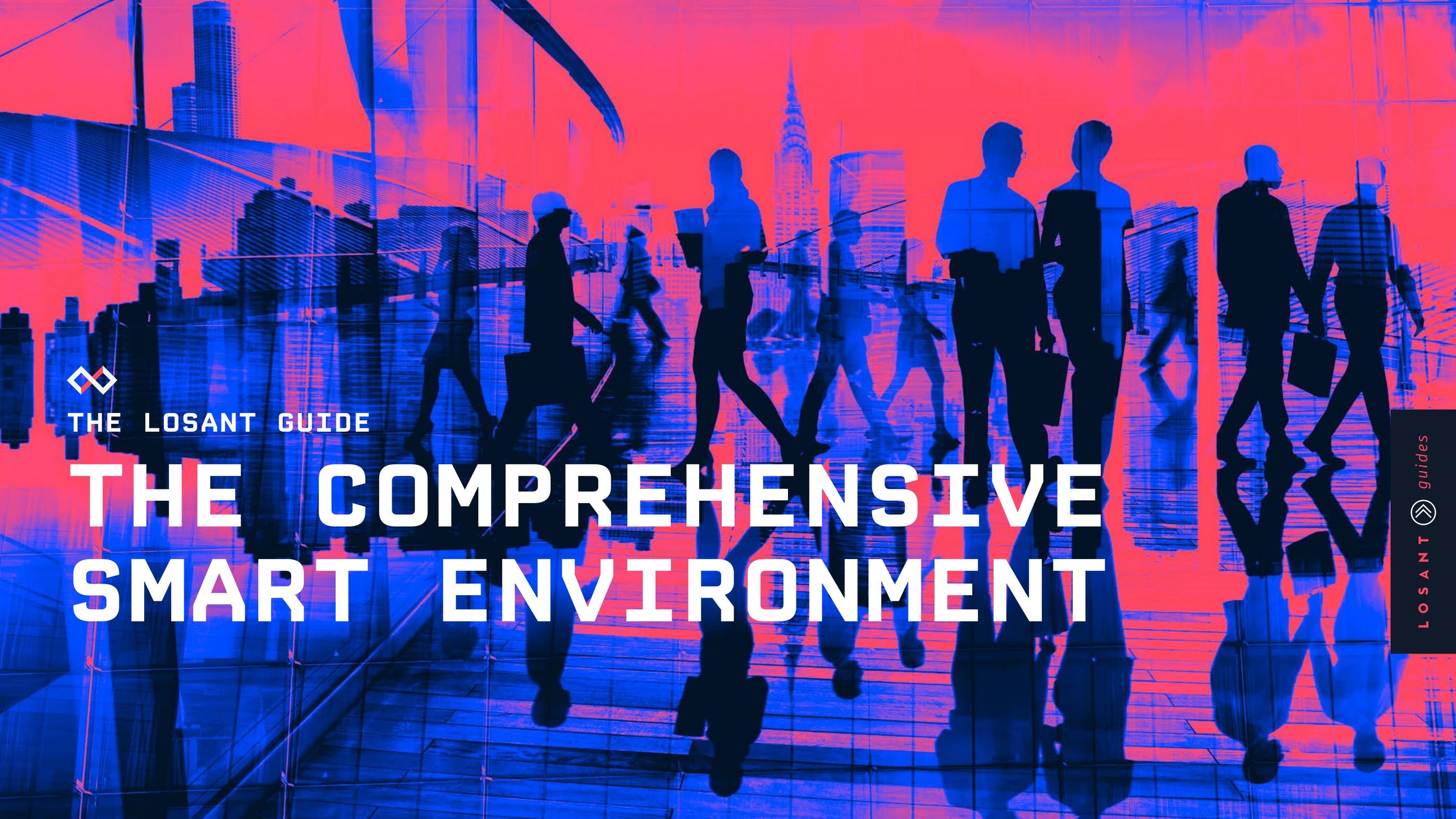


THE LOSANT GUIDE

THE COMPREHENSIVE SMART ENVIRONMENT

LOSANT guides

THE SMART ENVIRONMENT DEFINED

POSSIBLE SMART ENVIRONMENT APPLICATIONS

Innovative workspaces

Smart appliance integration (dishwasher, coffee maker)

Space utilization

Real-time resource management

Hot desking

Asset tracking

Enhanced security

Seamless conference room presentations

Energy efficiency

Employee retention based on a one-of-a-kind experience

Data-driven decision making

Air quality measurement

Whether your enterprise occupies a city office building with a view, a loft in a refurbished historical space, newly constructed warehouses or global locations - every environment has an impact on the way business is conducted and the way your organization is perceived.

Enterprises have taken note, as evidenced by the rising smart office market. Otherwise well-known and established brands are investing significant funds for open floor plans and hot desks to attract college graduates and top talent. According to Grand View Research, smart office spending is set to reach more than $57 billion by 2025.

An innovative environment drives an innovative team. However, trendy designs and disparate systems require sophisticated orchestration to create a true smart environment. By incorporating technology that can gather data about how the people in your environment use space and resources you will be able to measure, then optimize.

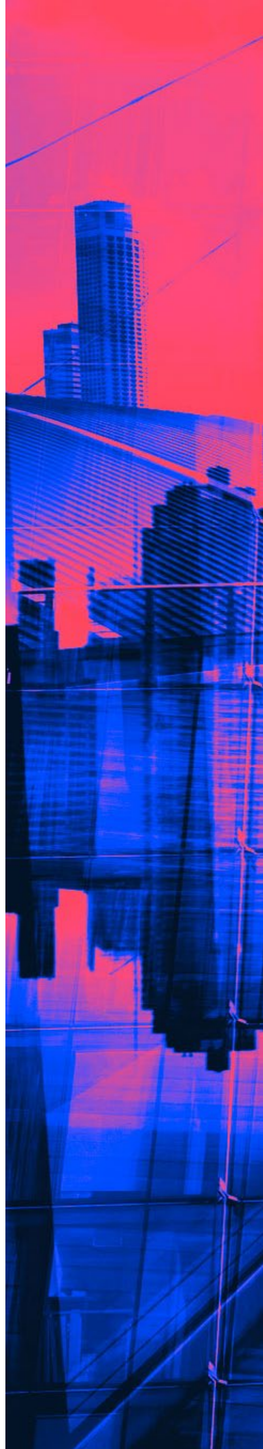
We define a smart environment as any environment which uses the seamless amalgamation of technology to extract data which will optimize resource efficiency, enhance productivity and provide security for associates in offices, buildings, in warehouses, or on campuses. A smart environment reflects an organization's ability to respond in real time and an organization's commitment to decisions backed by data.

HOW DO I GET THERE?

The way forward is not always so clear. In order to create a comprehensive smart environment, organizations must combine the strengths of existing assets including building management systems, IT properties, and security systems (cyber and physical) with new technology. It is our practice to help smart environment creators get a single view of assets, normalize the data and create applications to best utilize the information.

THE PURPOSE OF THIS GUIDE IS TO HELP DECISION-MAKERS:

1. ***Determine which smart environment solutions are possible***
2. ***Understand how internal and external partners work together to create a smart environment***
3. ***Evaluate existing systems and learn how to get started***



PART 1

BUILDING THE SMART ENVIRONMENT

Enterprises can use the smart environment to get a single view of all of their assets. There are a number of ways to begin to implement smart environment solutions with IoT.

> ***"Marrying newly collected data with information from existing systems is becoming imperative. Plant or facility stakeholders are challenged to navigate many silos of data to gather the true state of their operation. IoT solutions allow for an aggregate view of data to impact meaningful decisions."***
>
> PAT HUGHES
> STRATEGIC PARTNER MANAGER, LOSANT

Consider the opportunities that advanced data have afforded modern businesses. Prior to the invention of the arsenal of tools created to manage customers, salespeople were left to guess about other products that would serve their customers. Salespeople relied on their customers to tell them when they needed replenishment and couldn't take advantage of the arrival of new sales opportunities. Today, data-backed businesses like Hubspot and Salesforce are in one of the fastest growing sectors of software and projected to earn more than $80B by 2025. Expand your vision of the smart environment beyond sensor lights and a programmable thermostat. There is immense value in being able to gather new data using IoT and combine it with data from existing systems. New intelligence moves organizations towards making more informed decisions.

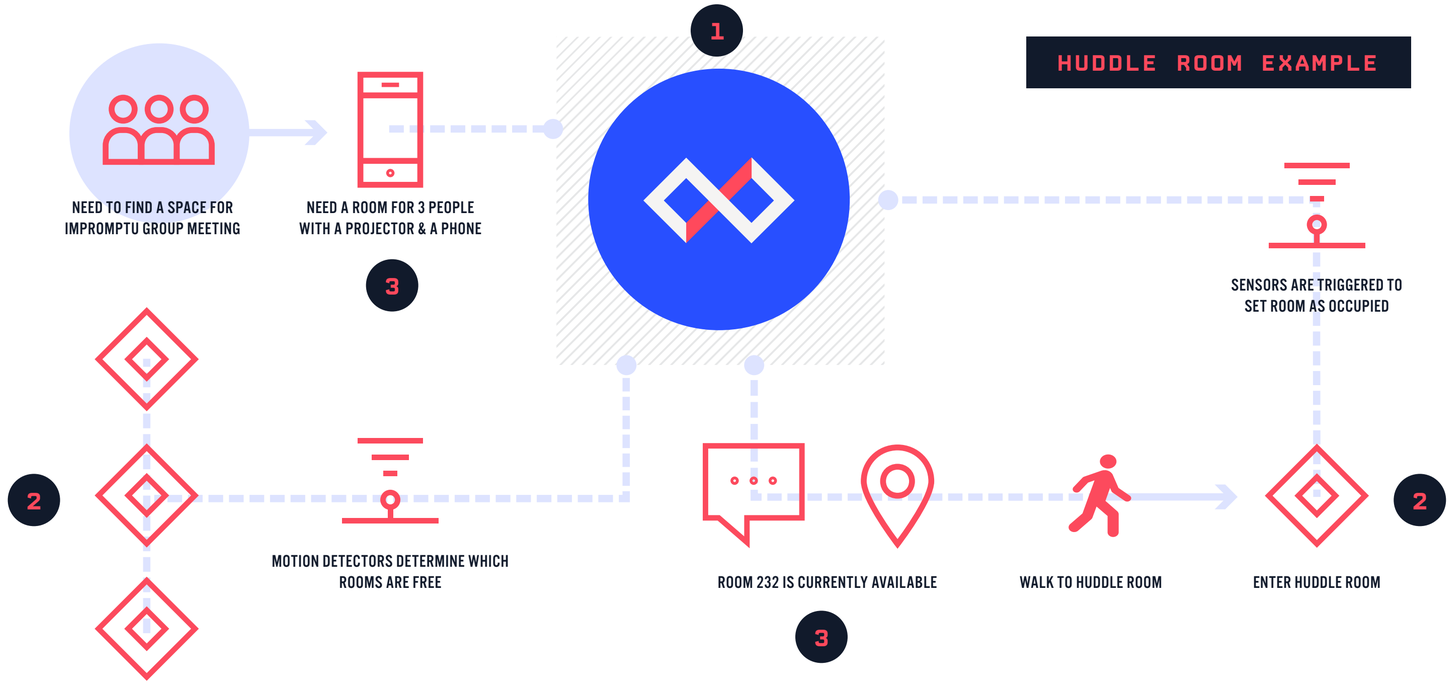
SMART ENVIRONMENT ORCHESTRATION

While it may feel overwhelming to think of an onslaught of data streaming into a building management or existing IT system, the reality is that IoT platforms were created to appropriately collect, visualize, analyze and store the data that you choose to receive from your environment. The Losant Enterprise IoT Platform is designed as an orchestration layer which facilitates seamless interactions between smart office systems and the people that will use them. Data from multiple systems are combined into a single-source API for all building systems which makes it simple to change or upgrade components in the future.

ORCHESTRATION 1
Communicate, command, and control in one platform

ABSTRACTION 2
Pull the information in from devices and other physical and digital sources

NORMALIZATION 3
Access data from all building systems in a single, unified format



The primary benefit of a platform in the smart environment is to orchestrate all of the devices and data sources, abstract data and then normalize it to provide useful end-user experiences.

CASE STUDY

LABORATORY ASSET MONITORING

Virtually any environment can become a smart environment. A university professor found a way to turn raw data from his lab into a solution that improved employee scheduling, helped his team monitor its environment and preserve high-value assets.

A biochemistry professor on the campus of the University of California - San Francisco, needed to create an automated solution for monitoring conditions in the university's Cryonics lab. The lab is home to two high-value Krios cryo-electron microscopes which require liquid nitrogen tanks, off-site UPS systems and a temperature and vibration-controlled facility. Using the Losant Enterprise IoT Platform and Particle equipment, Dr. Agard built a connected solution to monitor assets and alert staff only if conditions require attention.

KEY OBJECTIVES

- *Activate a smart replenishment system*
- *Optimize labor force*
- *Provide attentive customer service*

RECOMMENDED NEXT STEPS

- Design your vision for your enterprise's smart environment.
- Identify opportunities. Discover which resources are in high-demand that could benefit from being reserved for use.
- Brainstorm ways your team can improve the employee, guest or customer experience in your environment by enabling responses to real-time data.

PART 2

THE SMART ENVIRONMENT TEAM

A team which consists of valuable internal and external partners will help to create a successful smart environment.

> ***"Smart cities and utilities collaborate with partners to integrate sensors, edge computing devices, and applications to build smart environments. To leverage the strengths each partner brings to the table, [our] partner and developer programs use open standards to enable seamless collaboration. [We] enable partners to utilize best-in-breed sensing technology and standards-based networking technology to equip smart environments to solve modern IoT challenges with integrated solutions."***
>
> TODD THAYER
> ITRON

A smart environment is only limited by an organization's imagination (or budget). Start with the opportunity that will delight your workforce or increase efficiency in a way that complements your organization's business goals. With the right partners, a smart environment is well within reach.

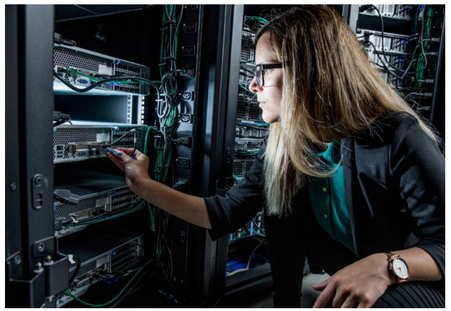
THE SMART ENVIRONMENT TEAM

In our first guide to digital transformation, we emphasized the need for teams to achieve internal buy-in from the leadership before beginning an IoT project. This sentiment is especially true for any stakeholder interested in constructing or transforming an enterprise space into a smart environment or creating intelligent spaces. Your team should consist of internal stakeholders -from facilities, IT, HR and security - and external partners who will help build your smart environment solution.

Before you begin, work to gain a complete picture of your digital and physical assets.

FACILITIES

- Building
- Infrastructure
- Mechanicals - Electrical
- HVAC
- Building Performance



IT

- Network Tools
- Network Security
- IT Service Management
- ServiceNow

SECURITY

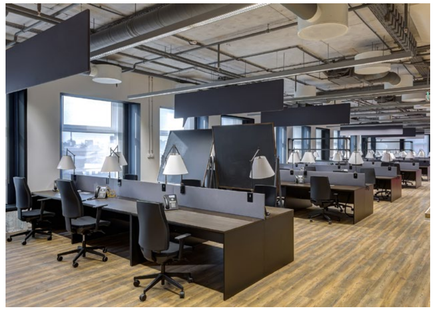
- Guards
- Badges
- Physical Security Systems
- Visitor Experience

HR

- Innovation
- Employee Experience
- Employee Safety

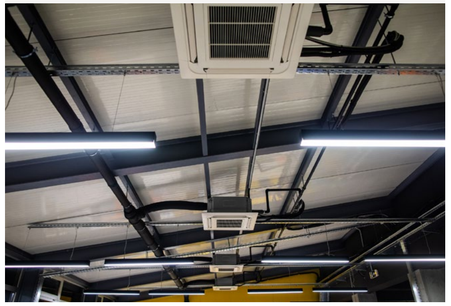
ENVISION A COMPREHENSIVE SMART ENVIRONMENT

OFFICE



In an office, a solution could be as simple as providing a screen to help associates identify available desks in an open environment or track iPads on a dashboard. Or, it could be as thorough as enabling a coffee machine to create a latte according to an executive's specifications upon his or her arrival.

FACILITIES



On a building floor, a solution could enable security teams to monitor visitor activity live on a map, or help facility teams sync motion sensor data with HVAC controls to automatically regulate temperatures in occupied and unoccupied spaces, storing data about resources that are not being used to eventually reduce costs.

WAREHOUSE

In a warehouse, a solution could be as simple as monitoring inventory systems on a dashboard or using RFID to prevent loss and theft. Or, it could be as thorough as connecting inventory management data to purchasing systems to automatically replenish parts or items nearly out of stock.

CAMPUS

On a campus of several buildings a connected solution could help a leadership team mitigate security concerns with gunfire detection technology; monitor high-value or frequently-used equipment; measure and analyze food or water consumption and boost sustainability efforts. Smart environment technology can also provide an additional layer for secured areas, confidential information or help provide stakeholders with critical budget and resource allocation information.

IDENTIFY EXTERNAL PARTNERS

Each solution will require a different process and set of tools. At minimum, you will need to consult with the following partners:

IoT HARDWARE PARTNERS
Sensors, gateways

SMART EQUIPMENT PARTNERS
Intelligent light fixtures, intelligent thermostats, motion sensors, weight sensors, inventory monitors

CONNECTIVITY NETWORK
LoRa, ultra-wideband, wifi

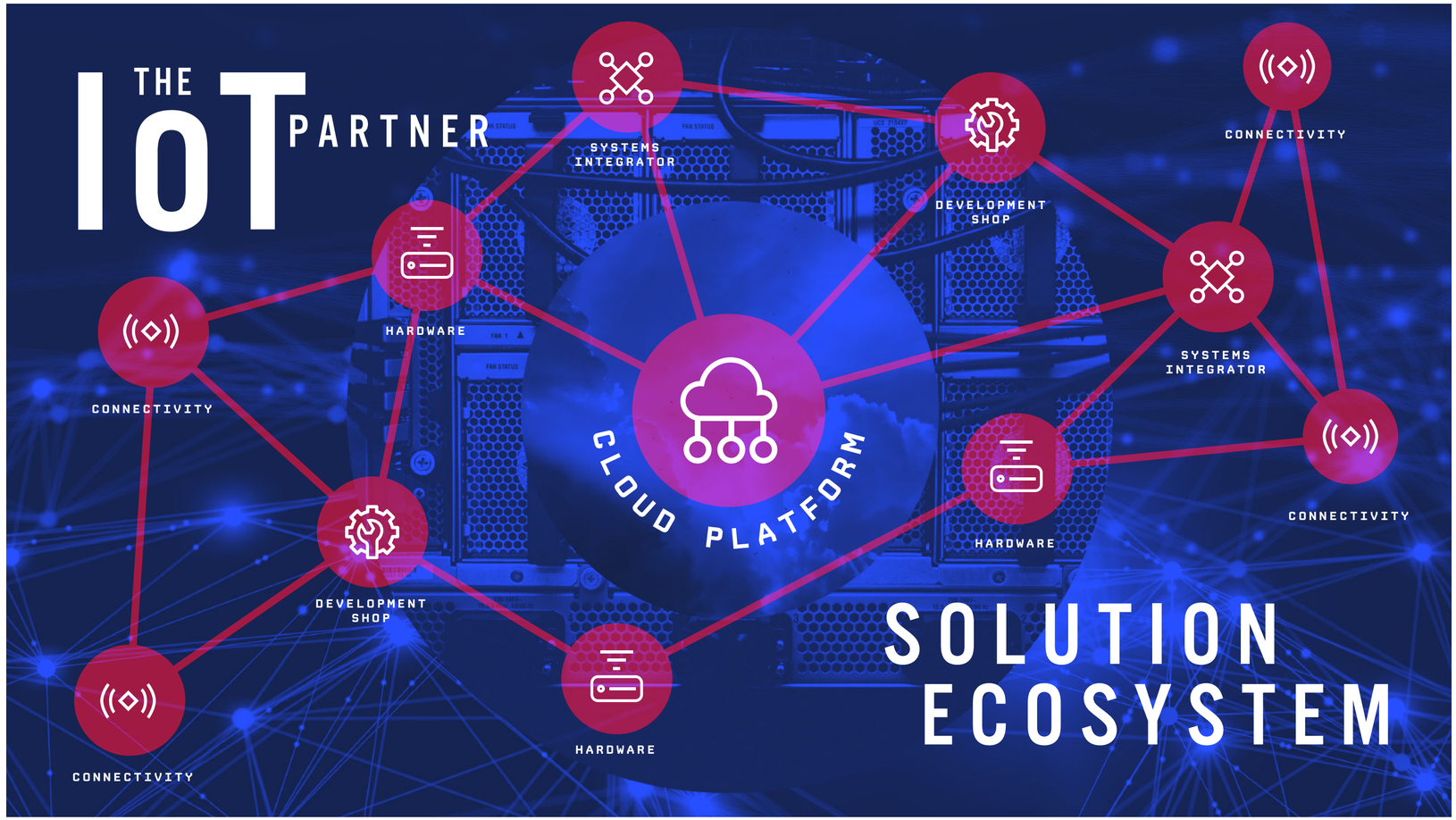
SOFTWARE PLATFORM
Losant, equipped to create end-user experiences

SYSTEMS INTEGRATORS
Engineers

QUESTIONS TO ASK

What problem are you trying to solve?

What data are you trying to collect?



LOSANT INSIGHTS FROM SMART ENVIRONMENT APPLICATIONS

The Losant Enterprise IoT Platform can communicate with systems using a variety of different protocols which enables our team to work with building automation system manufacturers, hardware manufacturers and incorporate an organization's IT requirements. The flexibility of the platform also enables our team to start small with one solution, and extend capabilities for future smart environment solutions.

SPACE UTILIZATION

For space utilization or conference room solutions, an organization may need motion sensors connected to an API to seamlessly share.

ASSET TRACKING

For asset-tracking solutions, depending on the asset, an organization may need scales, distance sensors or GPS sensors to determine the precise location of a high-priced asset.

ENERGY EFFICIENCY

For energy efficiency solutions, an organization may require smart lighting hardware, combined with an API to send data to the platform.

CASE STUDY

ROOM & RESOURCE MANAGEMENT

aruba
a Hewlett Packard Enterprise company

KEY OBJECTIVE

- *Optimize resource utilization across a campus*

Many organizations implement smart environment solutions to increase efficiency. Our partners at Aruba began combining information from systems with Losant some time ago to eliminate conference room confusion.

Conference rooms in large enterprise spaces are often in high demand and meetings have a tendency to go over time. Perhaps you've experienced standing outside of a room while others finished up. Aruba wanted to make the meeting transfer process more seamless. By leveraging their smart lighting system and their calendar system, they created a last call visual indicator. When a meeting is nearing its end, lights will blink when five minutes remain and again when two minutes remain to politely alert meeting attendees. Information from this initial project has been helpful in other ways to inform the building staff which conference rooms were in use and which ones were open.

RECOMMENDED NEXT STEPS

- Determine your internal team of stakeholders (include IT).
- Identify which external partners you will need.
- Become familiar with your organization's cybersecurity guidelines and policies.
- Create a method or flow of how will you receive data from your environment.
- Create a plan for your organization to respond to the data it receives.

SECURING YOUR SMART ENVIRONMENT

There is a lot of discussion about the vulnerability of smart homes, smart buildings and smart offices. Although no manufacturer or partner can guarantee invincibility, we believe there are a few ways to protect smart environment technology.

BEGIN A SECONDARY NETWORK

Create a dedicated network for your IoT devices. In a smart environment, you will be installing thousands of new devices in your environment which will introduce a lot of surface area and vulnerability. If these new devices don't touch your core network but interact with a gateway instead, you will reduce the surface area and vulnerability by volume. A gateway limits the surface area for attack. We've seen a lot of instances where others have implemented a cellular network to avoid IT, but we don't recommend avoiding your IT department.

ELIMINATE PHYSICAL ACCESS

Ensure sensors, gateways and other devices responsible for collecting information are out of plain sight and not easily removed from their environment. Manufacturers often use the same username and password for the millions of devices they make and sometimes those are printed on the physical device.

CREATE UNIQUE KEYS

Unique authentication for every device also helps to prevent an attack.

INVOLVE THE IT DEPARTMENT

IT departments are trained to protect and maintain an organization's existing systems. Ensuring your organization's IT department is aware will prevent the team from removing foreign devices from the environment.

APPLY EXISTING SECURITY BEST PRACTICES

Your organization likely already has best practices in place. Ensure your smart environment suppliers and team adheres to existing security best practices. The same technology we use to do internet banking can be used for IoT. You don't have to reinvent the wheel or invent new security practices for IoT.

PART 3

DEPLOYING THE SMART ENVIRONMENT

There is no one standard method our team uses to deploy a smart environment. By now you've learned that a smart environment can take shape virtually anywhere. Despite the differences, there are a few common practices every organization should consider.

> ***"Through a PoC we were able to show immediate value. We started small with one focused goal and have been able to expand that to solve multiple issues rather quickly."***
>
> ADAM DANIEL
> VP, SOLUTIONS
> LOSANT

DEFINE THE SHORT-TERM AND LONG-TERM STRATEGY

When creating a budget and timeline, it is important to note that a solution put in place to manage conference room space could be executed in months, but a solution created to provide additional security for a workspace could take far more time to implement. For instance, if custom hardware is required, a three- to six-month lead time is to be expected.

CREATE A PROOF OF CONCEPT

Once you have decided on a path forward, engage your internal team and external partners to design a PoC which will help you test the technology. A low-risk proof of concept is the best way to introduce a solution to an organization. The purpose of a PoC is to experiment with a solution in your environment, collect data, and evaluate performance from a set timeline on a set budget.

PLAN A SMALL-SCALE ROLLOUT

A pilot, or small scale rollout gives organizations the opportunity to identify any hiccups with hardware, iron out any kinks in the installation procedure, and receive feedback from users. Additionally, the pilot gives enterprises a chance to develop a process for other business units and solve problems before scaling up.

MAINTAINING THE SMART ENVIRONMENT

In each of our smart environment implementations, a different team led the charge. In one example, the innovation team sought to improve a major issue to provide a better overall customer experience and brought the other parties (facilities, IT) onboard. In another example, the security team used IoT to create a more secure environment and worked with IT to develop the specifications for a solution that would work within their cybersecurity standards.

As you build your smart environment solution, install new hardware or implement new connectivity systems it is important to consider how the complete solution will be maintained. For instance, if the technology in the conference room isn't functioning, or the hot desking application is out of sync, people who rely on the technology to do their job will need to know who to call. Further, if the IT department was not involved in the development of smart environment applications, they may not be able to fix the issues that arise.

This is still an untapped opportunity in IoT.

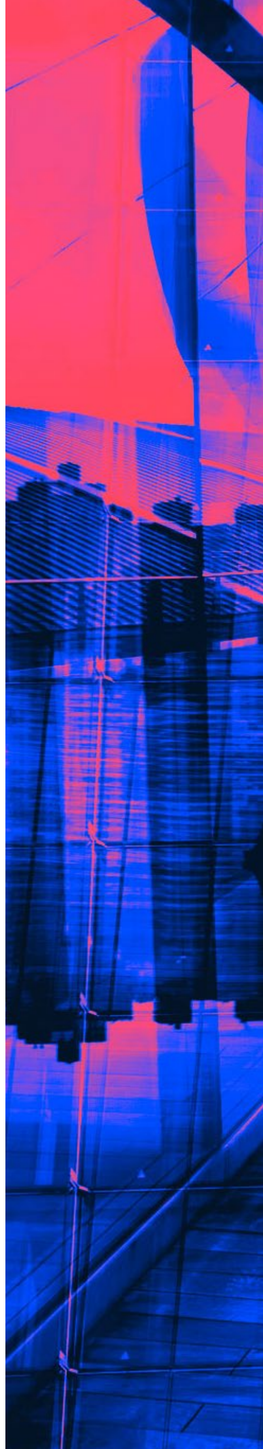
Will the group that initiated the project, facilities, IT, operations or a new group answer service calls? The answer could come out of a PoC process. The answer will also be unique to your organization. Start by thinking about the business processes already in place when something doesn't work. We'd suggest designing a business process for service based on the equipment that is malfunctioning. Define this for users in the environment before your project is rolled out.

QUESTIONS TO ASK

How will you receive feedback about your smart environment solution?

Who owns this, who is the point person or responsible party?

Who will maintain this solution?



CASE STUDY

GUEST EXPERIENCE IMPROVEMENT

CINCINNATI/NORTHERN KENTUCKY INTERNATIONAL AIRPORT

One of our clients wanted to improve their customers' experience. Market research revealed that clean restrooms were one of the leading factors that contributed to a positive traveler experience. Our client decided to focus on restroom cleanliness to improve the experience overall. We worked with the client's internal team to begin a proof of concept to keep paper goods replenished but quickly learned that the sensors could not operate effectively because of the dust produced in the dispenser. In the end, the client learned that data could be collected from another source. The client used a formula based on the number of visits and combined data from other sources within an API to provide guests with the best restroom experience.

KEY OBJECTIVE

- *Improve traveler experience*

RECOMMENDED NEXT STEPS

- Collaborate with internal and external teams to create a complete production plan.
- Prepare a home for the data your solution will return and understand how it will be used for a positive business impact.
- Continuously monitor the health of the smart environment solution with application monitoring software.

GETTING STARTED GUIDE

We encourage our customers to start small, begin with one problem, discover how the data can help an organization make decisions and then tackle another opportunity area.

The path to constructing a smart environment solution begins by identifying opportunities, taking inventory of the systems in place and procuring the additional hardware required to begin. Below are some questions to ask your internal team of stakeholders to get started.

Identify the problem or opportunity area

- How can your organization improve an experience for your community?
- What can be made more efficient?
- How can your organization shave time from an activity and make associates more productive?

Take inventory of existing data and systems

- Which systems already generate data and how do we access it?
- Can the IoT platform we've selected ingest data from our systems?

Determine metrics

- How can your team use data to solve a current or potential problem?
- Are there technologies that we can use to save our associates' time?
- How can data help your organization optimize a process or save resources?

Select partners

- What does your organization want to measure or track?
- What kind of hardware will help gather data?
- Will the equipment selected provide the data we need to make decisions?

Initiate a proof of concept

- What will it take to create a small-scale execution to test the technology?
- Will our partners offer a test environment?
- How will we define success for a PoC?

LOSANT

WHAT IS LOSANT?

Losant is an easy-to-use and powerful enterprise IoT platform designed to help teams quickly and securely build complex real-time connected solutions. Losant uses open communication standards to provide connectivity from one to millions of devices and provides data collection, aggregation, and visualization features to empower enterprise teams with new data insights. Edge features are integrated directly into the Losant IoT platform for seamless integration of connected and non-connected devices. Start independently or work with Losant's experienced solutions engineers.

www.losant.com