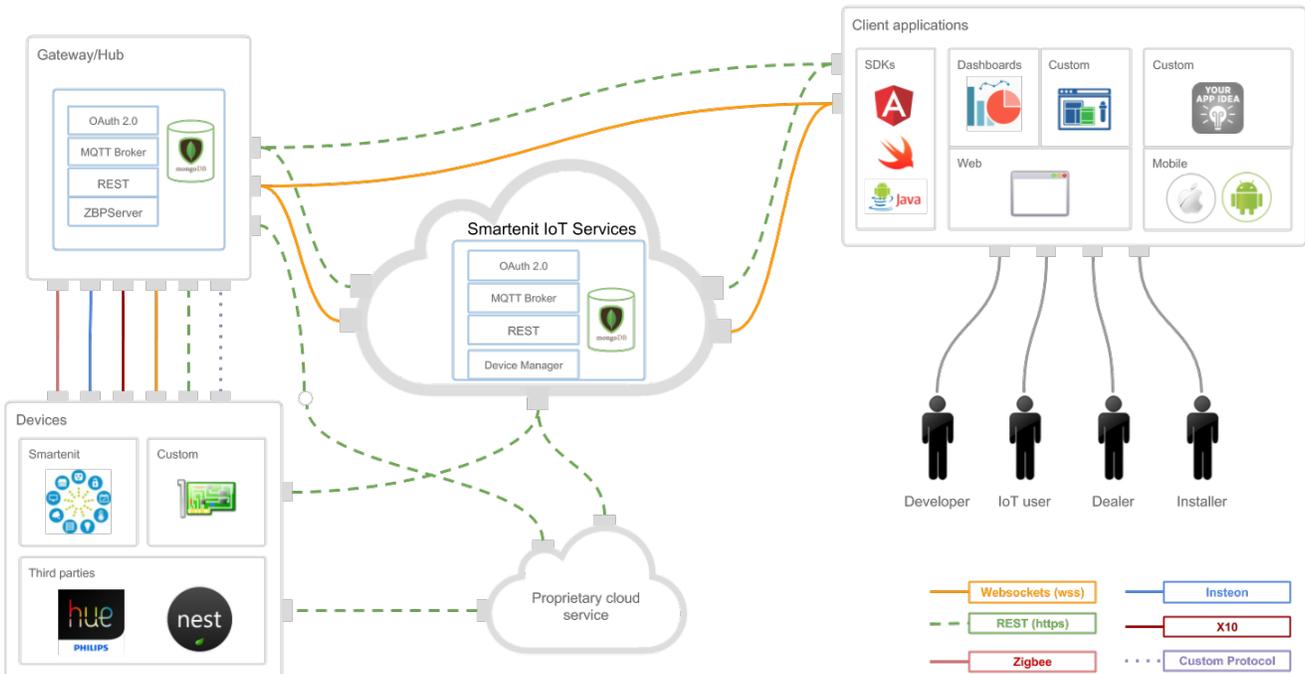
Users

Any IoT User, Developer, Installer, Dealer, Support member, or entity that interacts in some way with an IoT device or the cloud in the Smartenit ecosystem as services consumer.

Devices

Devices are physical or logical entities that can be controlled or that expose/report valuable data. There are several protocols and types of devices that can be integrated into the ecosystem.

Client Applications

Client applications are the interface between users and the Smartenit ecosystem services. They provide the user experience needed for the user to understand and interact with the ecosystem resources.

Smartenit APIs

Smartenit APIs define the communication protocol among all the elements of the ecosystem. They are structured to be intuitive and to provide granular access to resources in the ecosystem. Using the Smartenit APIs a user or client can interact with physical devices and manage the data that flows through the ecosystem.

Smartenit IoT Services

Smartenit IoT Services encompass the many different services running in the cloud that host the different functionalities. They include services that provide account management for companies/users, device management to control/monitor devices, and secure authentication and access for all resources using the OAuth 2.0 standard. The IoT services also store metrics to offer data analytics and to intelligently learn patterns that provide users with meaningful information. The IoT services also include voice control services to interact with appropriate resources though integrations with Amazon Alexa and Google Assistant. Smartenit is constantly improving our IoT services, expanding their functionality and increasing their speed, with the final aim of increasing the value provided to companies and users

Gateway/Hub

Gateways in the Smartenit ecosystem provide physical connection with devices via custom or standard protocols such as ZigBee, Z-Wave, Thread or INSTEON and bridge those device networks with IP based networks such as WiFi, Ethernet and Cellular.. This physical device connection is then abstracted into a logical device model for one or many devices for exposure to a cloud service or client application such as the Smartenit Mobile App. The gateway may also have a comprehensive device manager that enables additional device manipulation such as grouping, scenes, and automation rules.. Gateway services are exposed to clients and cloud services via RESTful and Real-time Messaging APIs. A gateway with this functionality may provides all services to clients in a local area network even when the Internet or cloud connectivity is unavailable. This scheme gives client applications the ability to switch between local and cloud services to intelligently provide an "always connected" interface that can also save on data costs.

Proprietary Cloud Service (or 3rd Party)

The symmetrical access nature of our cloud and gateway resources through the Smartenit APIs enables very simple integrations with other current or future company clouds, thus speeding up the expansion of the IoT device universe. Several of these integrations have been done already (Nest, Phillips Hue, Amazon Alexa, Google Asistant), and Smartenit is always available to assist its partners to quickly and effectively add new ones.

Next Steps

- Getting Started
- Authentication and Authorization
- API Overview
- REST APIs
- Real-time Messaging APIs
- Error handling
- Actions (Automation Rules)
- Scenes
- SDKs
- Backup & Restore
- Permissions Management
- Device Registration Flow
- Examples