AXONIZE

Smart Building Bundle

Building Monitoring Analytics Product Description

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Table of Contents

Smart Buildings

IoT Smart Building Bundle by Axonize

Axonize leverages its powerful comprehensive bundle of IoT features to provide a one-stop shop for fitting and retrofitting smart buildings, including requirement assessment, deployment planning, hardware shopping list and ready-made, out-of-the-box Axonize software. The Axonize solution comes with an extensive variety of easy-to-use, configurable options targeted at the smart building industry.

This tool is provided by our extremely innovative and experienced technological team, which has successfully deployed numerous types of IoT solutions throughout the world for our impressive customer base.

Before Smart Buildings

Until now, the various systems in buildings existed as their own separate closed blocks. These systems had their own interfaces and little or no communication with external systems or with each other. Because of this lack of internal interaction and external connectivity, a variety of sensors that could provide information were not utilized. Many sensors were not even installed because it was too complex to access and utilize their readings.

Today, solutions are expanding their touchpoints to include all building occupants and visitors.

While customer uptake continues to grow, some market commentators claim that Integrated Workplace Management (IWMS) and BMS solutions are now outdated under the slew of new entrants offering IoT-based software. In addition, the rise of open APIs, which enable different software applications to communicate and exchange data, inherently challenges the need for firms to implement a single platform from a single vendor.

What is a Smart Building?

A Smart Building is a kind of ecosystem. It is a dynamic entity consisting of many devices and sensors of varying types and ages. They communicate with a centralized insights/decision-making portal, with each other and with external systems. They share data, depend on each other and respond to various needs.

The success of a smart building can be measured by how well the various systems communicate with each other and the external world by exposing their measurements, readings and events. Success can also be measured by how well their readings and usage data are aggregated, analyzed and applied to building performance and profitability.

The success of a smart building is not only dependent upon new sensors that are installed and the legacy in-place systems. The essential component for smart building success is the ***overlay that turns these systems into an environment of shared information***, which can lead to real-time notification, insights and enhanced decision-making capabilities. This centralized portal enables the full integration of the building's systems into the same network, including fire alarms, access control units, HVAC, elevators and so on.

In such a logic-based environment, there are major gains to be achieved.

Wellbeing, Comfort and Productivity

Employee wellbeing and employee productivity are hot topics in the real estate sector, driven by the

heightened awareness of the link between staff wellbeing and their productivity levels. In the Verdantix global survey, 92% of respondents rate improving the experience of building occupants as a high or medium priority for 2019.

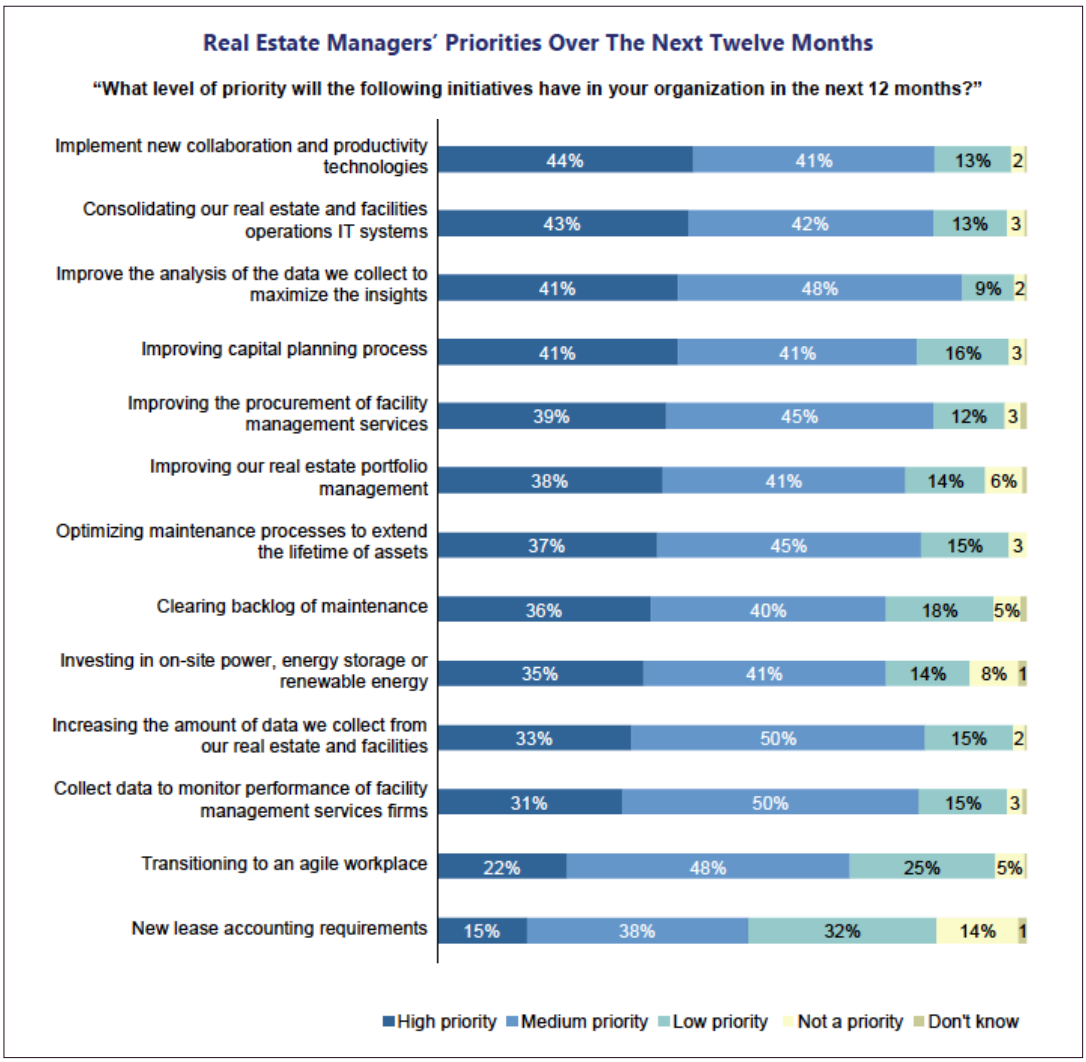
The ongoing push to maximize the number of employees per building is inspiring on new efforts to improve occupants' office experiences. As a corporate facility manager explained to us, "Our open-plan offices were cheap to fit out and allow us to pack in staff, but we recognize that we need to invest more in building amenities to offset any employee frustration."

Full integration of a centralized monitoring and control portal, such as Axonize, enables the optimization of comfort parameters by automated adjustment of air quality, humidity and temperature, as well as awareness of other comfort parameters (such as CO2 recordings, overcrowding, noise, state and movements of doors and windows, lighting and more).

Cost Savings

Real estate and facility management departments continue to be under corporate pressure to deliver cost savings as shown in the diagram below. Across our global survey panel, 92% of 303 respondents stated that reducing utility bills is either a high or medium priority in 2019.

While utility expenses, including energy and water, are only a negligible part of overall building expenses, they are visible, easy to measure, and therefore continue to be a focal point for cost management programs. Firms are also exploring opportunities to defer capital investments; 37% of firms explained that optimizing maintenance processes to extend the lifetime of assets is a high priority.



Source: Verdantix Global Survey 2018: Smart Building Technology, Budgets, Priorities & Preferences

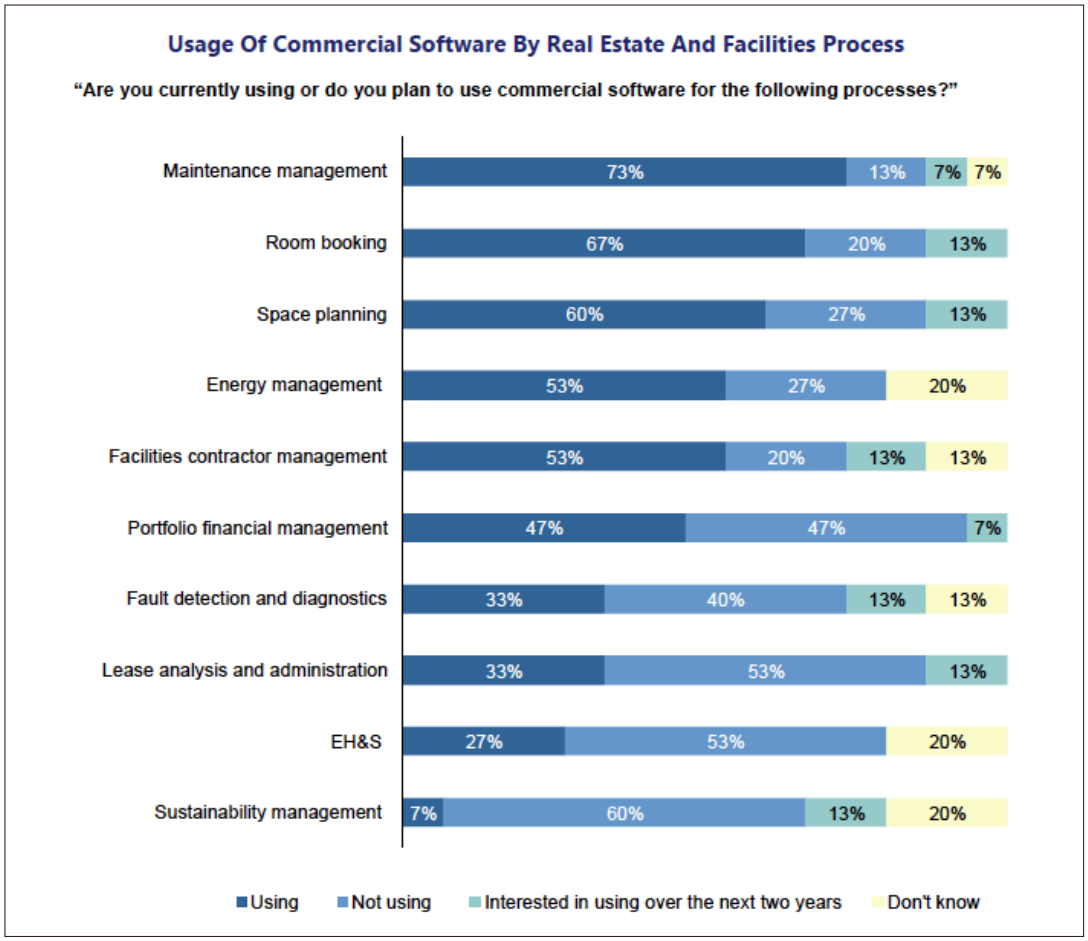
Space Utilization

Space utilization continues to be a top factor shaping real estate management strategies. It can be a high-return activity that can deliver cost savings to millions of large firms. The recognition of under-utilized space enables the creation of new levels of added value and services.

In 2019, firms are not just collecting space usage data, they are also pursuing agile working strategies based on employees not having a fixed desk. To date, activity has been led by corporate buildings in city center locations and the public sector where there is a strong push for cost control.

In the UK, the Lancashire NHS Trust redesigned its office space to expand the number of desks from 192 to 268 and introduced "hot desking". This enabled them to increase the number of staff using thr office, reducing the occupancy cost per office-based employee by 30%; while Deloitte in Australia has been using hot desking and remote working practices to grow its office space by only 7% as staff numbers increased by 42%.

Across our customer panel, firms are using multiple systems to manage their real estate and facilities data. In this survey panel, 40% of firms told us they are using an IWMS to manage multiple real estate and facilities processes, with the remaining 60% using multiple IT systems at the same time.



Source: Verdantix Global Survey 2018: Smart Building Technology, Budgets, Priorities & Preferences

Other Benefits

- **Capital Savings** - Specific capital savings of heating, ventilation, air-conditioning, lighting and more.
- **Problem Response** - Targeted and timely response to problems and waste. Previously there was no timely awareness, nor were there prompt response options.

The Need for Smart Building IoT

New smart buildings are springing up around the world, and existing buildings need to be fitted and retrofitted with the latest and greatest sensors in order to be made 'smart'. Both building types require a simple, but intelligent platform on which to leverage the enormous magnitudes of readings that are collected. In order to perform monitoring, analytics and visualization, a centralized consolidated portal is required that is accessible through a cloud. This centralized portal must also be integrated into the building's systems as a single network, such as fire alarms, access control units, HVAC, elevators and more.

Workplace space and building operating cost (energy, service and maintenance) represent a significant cost block for any organization. There is significant potential for companies to save greatly in this arena. In order to make use of this potential cost savings, it is necessary to record space use, energy use, service needs and maintenance requirements by measuring them and by collecting, correlating, analyzing and understanding these measurements. This will make it possible to develop and implement viable optimization concepts.

Companies need to know which room is used, when is it used and how is it used. They also need to know whether doors and windows are open or closed and how optimal the lighting and air are in these rooms.

In order to achieve optimal smart business management, a system is needed that can handle data that is coming from varied sensor sources, vertical solutions, connected devices and existing data systems, and other IT systems, in different schemas and formats.

The system must be able to analyze data and visualize it in almost real time, to provide insightful information that facility managers can react to efficiently.

Facility managers need out-of-the-box IoT functions from a single solution that can handle all their end-to-end needs. This single one-stop shop must enable the managing, analyzing and storing of all data in a centralized location with the ability to create reports for users in a customized dashboard. The solution will enable the reduction of operational costs, improved efficiency, optimization of personnel resources and significantly increased comfort levels.

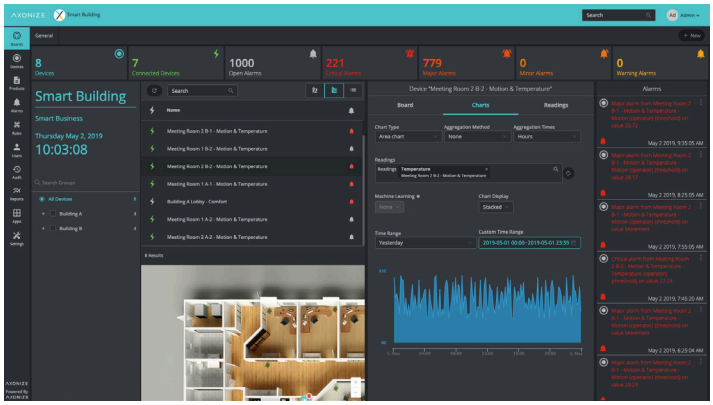
What is the Axonize IoT Platform for Smart Building?

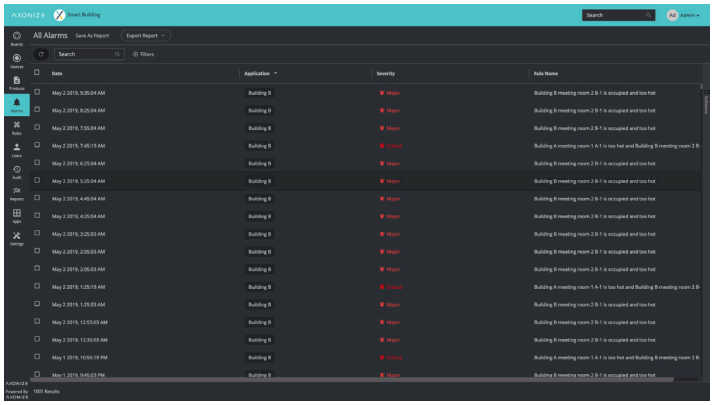
The Axonize IoT cloud platform is a full-scale end-to-end IoT orchestration platform that automates application creation by enabling you to easily tie in events and business logic across applications, sensors and protocols to create new businesses and services within days.

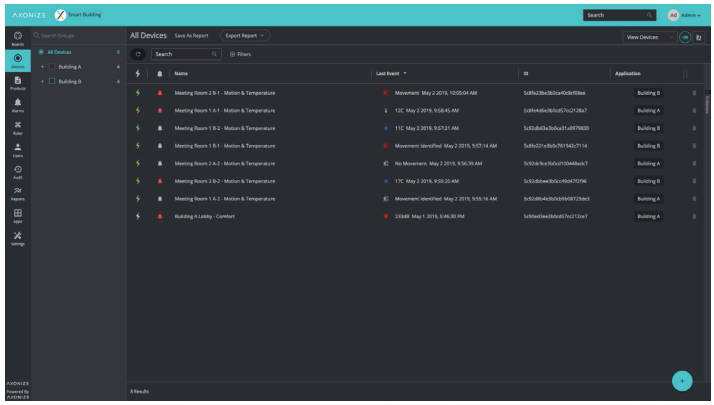
With the Axonize IoT cloud platform, you can:

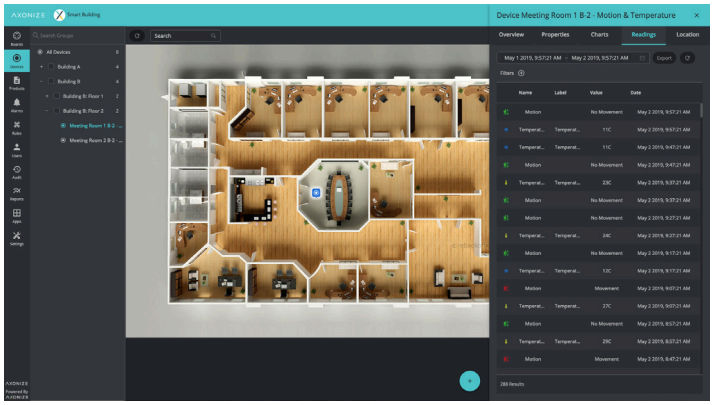
- Connect an unlimited number of devices, sensors and protocols.
- Benefit from full-dashboard functionality, customizable rules, alerts and charts.
- Monitor and analyze data from multiple devices and sources across customers and applications with a single pane of glass.

The look and feel of the Axonize platform









Axonize provides the centralized cloud portal for monitoring and controlling your facility (by collecting measurements/readings and sending commands) and an easy way to connect to and control all the devices in the facility.

Axonize can:

- **Collect Events from All Your Building Sensors/Devices/Platforms/Applications/Systems**
  The Axonize Device SDK can be installed on a device in order to enable it to send events to the Axonize IoT Hub. Alternatively, the Axonize Device SDK can be installed on a gateway in the field to which non-IP devices are connected either physically (wired) or by Bluetooth.

- **Send Commands to All Your Building Sensors/Devices/Platforms/Applications/Systems**
  The Axonize Device SDK can be installed on a device to enable it to listen for command endpoints from the Axonize Portal and Axonize REST API.

- **Monitor and Control Using the Axonize Portal**
  The Axonize Portal is a configurable, easy-to-use interface for monitoring and operating IoT devices. It provides a variety of features and enables you a multitude of significant configurable options.

Axonize has leveraged its extensive IoT orchestration platform to target smart building facilities.

- **Smart Building Dashboard and Reports**
  Axonize provides a rich variety of ready-made dashboards, complete with charts, graphs and gauges that provide total awareness and monitoring control of the facility. A multitude of informative scheduled and ad-hoc reports targeted at the smart building industry are also provided to enable optimal monitoring and operation of your facility.

- **Rules Engines Capabilities**
  Axonize smart building rules engine comes preconfigured for optimizing performance and cost-effectiveness of the specific aspects of smart building management. It enables you to define indications, alerts and actions based on device readings or time periods.

- **Hierarchical Business Logic**
  Axonize provides a top-down hierarchical inheritance business logic model according to your specifications from tenants to subtenants to master applications to other applications. This enables you to easily configure system behavior, monitor buildings and any sub-structures in buildings, such as floors, departments, specific room types, etc.

- **Full Access Control**
  Axonize enables you to allow/prevent secure access to functionality based on the roles and permissions that you assign.

Axonize – Smart Building Benefits

Axonize enables you to monitor and analyze each building from one centralized location with all customer requirements being handled on a single platform. You can capture data, improve service quality, reduce overhead costs and improve efficiencies within months.

Recording, analyzing and evaluating elements of your building gives you the control you need to monitor the quality of your building's parameters. You can use data to not only save money, but to derive new sources of revenue that can benefit everyone.

Axonize has leveraged its extensive experience in IoT, and in particular in smart building solutions. Many customers have benefited from our smart building package bundle.

The goal is to sensibly capture data, improve service quality and reduce costs by using space and resources in the best way possible.

- **Enhanced Efficiency**
  Manage buildings with greater efficiency by optimally aligning areas to their actual need, leading to additional profit by re-renting unused spaces. Ensure that areas are not too crowded and ensuring optimal balance between people and space.
- **Increased Service Quality**
  Total usage transparency enables you to monitor effectively by aligning services and avoiding unnecessary use of resources.
- **Lower Costs**
  Total visibility enables you to avoid unnecessary heating, open windows, lighting of unused spaces and to reduce energy costs.
- **Secured and Fast Reactions**
  Automated alerts and indicators are aligned with the limits and thresholds that you set for prompt intervention.
- **Optimized Comfort Parameters**
  Improve parameters, such as air quality, humidity and temperature.
- **Real-Time Data Assessment**
  Receive notifications and alerts in real-time.
- **End-to-End Product**
  One-stop-shop for the entire solution ensures easy and total solution integration.
- **Encrypted and Secure**
  End to end encryption according to the latest data protection guidelines. Remain safe and secure with cloud-based software on Microsoft Azure.
- **Actionable Intelligence**
  Provides in-depth statistics and understanding of people and systems behaviors.

Implementation Timeframe

Most IoT solutions take months or even a year to connect all the sensors and systems involved. With Axonize, your smart building solution will be implemented in mere weeks, giving you more time to begin monitoring and analyzing your data.

Axonize Smart Building Bundle

Building Monitoring & Analytics - An End-To-End Solution Out of The Box

The Axonize IoT Smart Building Bundle provides a preconfigured, pre-integrated, end-to-end solution for retrofitting IoT in existing buildings. This solution provides everything you need to modify existing buildings in order to upgrade them into smart buildings.

The Axonize IoT Smart Building Bundle provides monitoring and analytics for a variety of smart building aspects, such as space utilization, comfort and performance.

Axonize includes easy-to-install communication units for buildings that receive sensor readings using wireless technology and sends them to the cloud via wireless mobile communication.

Axonize's simple yet comprehensive smart building bundle of IoT features, includes the following:

Hardware

Sensors

The Axonize IoT Smart Building Bundle offers a set of standard sensors for capturing events, readings and measurements. These pre-integrated sensors can be used to measure people movement in rooms, use of workplaces, opening and closing of doors and windows, CO2 temperature, humidity, light, noise and more.

Sensors also provide for recording data on device state and usage.

Axonize will instruct you as to what sensors are ideal to purchase. The system comes out of the box, with end-to-end integration at the full functionality that can be achieved from the readings received.

*Refer to page 17 for more information about smart building sensors.

Communication Gateways

The Axonize Smart Building Bundle provides gateways and servers for collecting, aggregating and bi-directional communication from your existing devices/sensors and all new retrofitted ones.

Various types of Axonize IoT gateways are provided for the building, as needed, to connect the sensors with the Axonize platform.

Software

The Axonize Smart Building Bundle provides the entire IoT platform as a "Software As A Service" (SaaS), for analyzing and visualizing the data collected in the cloud. This interface enables you to monitor, manage and control the smart building, including managing sensors, configuring alarms and notifications, user administration and data storage.

Axonize provides preconfigured software for all the functionality needed for smart buildings, facility management, building monitoring and analytics in order to enable optimal savings, usage and comfort of building spaces and resources.

Axonize Portal

The Axonize Smart Building portal is accessible worldwide in a simple user interface that provides total building awareness, device management, configuration, centralized data storage, analysis and visualization.

Axonize Portal comes with all required smart building features in its user interface, dashboard, charts, reports, indicators, and provides a variety of structural and behavioral configuration options.

The Axonize Portal also enables you to define rules for receiving measurements. For example, a notification can be sent to a specific person, via SMS or email, or to a downstream IT system for high CO2 readings in meeting rooms, or for doors and windows that have been left open.

The Axonize Smart Building Bundle enables you to react promptly, and in a goal-oriented manner when problems occur in the building or if the building is not used optimally.

The multi-tenant hierarchy allows accessing all customer devices from one place, while keeping data segregation between the customers. The location of each smart building device can be presented on a customer floor plan diagram inside the dashboard, while customization of device icon and color can be configured according to device sensor data for intuitive overview of the device's state. The latest sensor data of a device is also available in the device's overview pane, including charts and forecasting features.

In addition, automated alerts and notifications are integral additions of the IoT platform. The platform supports the configuration of actions which are performed as soon as a condition on the incoming stream of sensor data becomes true.

Smart Building widgets are also provided, including heatmaps, overall reading, charts and videos.

Axonize REST API

The Axonize REST endpoints activate Axonize functionality:

- **Activate Axonize Portal Functionality**
  Perform all the functions provided in the Axonize Portal and more, such as creating a product, device or rule, and receiving reports.
- **Send Endpoints to a Device from the Axonize Portal**
  The Axonize Portal sits on top of the Axonize REST API to send endpoints to a device to effect how the Axonize device SDK operates, and to get device events. You can use the API to send endpoints as needed.
- **Activate Operations on a Device**
  The Axonize REST API enables you to send endpoints to a real device to activate operations on that device, such as turning on a light or locking a lock.

Axonize Device SDK

The Axonize Device SDK is installed on each real device so that the device can send events to the Axonize Portal and listen for endpoints from the Axonize Portal and Axonize REST API.

Axonize Smart Buildings in Action

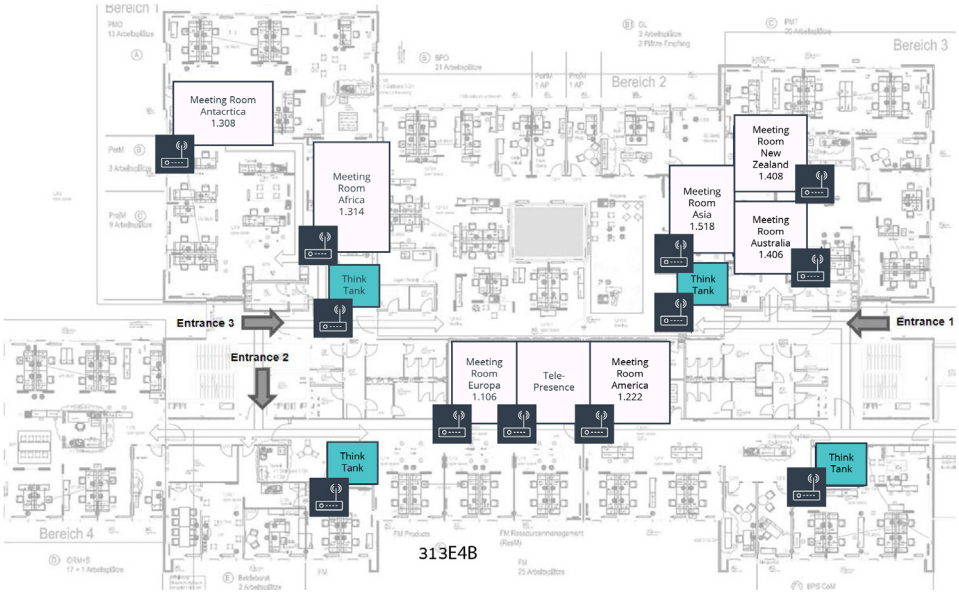
Create new levels of added value and services with targeted and timely interventions in the case of problems, waste and the recognition of under-utilized space.

What is Analyzed?

Rooms

- Monitor and analyze the presence and quantity of people in a meeting room.
- Monitor comfort parameters, such as CO2, temperature, humidity, light of meeting rooms.
- Visualize collected data.
- Define rules that trigger alarms and notifications for conditions, such as **Room Not In Use or CO2 to High**.
- Define rules that control room devices, such controlling PIR sensors that **Switch lights, heating and/or air conditioning on and off** after no one has been **detected in a room for 60 minutes.**

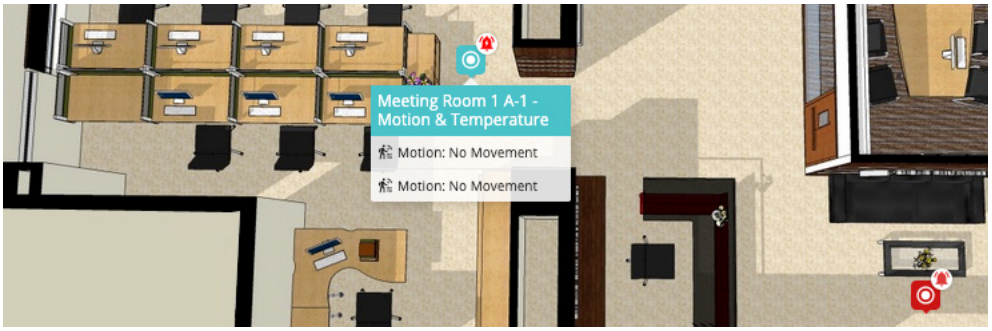
For example, the following shows the installation of 16 sensors:



- 8 motion sensors in the meeting room
- 4 motion sensors and think tanks
- 2 open/close door sensors
- 2 office temperature/humidity sensors

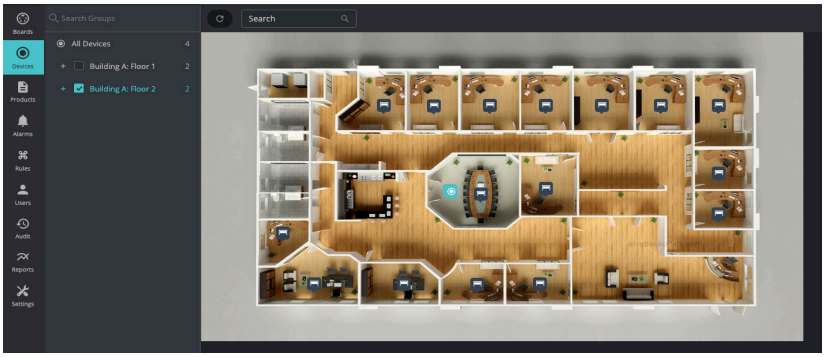
Room conditions can be easily monitored and acted upon.

More information is displayed after hovering over a sensor icon:



Desks

- Monitor and analyze office desk occupation.
- Visualize collected data.
- Define rules to trigger alarms and notifications, such as **Empty Desk For An Entire Day**.

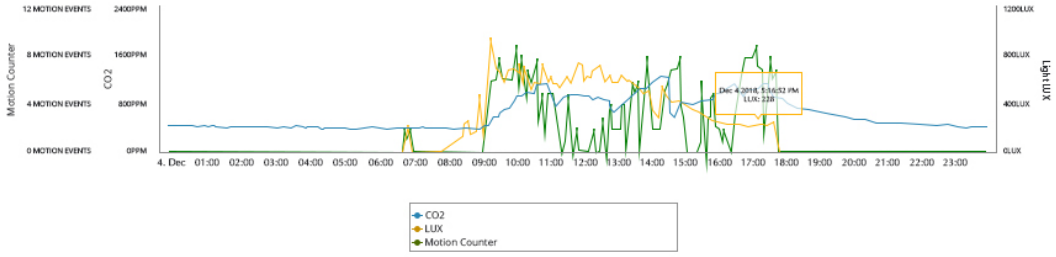


Doors/Windows

- State indicator of door/window/gate – open or closed.
- Analyze door/window/gate openings and closings – quantities and times.
- Visualize collected data.
- Define rules that trigger alarms and notifications, such as **Door/Window/Gate Open More Than 20 Minutes**, which is crutial for security and fire doors.

A Sample Story behind the Readings

Aan example of how the combination of various sensor readings in a room tells a story:



- The blue line represents the CO2 readings over time.
- The yellow line represents the lighting intensity (LUX) over time.
- The green line represents the readings of the motion counter over time.
- The motion counter (green line) shows that at 7:00 AM someone entered the room, probably for cleaning.
- It is winter, and at 7:00 AM it is still dark outside. The LUX graph shows that the lights were switched on as the (yellow) line is higher. After, the lights were turned off, likely when the person left the room.
- AT 8:00 AM it is light outside, and therefore the yellow line continued to rise.
- At 9:15 AM, someone entered the room and remained there, which is indicated by the motion sensor (green line), and the level of CO2 rising (blue line).
- Around 12 PM, people went out for lunch and the level of CO2 and the motion in the room reduced.
- After lunch people returned, and the level of motion and CO2 rose again.

Smart Building Services

Axonize-supported smart buildings benefit with the flexibility and easily customizable functionality of the Axonize system, creating unlimited opportunity.

Space Monitoring and Management

- Monitor and report the presence of people in rooms and at desks.
- Monitor and report the state (open/closed) of door/window/gates.
- Detect unwanted conditions and create notifications to trigger processes to resolve such conditions.
- Analyze usage and optimize related processes.

Comfort Monitoring

- Monitor and report comfort parameters, such as temperatures, humidity, CO2, lightness and noise level.
- Detect out-of-range conditions and create notifications to trigger processes that resolve these conditions.
- Report comfort parameters for regulatory compliancy statements.
- Analyze comfort parameters and optimize related processes and facilities.

People Flow

- Monitor and report the flow of people in and out of rooms, along corridors, in elevators and in areas, such as reception.
- Detect unwanted conditions, such as crowds or obstructions, and create notifications to trigger processes to resolve such conditions.
- Analyze people flow measurements to optimize services, such as in a cafeteria, bathroom or reception area. For example: cleaning purposes or for adding additional service personnel.

Smart Services

- Monitor and report fill quantity of consumable items, such as in bathrooms or dustbins.
- Detect whether consumable stock is nearly empty or whether a dustbin is nearly full, and create notifications to trigger processes to handle these conditions by an immediate or scheduled service response.
- Analyze data to optimize service processes and work plans.

Energy Efficiency

- Monitor and report room temperatures, out-door temperatures and power consumption of various facilities such as heating, ventilations, air-conditions and more.
- Detect energy saving potentials and create notifications to trigger either an IoT remote device control system or processes that control energy wasting systems manually.
- Analyze energy data to optimize energy efficiency algorithms and to optimize related processes, such as purchasing.

Condition Monitoring & Predictive Maintenance

- Monitor and report the health and operational status of various facilities by measuring vibrations, temperature and power consumption.
- Detect unwanted operational states, such as outages or wear, and create notifications to trigger processes that resolve such conditions. For example, an emergency repair or a scheduled maintenance service.
- Analyze conditions and optimize related processes, such as maintenance and purchasing.

Workplace Services

Workplace building occupants are provided with a variety of self-service and managed services, such as:

- Reservation of meeting rooms, workspaces, lockers, desks, workstations and more.
- Visitor management for keeping track of visitors' names, entries/exits, number of visits and current/historical visitor quantity.
- Location-based services for finding where a specific person is in the building, tracking where they have been and where people are congregating.

Occupant Wellbeing

Occupants are provided with a variety of well-being services, such as:

- Feedback/complaint box to which occupants can submit suggestions, requests or complaints
- Direct control of building devices, such as air conditioners, windows and more.
- Location-based services for finding where a specific person is in the building and/or where people are congregating.
- Amenity booking services for reserving space for a party, the Jacuzzi, the gym and more.
- Virtual personal assistant services to complete tasks that you cannot do or don't want to do.
- Ongoing visibility, monitoring and alerts regarding occupant well-being/comfort quality, meter and sensor readings.

Asset Management & Monitoring

- Condition-based and predictive maintenance for ensuring that assets are operating properly, efficiently and providing efficient maintenance in order to extend lifespan.
- Automated identification and diagnosis of equipment faults in order to enable targeted and timely response to problems and waste.
- Power and equipment efficiency and Key Performance Indicators (KPIs).
- Asset location-based services for locating and tracking assets and equipment in real-time.

Complete Sensor Solution

The key to creating a smart building lies in the connectivity and measurement of sensors.

Axonize collects and integrates sensor data from most sensor types and devices. The Axonize platform supports a wide range of out-of-the-box, LoRaWAN sensors covering motion, temperature, humidity, luminosity, sound, CO2, presence and door/windows opening and closure, and allows for new sensor types to be added with configuration, crucial for transforming facilities into smart buildings.

Some sensors measure and provide a single type of reading, such as temperature or humidity and others provide multiple types of measurements. Axonize is continually adding support for additional types of sensors.

Axonize will instruct you on which sensors to purchase and guide you through the entire process. The Axonize system comes ready-made with end-to-end integration at full functionality that can be achieved from the readings received by these sensors.

Configuring Sensors in Axonize

Axonize enables you to configure new sensors at the click of a button. After a sensor has been created, you can easily turn a sensor's analogical readings into digital events by defining it in the user interface.

Sensor Communication Networks

IoT today primarily communicates via two wide area network standards - standardized NB-IoT and LoRaWAN.

- **NB-IoT -** Narrowband IoT is a low power wide area network (LPWAN) radio technology standard developed by 3GPP to enable a wide range of cellular devices and services.
- **LoRaWAN -**The LoRaWAN open specification is a low power, wide area networking (LPWAN) protocol based on LoRa Technology that has become the de facto technology for IoT networks worldwide. Designed to wirelessly connect battery operated things to the Internet in regional, national or global networks, the LoRaWAN protocol leverages the unlicensed radio spectrum in the Industrial, Scientific and Medical (ISM) band.
- **WiFi -** WiFi is a wireless local area network (WLAN) that utilizes the IEEE 802.11 standard through 2.4GhZ UHF and 5GhZ ISM frequencies. WiFi provides Internet access to devices that are within the range (about 66 feet from access point).
- **Bluetooth -** Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz).
- **Mobile -** Mobile IoT refers to low power wide area (LPWA) 3GPP standardized secure operator managed IoT networks in licensed spectrum. Mobile IoT networks support devices requiring broad coverage, a long battery life and low cost, yet secure, connectivity across both rural and urban locations.
- **BacNet -** BACnet is a communications protocol for Building Automation and Control (BAC) networks that leverage the ASHRAE, ANSI, and ISO 16484-5 standard protocol.
- **ModBus -** Modbus protocol is mainly used to convey signals from industrial devices primarily involving instrumentation control and data acquisition devices to a typical micro-controller unit (MCU) or to a data collection system.

Sensor Types

Various types of sensors are best suited for the smart building industry:

PIR Sensors

Heat Passive Infrared (PIR) sensors measure heat and are used as motion detectors to detect intrusion and the presence of people in a room or building. It is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. Infrared sensors are typically quite low cost, enabling you to deploy multiple sensors without significant expense.

Room Sensors

ERS and ERS-lite are LoRaWAN™ room sensors measure and indoor environment. ERS contains five internal sensors – temperature sensor, humidity sensor, light sensor, and a motion sensor (PIR). For ERS-CO2 there is an additional CO2 sensor, and for the ERS-sound there is an additional sound sensor for peak and average dBa level. The sensor also provides a magnetic switch sensor for door and windows, regarding open/close state.

All-in-One Home Sensor

The All-In-One Home Sensor packs a huge amount of functionality into a small form factor. It is an ideal tool for measuring and reporting temperature, humidity and light intensity, detecting motion, shock and water leaks. Available in three different packaging options that include either an external contact for pulse reading or a PIR lens for motion detection.

Securing Sensor Data

Sensors are quickly and easily networked on the Axonize platform, and are further secured with Microsoft Azure.

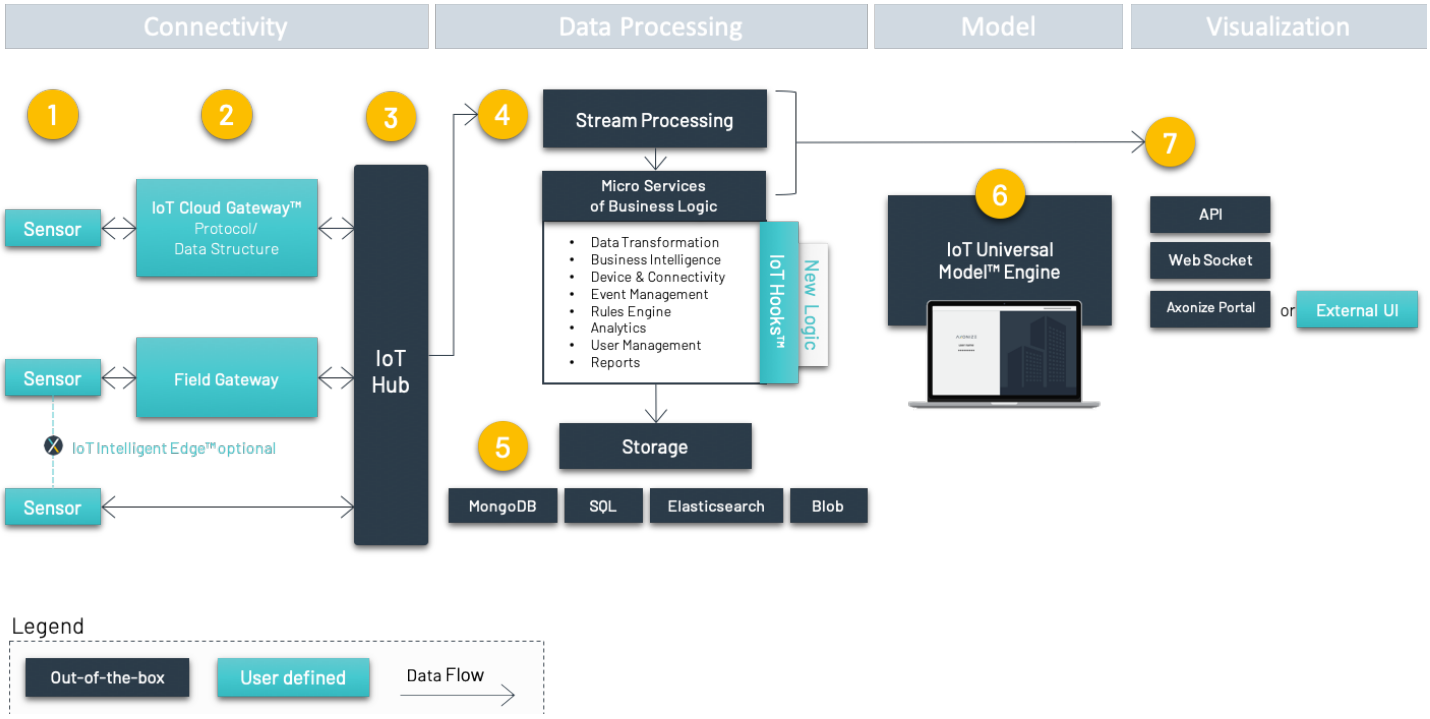
People Counting Sensors

Traf-Sys offers a full line of people counting equipment depending on your accuracy requirements, data retrieval needs and budget. We offer both wired and wireless people counting systems. Browse our selection of door counters, horizontal sensors, thermal imaging sensors, data controllers and other accessories.

Connecting to Existing Sensors/Systems/Applications

The Axonize Cloud Gateway connects to devices, sensors, applications, systems and platforms via standard protocols (protocol gateway), data structure gateway, cloud-to-cloud gateway and self-service gateway. Incoming data can be connected and normalized from any one of multiple protocols (as is), such as TCP, UDP, Modbus, OPCUA, SNMP, HTTP, AMQP, MQTT, web sockets and more.

Architecture



1. **IoT Devices**
   Any IoT device can connect to the Axonize platform. Axonize supports Edge Logic on the devices.

2. **Gateways**
   Devices can connect to Axonize using Field Gateways with the Axonize SDK, or by using our IoT Cloud Gateway that supports multiple IoT protocols and various data structures.

3. **IoT Hub**
   Used for data ingestion of millions of events per second and remote controlling the devices.

4. **Stream Processing**
   Process the incoming events and dispatch them to the correct microservice to achieve the desired outcome. For example, an event will trigger a rule and send a notification to the user.

5. **Storage**
   Axonize uses multiple databases to fulfill the need of any IoT project. For example, Elasticsearch will store all the incoming events and the MongoDB will store data on the Axonize entities (devices, products, etc.)

6. **IoT Universal Model™ Engine**
   By defining your application model once, you can share it across multiple applications, saving time and resources without the need for in-house developers.

7. **Visualization and User Interface**
   Axonize is an API first company. By using our standard restful API you can build your own UI or mobile application or you can use the predefined Axonize UI and mobile application.

Support

Axonize provides full support of the entire process from requirement assessment, deployment planning, hardware shopping list, installation and setup and an extensive variety of easy-to-use configurable options targeted at the smart building industry. Ongoing support is provided as needed or according to license agreements.

For more information, please refer to these links:

Case studies

- Deutsche Telekom Selects the Axonize IoT Orchestration Platform
- How Optus is Using IoT to Disrupt the Retail Industry in Australia
- How ISS is Revolutionizing Facility Management Services with IoT

Blogs

- How facility managers are "smartifying" their buildings for increased profitability
- Case Study: Transforming Retail Pain into Smart Gain

Whitepaper

- The Demand for Smart Buildings Guide

About Axonize

Axonize is an IoT orchestration platform, purpose-built to provide speed and scale for service providers and their end customers, developing and managing IoT applications. Based on a unique multi-application architecture that requires configuration rather than development, launching a full-fledged IoT project on Axonize requires mere days, rather than months, and yields a high ROI. Axonize is used by leading companies, including ISS, Deutsche Telekom, DHL and Optus.

Contact me to schedule a walk-through: **janivr@axonize.com**