The Insider's Buyer Guide to Operations Technology for CRE

A Word on This Guide

Obviously, when creating a "buyer guide" as a technology provider, it's tempting to make it biased and self serving. While we at Enertiv stand by our platform and believe in its value, we understand that our biggest competitor is the status quo.

Given this, it's in our ultimate best interest to help the industry map the market, to understand the different categories of solutions so that they can effectively find what they're looking for and make apples-to-apples comparisons.

Of course, the world of 'PropTech' is massive and includes solutions for construction, leasing, market data, tenant engagement, and more. In this guide, we stick to the segment of PropTech we know: building operations, building performance, and "smart" buildings.

This guide doesn't focus on features and capabilities. Instead, it aims to categorize types of solutions, why they exist, and which providers are in those categories.

The Map

Because this is a buyer's guide for commercial real estate, we thought it best to lay out the market in familiar terms. Here is the market as we see it in terms of the floor plan of a retail asset.

The mall is broken into three floors. On the first floor, we have building operations. These are technologies that are used to streamline those workflows and processes that have to happen to operate a building.

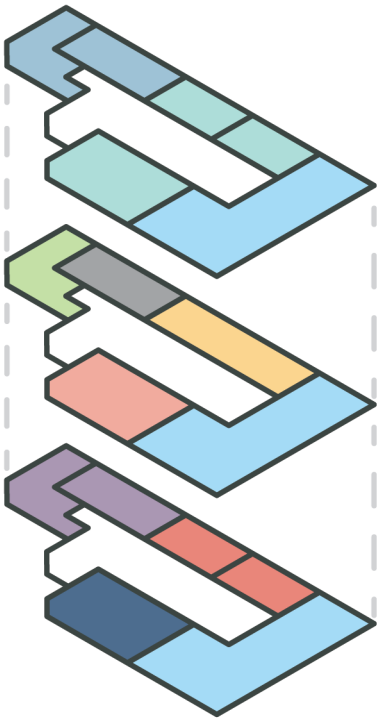
On the second floor, we have optimization. These are technologies that enhance the solutions on floor one using real-time data from sensors, meters, and building management systems.

On the top floor, we have "intelligent buildings." These are the technologies that are at the cutting edge of current capabilities in the market. This floor generally gets the most buzz and press but is not necessary to explore for the vast majority of portfolios today.

Jump to a Floor

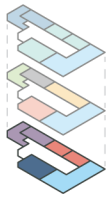
- Floor 1 – Building Operations
- Floor 2 – Optimization
- Floor 3 – Intelligent Buildings

The Map



Floor 1 — Building Operations

Building Operations

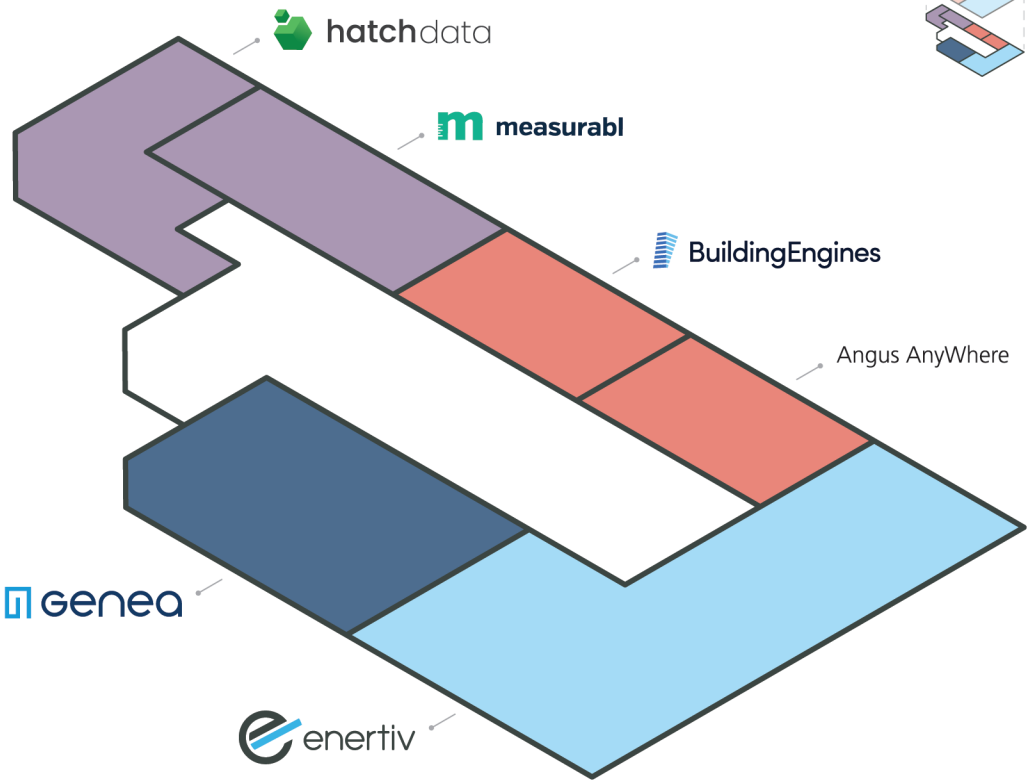


Utility Management & ESG

Maintenance

Tenant Billing

Capital Planning



Building operations technology empowers on-site operators, property managers, asset managers, and sustainability managers to do their normal job faster, more effectively, and in a more digitized way.

There are several categories of technology within building operations, each of which helps with a different type of workflow.

Jump to a Solution in Building Operations

- Asset Tagging
- Inspections
- Preventative Maintenance
- Vendor Management
- Work Orders
- Utility Management
- ESG Reporting
- Tenant Submetering
- Capital Planning

Maintenance

Even within the broad category of maintenance, there are a few types of technologies.

Asset Tagging

Purpose

The purpose of asset tagging is to connect physical equipment to the cloud to improve organization of documentation and to make that documentation instantly accessible in the field.

Example

There is an unexpected failure with an air handling unit. Instead of searching in the chief engineer's office for the warranty, service agreement or maintenance manual, the operator on the scene can scan the asset tag with a mobile app and pull up those documents instantly.

Value

30% of an operators' time is spent on administrative work, including search for documentation. In addition, asset tagging digitizes equipment and meter inventories so they are instantly accessible for asset managers. The real value of asset tagging is to lay the digital foundation on which most advanced capabilities are built.

Pitfalls to Avoid

When evaluating asset tagging, the most common pitfall is the difficulty of initial setup. Asset tagging should be easy enough for any building operator to do on their own.

Providers

- Enertiv
- ConnectM
- Ravti (now Building Engines)

Inspections (or Rounds)

Purpose

The purpose of an inspections or rounds app is to digitize the routine walk throughs that operators perform daily.

Example

Instead of printing out which rounds are to be performed each day and taking recordings with pen and paper, operators login to a mobile app in the morning and it shows them which rounds are due that day; as they complete the rounds, their recordings are digitized, archived and visualized in dashboards.

Value

While sensors can continuously monitor and collect data, they are narrow in function. Digitizing rounds and inspections, while fewer data points over time, produces a very broad and powerful data set that can be utilized to focus maintenance, head off failures, and influence capital planning.

Fig. 1 — Asset Tag

Pitfalls to Avoid

When evaluating rounds apps, the most common pitfall to avoid is ending up with a solution that does not tie into other aspects of building operations and does not produce analytics from the data collected by operators.

Providers

- Enertiv
- LogCheck
- Building Engines

Preventative Maintenance

Purpose

The purpose of a preventative maintenance app is to ensure that equipment is being maintained proactively.

Example

As an operator goes through a preventative maintenance procedure, they check off each item in a task list to ensure that nothing is missed.

Value

98% of maintenance tickets in commercial real estate are reactive, meaning a fix was implemented after a piece of equipment already broke down. Only 2% are preventative. The data shows that the cost of doing a reactive repair is five to fifteen times more expensive than preventative maintenance would've been. A proper preventative maintenance program can add 10–20 cents per square foot in NOI.

Pitfalls to Avoid

Preventative maintenance is a tricky area because it often falls in between the more property management-focused platforms, which allow tenants to submit work orders, and the more operations-focused platforms, which have more engineering information. There is no absolute right answer, but it should be thought through in relation to the other technologies mentioned in this guide whether preventative maintenance would benefit from being closer to engineering (asset tagging, real-time monitoring, etc.) than property management (tenant work orders).

Providers

- Enertiv
- Angus Anywhere
- Building Engines

Vendor Management

Purpose

Many commercial real estate portfolios outsource some or all of their maintenance to third party vendors. A vendor management solution helps keep track of these agreements and the work that is done on site.

Example

When a vendor arrives on site, they scan an asset tag to start the clock on their billable hours. When they arrive to an individual piece of equipment, they scan another asset tag to provide transparency into what they did and when.

Value

Many owners and operators are aware that their vendors are not doing all the work they bill for but have no transparency or ability to hold them accountable. Providing this accountability has been showing to decrease related maintenance costs by up to 25%.

Pitfalls to Avoid

Vendor management generally requires a combination of several solutions, such as asset tagging and preventative maintenance. It would likely not be worth to adopt vendor management as a standalone solution.

Providers

- Enertiv

Work Orders

Purpose

Work orders are a well-known concept across the industry. Either a tenant or a company employee can submit a ticket and the work order system will route that ticket to the right person, track progress, and notify the original submitter when completed.

Example

A tenant notices that a light bulb in their hallway is out. They submit a ticket and get notified when an operator closes out the ticket.

Value

Work orders give employees and tenants transparency into their issues and close the loop to ensure problems do not fall through the cracks.

Pitfalls to Avoid

Work orders are a useful function for any commercial asset. The only thing to avoid is assuming that having a work order system in place is sufficient as a maintenance program. Work orders are inherently reactive and should be complimentary to a robust preventative and inspection program.

Providers

- Enertiv
- Building Engines
- MRI
- Yardi

Energy & ESG

Energy management is no longer "nice to have," it's basically required for most commercial portfolios.

Utility Management

Purpose

To digitize and streamline the routine activities involved in utility reporting and budgeting.

Example

Instead of doing transcribing bills into a spreadsheet and applying a flat 3% increase year over year for budgeting, a software can ingest bills directly and make a more informed estimate on future costs. In addition, this information can flow into and out of reporting tools like ENERGY STAR Portfolio Manager.

Value

Automating bill ingestion saves time and eliminates errors. More importantly, budgeting accurately reduces variance, which is critical to the cash flow of a property.\

Pitfalls to Avoid

Utility management is usually the first step in a comprehensive energy management program. The only pitfall to avoid is to become locked into a provider that cannot effectively help optimize systems (see Floor 2) in both properties with robust building management systems and those that are more simplistic and decentralized.

Providers

- Enertiv
- Aquicore
- Hatch Data

ESG Reporting

Purpose

To streamline the process of environmental, social and governance (ESG) disclosure.

Example

The annual GRESB disclosure process is difficult, tedious and involves gathering information for siloed sources. An ESG reporting software automatically collects data from these different sources and helps with the submission process.

Value

Many investors now require ESG disclosure and are actively benchmarking portfolios based on their performance. Streamlining the submission process increases access to funds while minimizing administrative burden.

Pitfalls to Avoid

Similar to utility management, it's easy to end up with a "point solution," a provider that only provides one (albeit necessary) service. While this may solve a short term pain, it usually creates a disconnect between reporting and action, which is not ideal as a technology strategy.

Providers

- Enertiv
- Measurabl

Tenant Submetering

Purpose

To ensure that tenants are being billed for their share of utilities and to influence tenant consumption.

Example

Utility bills are automatically ingested into the billing software and rates are calculated. Operators record the monthly consumption on each tenant submeter using a mobile application. The billing software automatically applies these rates to the amounts and generates bills for tenants.

Value

Tenants generally make up 60–70% of the overall utility bill but new regulations and ESG disclosure are judging owners on whole-building consumption. Tenant submetering technology can reduce that consumption through behavior change and save hours every month on transcribing data into spreadsheets and generating bills.

Pitfalls to Avoid

Even if the only immediate concern is billing, it is likely that analytics for both landlords and tenants will be desired at some point. When evaluating a tenant billing provider, compare the analytical capabilities of platforms.

Providers

- Enertiv
- Genea

Capital Planning

Purpose

The purpose of capital planning software is to leverage software to de-silo capital planning and more effectively incorporate important factors, such as maintenance compliance.

Example

Instead of property condition assessments resulting in a dense PDF report of equipment useful life based on a snapshot in time, the software integrates a digital property condition assessment, as well as ongoing inspection and preventative maintenance data to generate a more accurate forecast.

Value

Capital investments are major decisions that have ramifications for years. Getting equipment useful life correct can improve cash flow by deferring unnecessary investments and help avoid unexpected failures that cause capital investments to become uneven year over year.

Pitfalls to Avoid

Any software that brings a process out of spreadsheets is a move in the right direction. That being said, capital planning software should connect to and incorporate data from ongoing inspections and preventative maintenance.

Providers

- Enertiv

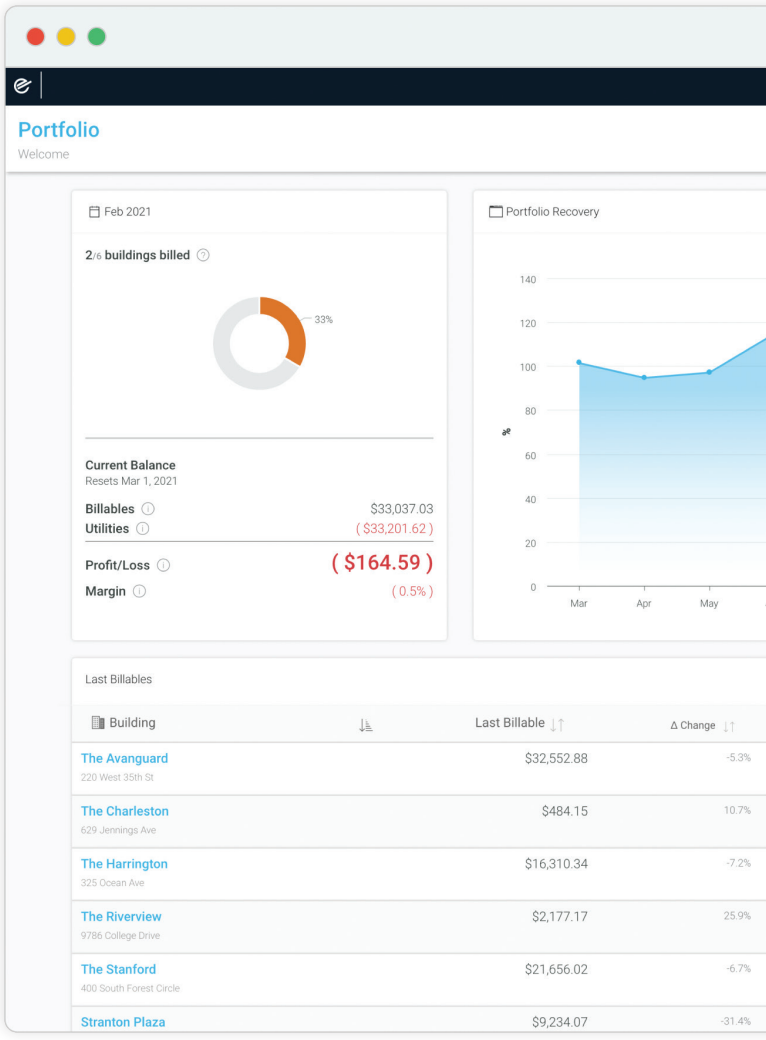
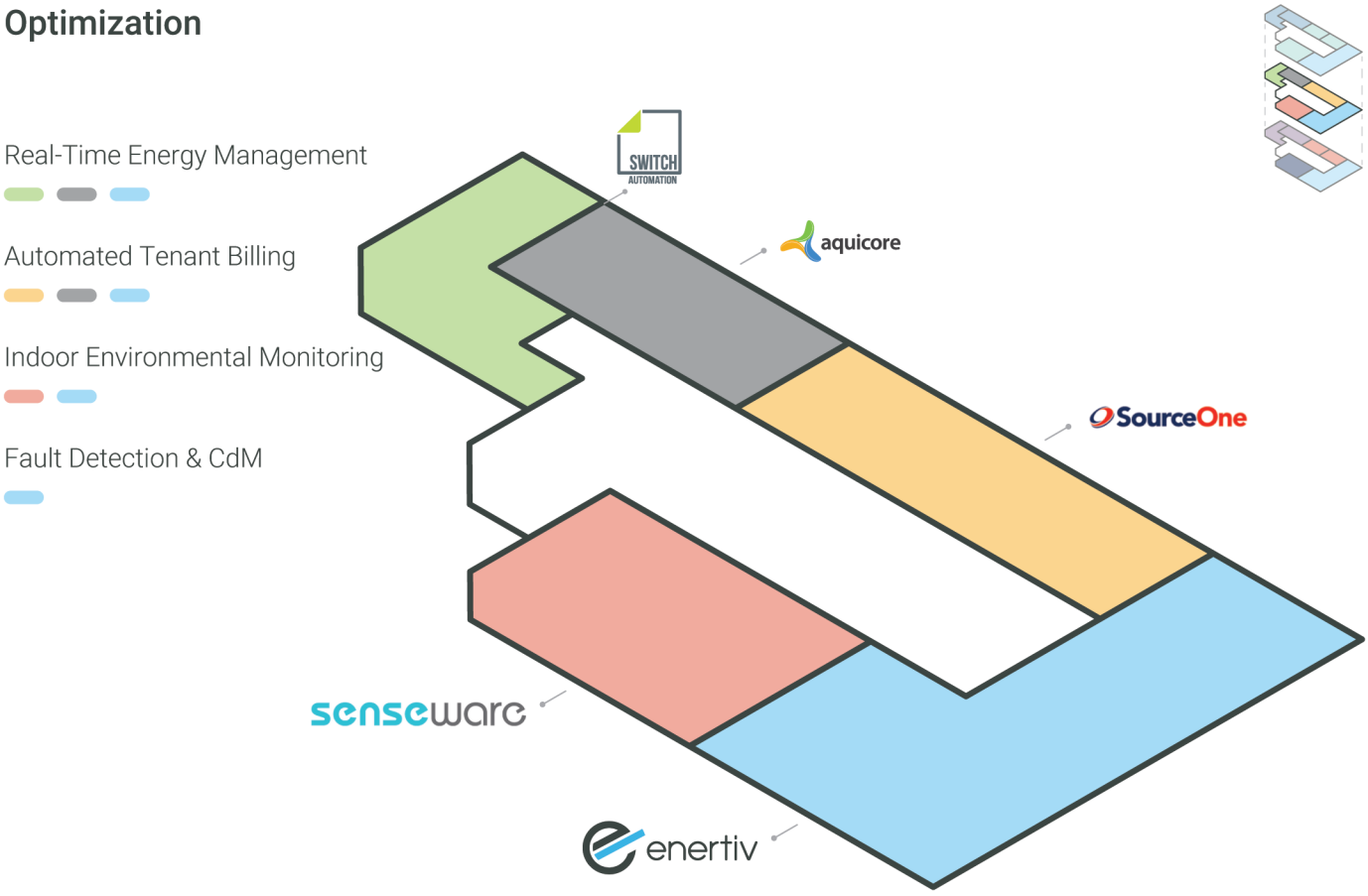


Fig. 2 — Portfolio View in Enertiv ATB

Floor 2 — Optimization

Optimization



Optimization builds on the technology in place in Floor 1 by incorporating real-time data to actively improve performance and significantly decrease operating expenses.

There are several categories of technology within optimization, each of which provides different value.

Jump to a solution in Optimization

- BMS Optimization
- Equipment Monitoring
- Environmental Monitoring
- Automated Meter Readings

BMS Optimization

Purpose

BMS Optimization is the connection of a building management system (also known as a building automation system) to the cloud and the application of analytics to prescribe efficiencies to the controls and configurations of the system.

Example

Generally with one piece of hardware, a provider can connect to a building management system and start trending data. Their software may identify that HVAC systems are running outside of occupancy hours and prescribe what the hours should be changed to to save costs.

Value

Building management systems are designed to carry out instructions exactly. The problem is that these instructions are often suboptimal and tend to get worse over time. BMS Optimization can often decrease energy bills by 15–25%.

Pitfalls to Avoid

Not all buildings have a BMS so relying on this strategy completely may not cover the entire portfolio. Moreover, different BMS manufacturers label equipment and measurements differently, which can make integrating systems across a large portfolio a challenging undertaking.

Providers

- Enertiv
- Cortex
- Aquicore
- Prescriptive Data
- Switch Automation

Equipment Monitoring

Purpose

Equipment monitoring is a similar concept to BMS optimization, but the data is collected through stand-alone sensors rather than an existing system. In addition, equipment monitoring generally can identify maintenance insights in addition to the energy efficiencies of a BMS optimization and can be used to track systems outside of the normal scope of a BMS, such as elevators.

Example

10 devices are installed in a property. These devices each contain 16–48 sensors, which correspond to individual pieces of equipment, such as boilers, chillers, elevators, pumps, cooling towers, air handling units, and exhaust fans.

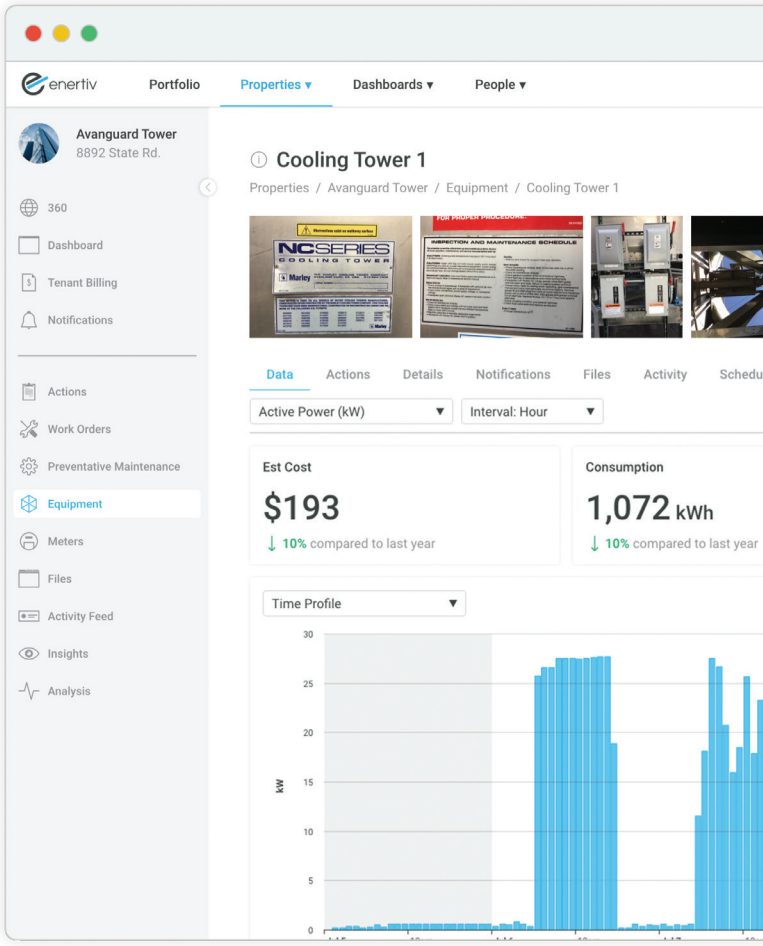


Fig. 3 — Equipment Data View in Enertiv

Value

Equipment monitoring delivers both real-time faults as well as performance optimizations. On average, these insights translate to a decrease in operating expenses of 21 cents per square foot.

Pitfalls to Avoid

Equipment monitoring requires more hardware than BMS optimization. While there are cases where equipment monitoring being used as a redundancy to BMS data (BMS control loops can fail, and instructions can stop being carried out), generally if there is a robust BMS in place, it makes sense to leverage that.

Providers

- Enertiv

Environmental Monitoring

Purpose

Environmental monitoring is used to track data streams relevant to operations but outside of equipment performance. These are generally tracked with wireless internet of things (IoT) sensors placed depending on the sensor type and intended use.

Example

Temperature sensors are placed near plumbing infrastructure to notify operators to freezing conditions around pipes; air quality monitors are placed in lobbies and tenant spaces and displayed on tenant-facing screens; leak detection is placed in the basement to allow operators to respond immediately before flooding occurs.

Value

In the post COVID-19 world, owners must demonstrate to their tenants that they are being proactive about their health and safety. Doing so can increase retention and decrease associated marketing and vacancy costs. In addition, leak and temperature detection can help avoid disaster scenarios that cause insurance premiums to rise.

Pitfalls to Avoid

It can be easy to end up with a different software for each type of environmental monitoring, a leak detection company, an air quality company, etc. Point solutions should be avoided, if possible.

Providers

- Enertiv
- Senseware

Automated Meter Readings

Purpose

Automated meter readings take the human element out of tenant submetering and provide real-time consumption data.

Example

Existing or newly installed digital, remotely readable meters are integrated with a tenant billing software so that meter readings don't have to be performed, bills are generated as soon as possible, and tenants can get real-time transparency into their consumption.

Value

Automating meter readings saves many hours of operator time spent manually reading meters. It also enables tenant portals to influence behavior even more than traditional submetering.

Pitfalls to Avoid

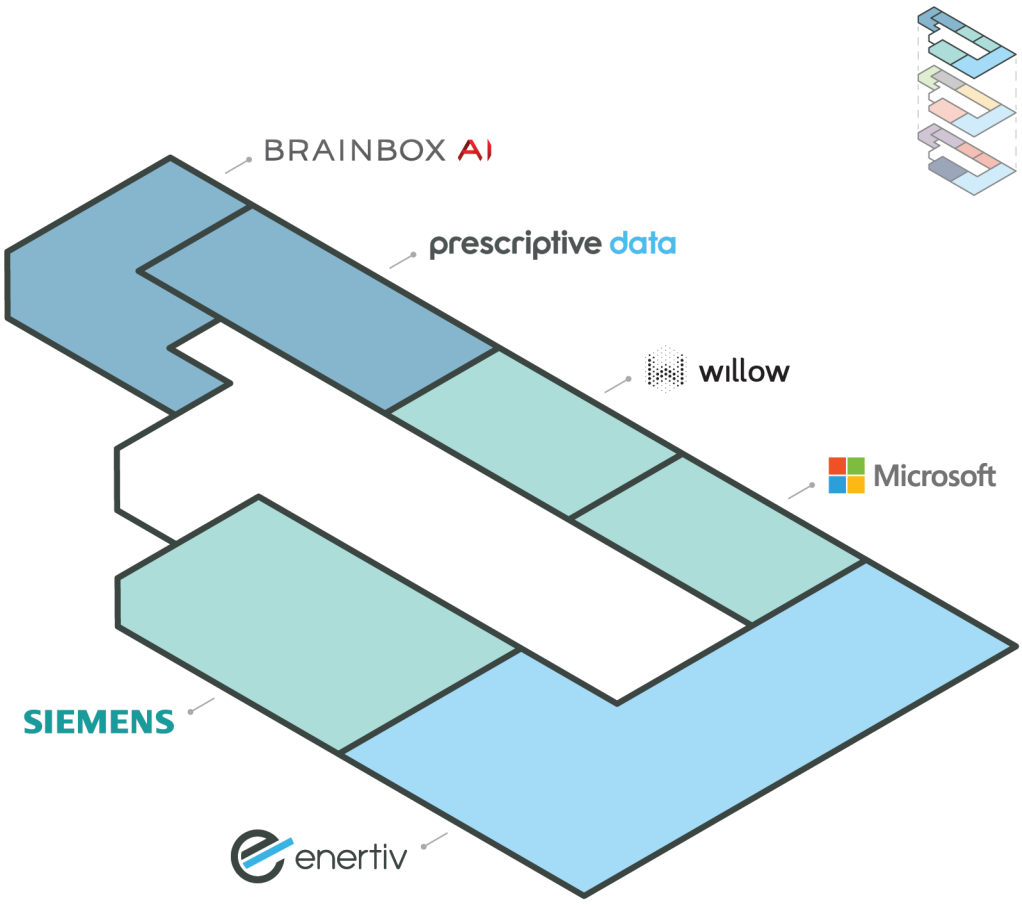
Submetering can be a very complicated undertaking. While it may be appealing to skip straight to a fully automated process, it usually makes sense to start with digitizing manual reads and then transition to a more automated process over time.

Providers

- Enertiv
- SourceOne
- Aquicore

Floor 3 — Intelligent Buildings

Intelligent Buildings



Intelligent buildings are the class of technology that go beyond basic optimization and approach a world where buildings run themselves. While these get the bulk of media attention today, their real-world applications are still relatively limited due to the prerequisites required to implement them.

There are several categories of technology within intelligent buildings.

Jump to a solution in Intelligent Buildings

- Predictive Maintenance
- Digital Twins
- Autonomous HVAC Controls

Predictive Maintenance

Purpose

The purpose of predictive maintenance is to go beyond fault detection and start to dynamically maintain equipment based on what the conditions indicate are necessary.

Example

An air handling unit, which is due for preventative maintenance in 3 months, starts showing signs of degradation and operators are alerted to perform maintenance sooner.

Value

Predictive maintenance has been shown to reduce overall maintenance costs by 8–12% beyond preventative maintenance.

Pitfalls to Avoid

Predictive maintenance is much more common in manufacturing than in commercial real estate. It may be tempting to try to utilize a provider from the manufacturing space, but it is unlikely to fit into the budget of commercial real estate.

Providers

- Enertiv

Digital Twins

Purpose

The purpose of a digital twin is to be able to remotely monitor, diagnose, troubleshoot, and manage physical assets.

Example

A portfolio operations manager in charge of 40 buildings notices that a fault has been detected and one of his operators needs assistance. The manger pulls up the digital twin, which houses historical and real-time data to guide the operator to a resolution without having to physically move.

Value

Digital twins promise to be a single source of truth for all building operations-related information as well as a way to reduce travel time and improve processes like construction to operator hand-off, training new operators, and onboarding services companies.

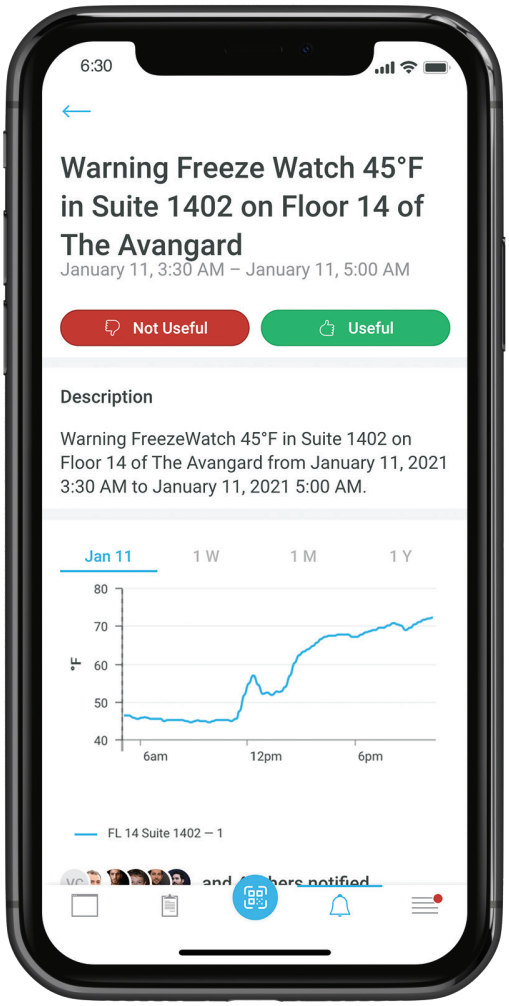


Fig. 4 — Fault Detection in Enertiv App

Pitfalls to Avoid

Some digital twins require an up-to-date building information model (BIM) in order to generate the spatial aspect of the virtual replica. While this produces an accurate digital twin, many buildings have not updated the BIM since construction (if it ever existed).

Providers

- Enertiv (lite)
- Willow
- Prescriptive Data

Autonomous HVAC Controls

Purpose

To completely remove the human element from HVAC controls and utilize the power of artificial intelligence.

Example

The software ingests BMS data just like BMS Optimization but instead of supplying prescriptive recommendations, the software uses artificial intelligence to determine the optimal configurations and remotely controls the HVAC itself.

Value

Humans are fallible and AI can see patterns that no human could. Handing the keys over to a software can save significant energy costs.

Pitfalls to Avoid

There are cybersecurity concerns involved in having two-way communication with controls. Buildings have been held hostage by hackers and the risk is much higher when controls are involved. In addition, automation to this extent can cause operators to be resistant and dig in deeper to the status quo.

Providers

- BrainBox AI

Conclusion

The most important thing to keep in mind when evaluating operations technology is that the status quo is costly. Every day that passes with pen and paper-based processes and spreadsheets is costing the portfolio money.

Nevertheless, there is a huge range of technologies to explore and moving quickly without a clear understanding of the market can result in adopting dozens of solutions that only serve one narrow purposes.

Other areas of the commercial real estate business, such as property management, construction, and leasing have comprehensive platforms. In those cases, everyone in the organization knows that any questions in that domain can be found in that platform.

Why should operations be any different?

That being said, it's naïve to think that a comprehensive platform will be adopted all at once. Even when looking at broad platforms, it makes sense to focus on one aspect first, such as maintenance or tenant billing. That's how the most successful have scaled their technology adoption to date.