

**Made in USA – 100%**

Entronix's focus is providing easily deployable AI-based facilities analytics platform. The Entronix team consists of hardware, software, and application engineers from the building automation industry who design, manufacture, and deploy systems globally.

**BUILDING YOUR**

**VISION**

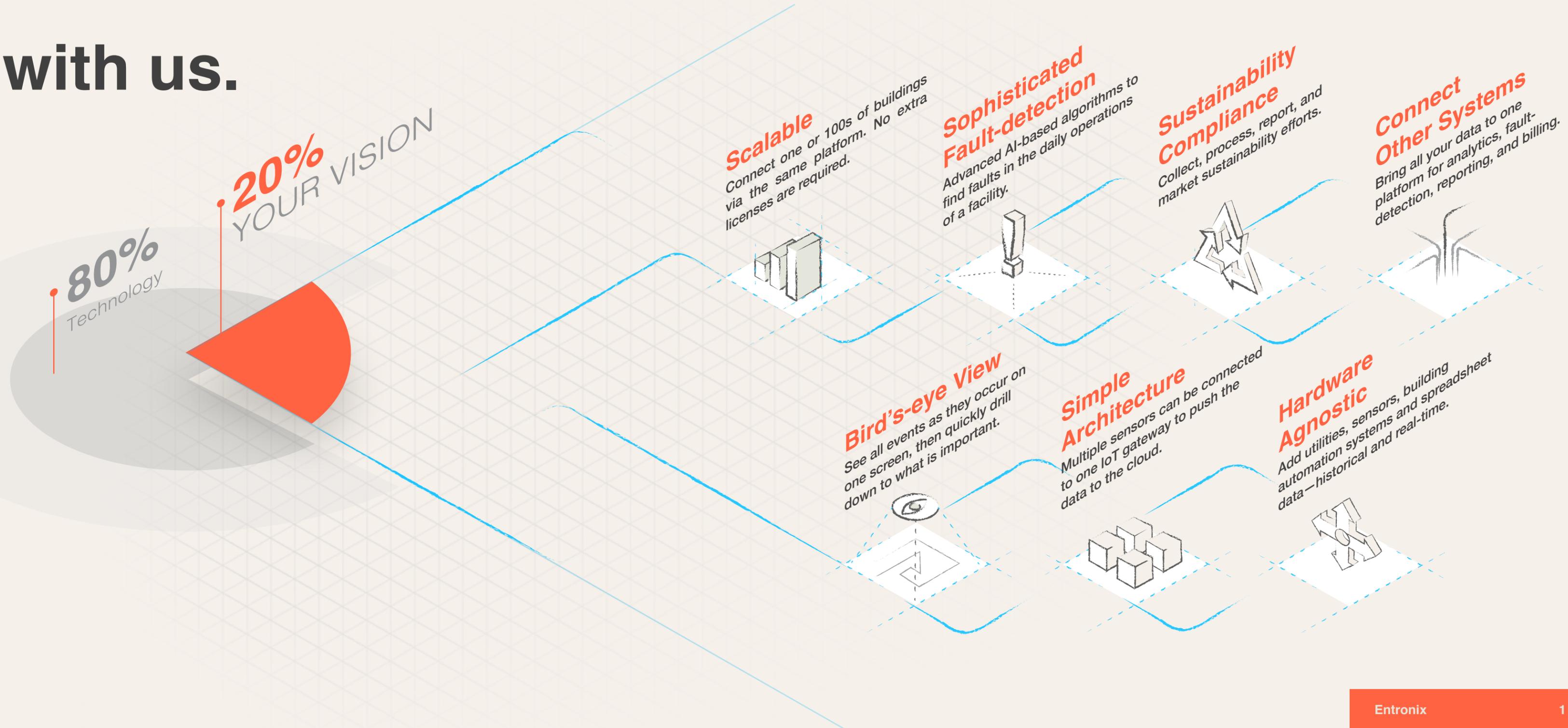


**entronix**  
FACILITIES ANALYTICS PLATFORM

# Partner with us.

## Technology at the speed of thought.

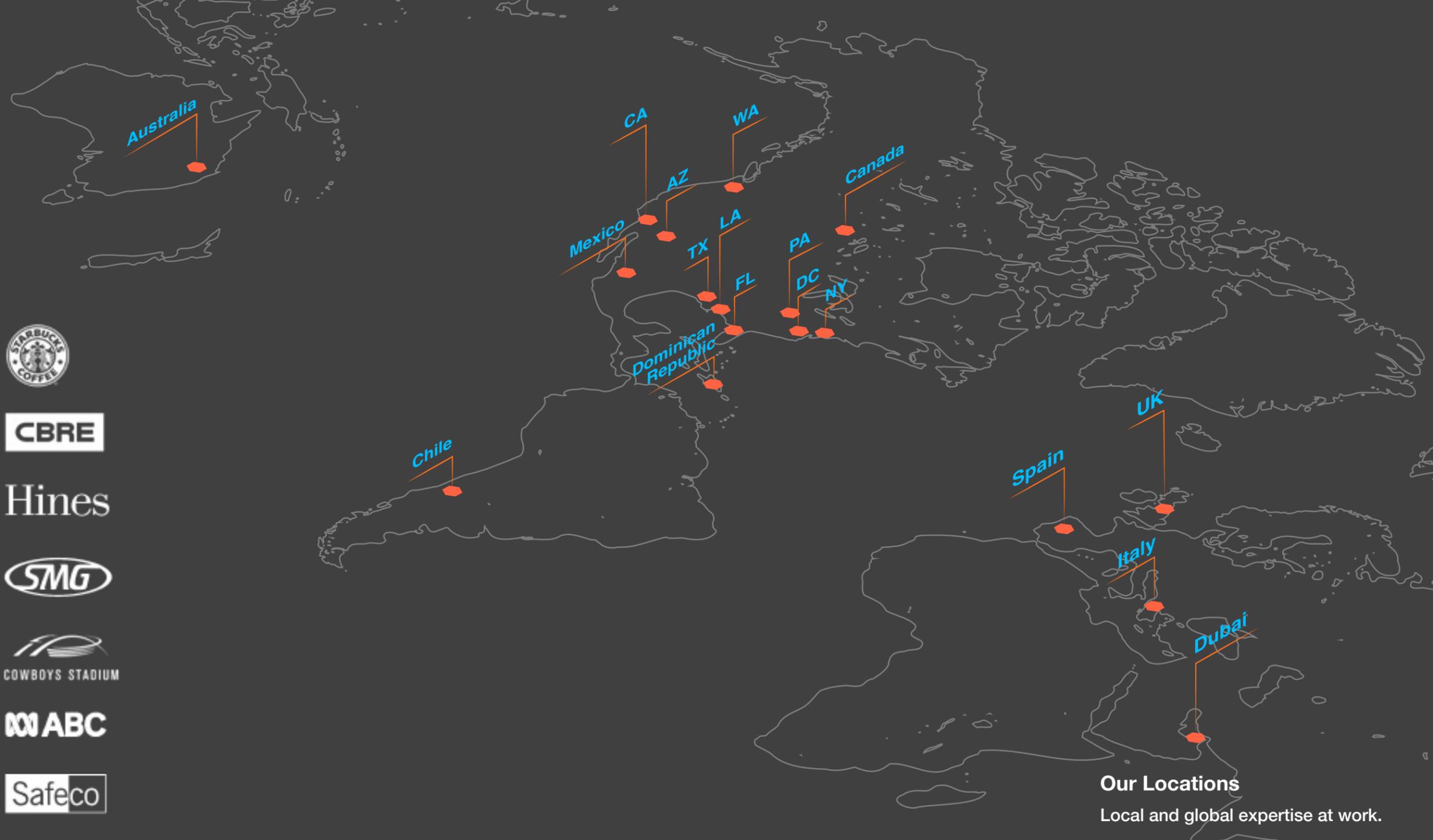
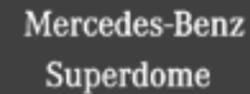
Property Management strives to optimize their facilities and improve profitability. The Entronix platform provides the technology and advances AI-based algorithms to achieve this goal. It is coded by engineers from the facilities industry and serves the data-driven decision-making needs of universities, convention centers, hospitals, and class A high rise buildings.



# Enterprise Level Global Deployment

The wide range of countries and sectors we do business in is a reflection of our flexible, easily customized approach to problem-solving. Our systems manage facilities from universities and medical centers, to commercial and residential buildings across 12 countries.

## Customers Include:



## Our Locations

Local and global expertise at work.

# Hardware: **Entronix IoT Node**

**Redundancy**  
One-year data-storage if the internet fails.  
IoT node carries lifetime warranty.

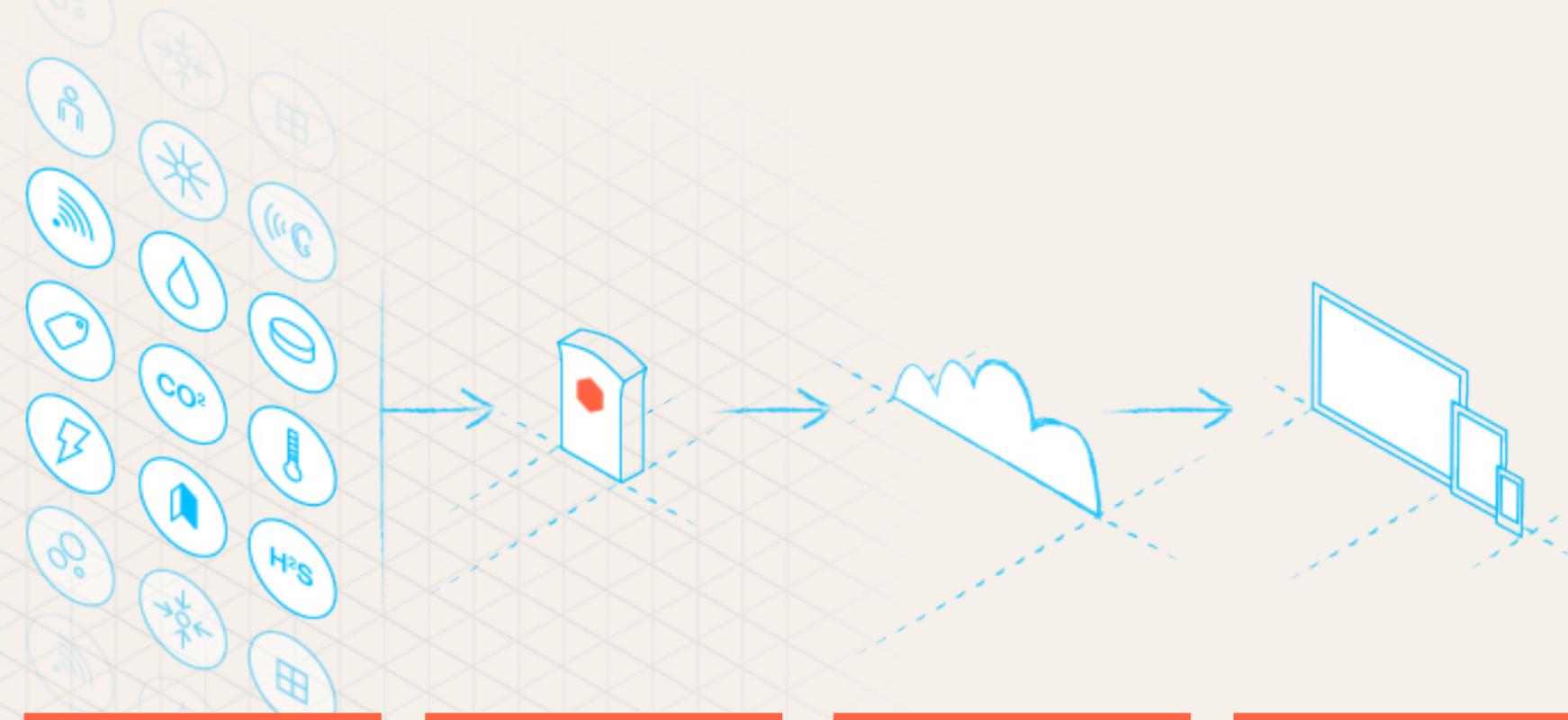
**Connect and Go**  
Easy to add sensors and connect  
to the internet.

**Connect up to 35 Sensors**  
IoT Node can communicate via Modbus,  
BACnet, oBIX, SNMP, ...and more.



## Bring IoT technology to your facility

The Entronix IoT Node is an on-site IoT Gateway that communicates with the Entronix cloud. It requires minimal IT dept interaction since no port forwarding, firewall configuration, or static IP address are required. All that is required is simple outbound internet access to connect. Data is pushed to the cloud every few seconds. It's fast!



### Any Sensor

Each Node can support up to 35 sensors.  
Any measurement device can be connected to an Entronix IoT Node if it talks Modbus, BACnet, oBIX, SNMP, or other supported protocols.

### Easy, Scalable, Redundant

Sensors can be added in three clicks. An unlimited number of sensors, nodes, and users can be added to the Entronix account. No special license is needed.  
All data is trended, stored locally at the IoT Node level and the Entronix cloud.  
It can retain a year of data if Internet connectivity fails and back-fill the data when it comes back online.

### 100% Cloud-based

An unlimited amount of data can be retained, shared with other systems, used for analytics and reporting, and mined for decision making.

### Flexible Interface

Dashboards combine multiple views of the data into one page, providing a central location for all information relevant to their portfolio. Navigate between the many built-in dashboards or design your own.

# Features at a glance

## Portfolio Manager

The system can “stitch” together water, electric, gas, and other data from multiple facilities to identify efficiency opportunities and provide analytics for facilities profitability.

## Analysis & Reporting

Entronix offers several different reports designed to help you better understand how your facility operations impact the bottom line.

Any report can be scheduled to run periodically and send out the results by email.

## AI / Fault Detection

Identify and alert building engineers of problems before or as soon as they occur. Big data and machine learning technologies in Entronix predict how much energy you will consume this month, or when you’re likely to hit a new electrical peak demand, or use the sophisticated “Expert Systems” to identify anomalous or inefficient operation.

## Modern / Accurate Tenant Billing

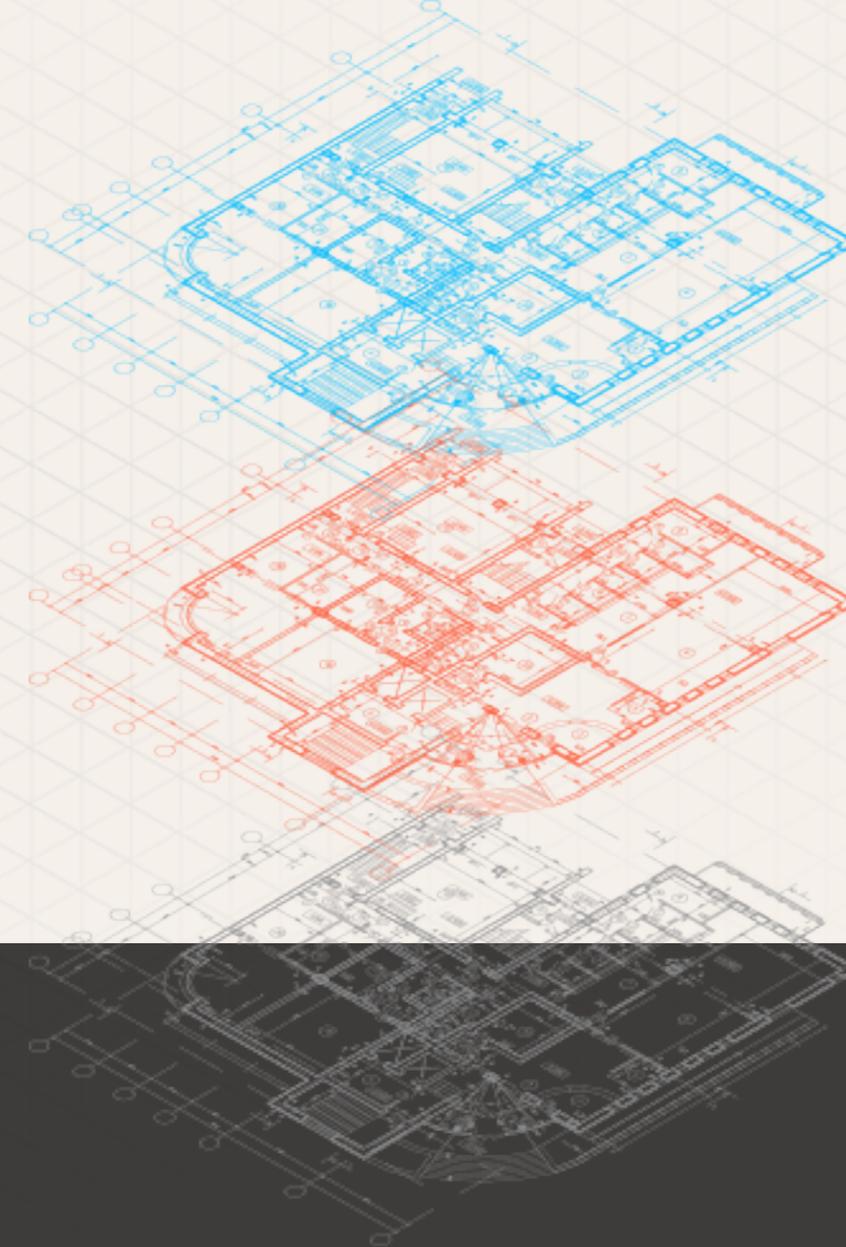
Entronix helps you bill your tenants for utility usage by pulling consumption data directly from building automation systems and meters.

## Dashboards 2.0

The next generation of dashboards are not static. You can interact with your data, zooming in and out or connecting with other data sets or visualizations on-the-fly for more dynamic human interaction.

## Sustainability Compliance

The system can gather, produce, and report on sustainability goals and measures. The system is integrated with EnergyStar servers for automatic daily data transfer.



PAGE

9

11

13

17

19

21

# Modern Portfolio Management via Digital Twin

Entronix system collects all data points from a building to create a digital twin of the facility. The digital twin analysis of past and present operation identifies inefficiencies. The system can also run what if scenarios for future planning. A digital twin helps facilities management uncover new opportunities to become more profitable.

## Automatic Anomaly Detection

By implementing statistical and machine learning methods, Entronix is able to identify outliers in data. This means that inaccurate or unexpected data can be flagged for further review. For example, unusual tenant bills are highlighted in red so that potentially embarrassing mistakes can be avoided.

## Interactive Dashboards

Explore your data interactively using dozens of pre-existing live dashboards and reports, or create your custom dashboards. See live up-to-the-second information for one or many sites simultaneously, including relative demand, projected consumption, expected peak demand time, and power quality.

## Spend Energy Efficiency Capital Budgets More Effectively

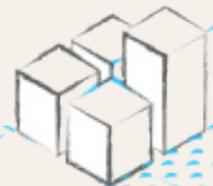
The Entronix platform allows users to arbitrate over their entire portfolio of buildings for realistic comparisons of performance. Quickly see which building's plant room started more efficiently than others or analyze building's energy use intensity per sq foot (EUI) against other facilities or the national average.

## Digital Twin Visualizations

Multiple sites can be visualized together on an interactive Google map, which allows you to see energy demand, UPS, generator status, HVAC summary, or almost anything else that is measured. Attention is immediately called to alarms or trouble-conditions through color-coded indicators.

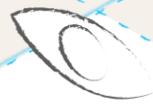
# Analytics, Reporting & Compliance

Entronix offers several features to analyze facility performance metrics and extract insights in real-time. These tools are designed to enable decision-makers to recognize performance gaps, find inefficiencies, or discover new revenue opportunities. Reporting & Analytics features are commonly used by the director of engineering, portfolio managers, REIT CFOs, compliance officers, and tenants. The Entronix reporting module can be utilized to make informed business decisions and advance a real estate's position within the marketplace.



## Intuitive Performance

The system already knows what most people want to see from a particular data point. Reports include consumption projections, models for energy, load profiles, demand projections for power, and histograms for voltage/power factor. Just clicking on a point will automatically display all these visualizations instantly.



## Engineer Report

Entronix provides technical performance reports specifically catered to the needs of facility engineers. These reports can be displayed on a dashboard or can be customized into a monthly PDF. Engineers can also input their own feedback, which can appear in the monthly report.



## Sustainability Report

Set a baseline and collect data automatically from building sensors or upload data from a spreadsheet. You can verify performance, create monthly reports with analytics and visuals.



## CFO Report

The CFO module displays metrics and graphs on the financial aspect of a facility's operations. For example, one of the CFO dashboards shows a live display of how much money is being spent on utilities or exactly how much is being saved because of a particular energy efficiency project.



## Tenant Usage Report

Tenant invoices can be generated from live-metered or inputted consumption. Sophisticated billing rate schedules, free allowances, and shared meters are all accounted for. Invoices that appear unusually high or low are caught by powerful statistical analysis algorithms and highlighted before they go out to avoid under or overbilling.



## ROI Report

An accurate estimate of ROI for energy improvement projects is provided by creating a mathematically accurate baseline, which takes into consideration daily schedules, temperature and humidity, and other factors to produce the most accurate model possible. This baseline model is measured against actual system performance to calculate the exact amount saved for each day.



## Robust Analytical Tools

Provides users with a robust tool set for analyzing, presenting, and reporting data



## Live History

Designed to compare multiple data points on the same graph. Visualizations and time period are customizable.



## Area Plot

Used to arrange a data point's value over multiple days. This illustrates the range of values over which a point varies at different times of the day.



## Chronogram

Chronogram reports create heat maps for data points. These heat maps are ideal for demand-based points, allowing for quick and easy detection of outliers and scheduling issues.

# AI – Fault-detection

Entronix is accelerating R&D in the field of Machine Learning and AI for facilities.

Up-to-the-second building performance can alert building engineers of problems or unusual situations as soon as they occur or sometimes even before they happen.

Operational issues like HVAC malfunctions can be flagged and addressed at the first sign of trouble, rather than after failures have already resulted in lost revenue or upset tenants.

Fault detection needs are varied, Entronix provides two tiers of fault-detection sensitivity.



## 1

### Rules

Rules expand upon alarms, giving users a tool to detect issues with more sophisticated criteria. Using a simple point-and-click interface, users can quickly create rules that combine any number of conditional statements along with any stipulations they choose.

A user can specify that the conditions remain valid for more than a specific time, or according to a schedule. Data points can be compared to each other, values, user-created calculations, other rules, or any combination of the four.

The rules can then be applied to a whole class of assets (for example, air handlers or chillers).



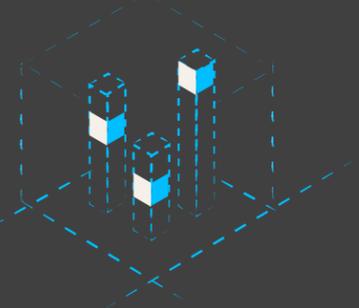
## 2

### Expert Systems 2.0

Expert Systems provide users with the most sophisticated fault detection possible. A single expert can analyze hundreds of data points at once and use historical data point values in addition to real-time values to make its decision.

This allows the expert system to monitor how far a point deviates from typical, when a data point reaches a new maximum or minimum, when consumption patterns vary from a building's norm, when a control loop is oscillating, and more.

Expert systems run on one or more classes of assets (for example, sensors or systems with PID loops).



# AI – Frequency Diagnostics

The well-trained ear of an experienced building engineer can detect mechanical faults. With this in mind, Entronix developed the “FrequencyAI” product line. It installs easily and “listens” to your equipment 24/7 with detection and analysis capabilities that far exceed the human ear.

## PHASE 1

### Learning

FrequencyAI measures the amount of acoustic energy across 22kHz of frequency bands, using Fourier analysis and Bayesian statistics to create an audio “signature” of the equipment. Just like fingerprints, different pieces of equipment will have different audio signatures, even if the model and manufacturer are identical.

The multi-dimensional audio signature allows FrequencyAI to tell if the unit is on or off, operating in one of several normal modes, or if the unit is operating in a way that indicates an imminent failure.



## PHASE 2

### Fault Detection

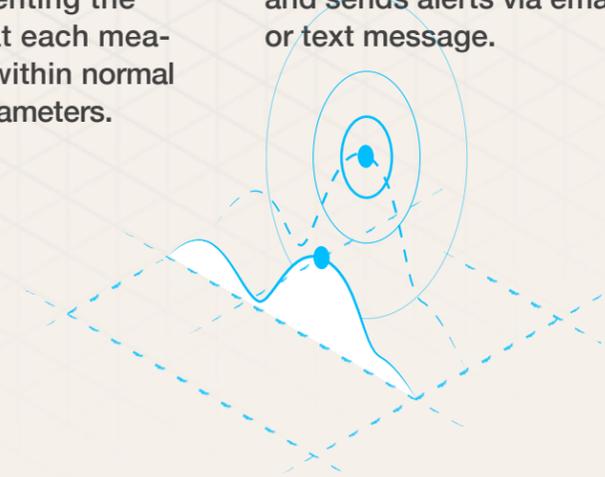
After spending a few days or weeks acquiring a base-line for normal operation, FrequencyAI enters detection mode. Now, audio measurements are tested against the statistical baseline generated in Phase I. This analysis provides a confidence-level value representing the likelihood that each measurement is within normal operating parameters.

### User Control

The user can set the threshold confidence level required before declaring a fault to minimize the frequency of false positives. Upon identifying a failure event, such as a loosening belt or failing bearing, the Entronix platform logs it and sends alerts via email or text message.

### Applications

- HVAC Equipment
- Transformers
- Motors
- Large machinery



### Savings

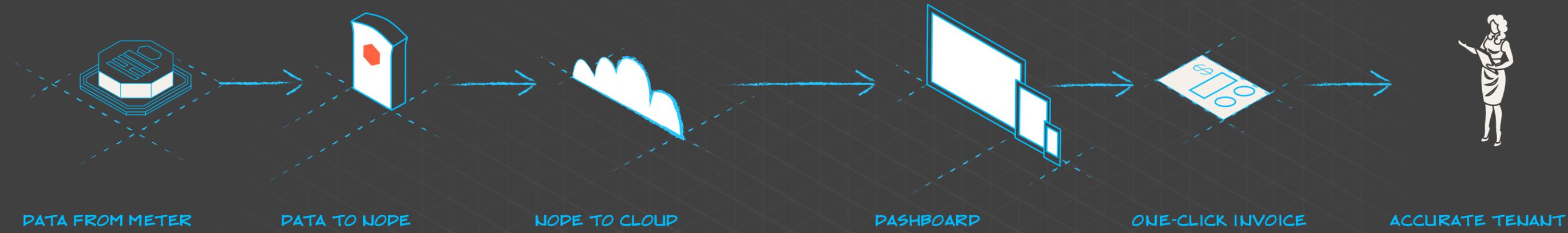
Frequency AI technology provides the next generation of AI-based prescriptive maintenance solutions.



While preventative maintenance continues to provide an ROI of over 500% in replacement and energy cost savings, the potential upside of prescriptive maintenance looms even larger, especially when the incremental cost of adding an Entronix prescriptive maintenance solution is negligible. By reducing maintenance callouts, false alarms, and energy consumption, the Entronix Facilities Analytics platform, and FrequencyAI hardware provide even larger savings in energy, repairs, and replacement.

# Automated Tenant Billing

Our platform includes automated billing features, which eliminate the need for manual data entry and cumbersome spreadsheets.



## Allowances

Tenants are billed only for consumption over pre-specified limits.

## Anomaly Detection

Our system automatically checks and detects irregularities in tenant energy consumption and billing totals for accurate invoicing.

## Separated Permissions

Billing information is only visible to administrators and accountant level users.

## Automated Invoicing

Input billing conditions, rates, and schedules, then simply click to create invoices.

## Customizable Invoices

Layout, visualizations, and logos can all be customized to fit your preference.

## Convenience & Speed

Our simple interface is designed to save time and effort.



## Quick Look

Get a complete billing overview for entire facilities with this feature.



## Bill Grid

View all invoices for any tenant from any time period in seconds.



## Speed and Scheduling

Run hundreds of tenant reports with a single click. You can also bill using different rates for different times of day and day of the week.

# Dashboard 2.0

Entronix Dashboards are flexible gateways to all of your data and controls. Our goal is to connect you with your facilities in ways that improve efficiency, save money, and make your job easier.

## Think "Springboard"

More than a static interface, our analytics dashboard is a springboard for analysis, action, and reporting:

- Detailed, interactive analysis
- Actionable Insights
- Highly customizable reports



## On-the-fly Reports

Drill-down ever further to generate customized reports.

## Connect Data to Tasks

Respond to data immediately by drilling down directly from the data points to controls and schedules.

## Dynamic Analysis Tools

Consumption, Controller & Point Views make parsing and analyzing data easy and intuitive.



## Group Dashboards

Each user-group has the ability to customize their dashboard.

## PORTFOLIO MANAGERS

Manage and compare data across an entire suite of properties.

## ENERGY MANAGERS

Predict peak demand and make adjustments ahead of time. Track your power usage & avoid peak demand charges.

## ENGINEERS

Maintain live updates of your system's performance. Fault-detection allows you to identify and alert building engineers of problems.

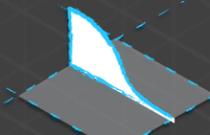
## CFOs

Monitor for inefficiencies, and keep tabs on cost. Bill your tenants for energy usage by pulling consumption data directly from the meters themselves.

# Sustainability Module

The Entronix platform can help with your sustainability and resiliency efforts, specifically:

Reducing operating expenses



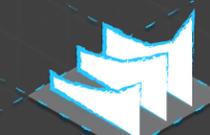
Improving occupant health and productivity

Enhancing marketability



Minimizing environmental footprint

Strengthening ESG performance



Creating enterprise value through triple-bottom-line performance

Pushing data to EnergyStar servers



Triple-bottom-line performance environmental footprint: People, profit, planet.

## Energy Star Integration

All the tasks required to properly handle an Energy Star account can be performed directly from the EMP software itself.

