

THE LOSANT GUIDE I O T IMPLEMENTATION: FROM CONCEPT TO PRODUCTION



"In the IoT industry we're going to continue to see new capabilities around making it easier and easier for enterprises and mediumsized businesses to take data and use it - whether that's building machine learning models, building simple algorithms to understand data, or presenting the data in a meaningful way for customers to gather insights from the information."

CHARLIE KEY

CO-FOUNDER /CEO LOSANT





THERE ARE MANY EXCITING WAYS TO MOVE **YOUR BUSINESS FORWARD WITH IOT**

LOSANT PERSPECTIVE

After helping several organizations move from concept to production, we developed this guide to help others overcome the obstacles that hinder enterprises from beginning digital transformation with IoT. Our guide will help you create a plan to address these issues and successfully implement IoT in your organization.



FIELD CAN LEAD TO NEW

















1 / PROBLEM

"Every customer already has information. Maybe it's an ERP system, maybe it's a customer database that already exists and you want to tap into that as well. You may want to bring in sensor data in different forms and interface with existing data in different forms. All of this information is coming in differently, how do we combine that together in a way that we can work with it?"

BRANDON CANNADAY

CO-FOUNDER /CPO LOSANT







One of our clients approached us with the problem of losing high-value equipment. We wanted to help them track the equipment, eliminate replacement costs altogether and improve efficiency as the problem disrupted customer service. After our client installed GPS location sensors and built an application on top of the Losant platform, they were able to see the location of high-value equipment on a map, which increased the team's productivity.

"Large enterprises are gathering" resources as they figure out the areas where they don't have specific expertise and want to fulfill it to get to the next level of digital transformation using IoT."

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CHARLIE KEY, **CO-FOUNDER / CEO** LOSANT

1 / PROBLEM

DISRUPTION IS INEVITABLE

Analysts recommend a digital business plan. Outdated processes are draining budgets and labor resources. Data is everywhere and can help get you to fruitful solutions but your team is challenged with knowing which data sources will be the most beneficial. There are more reasons to begin digital transformation and implement IoT than there are reasons not to. Our recommendation is to start small.

Many of our other clients have found success by doing this one thing first: select one challenge or problem that can be solved with data.

Data from IoT can offer solutions for many internal and external issues. An internal process improvement could also enhance customer service. Below are a few questions to help you identify problems that can be solved with data.

- What's missing?
- What information is already accessible?
- What are we doing well?
- What could we do better?
- How can we enhance the client experience?
- How can we reduce costs?
- How can we upgrade core services or products?
- How can we offer more?

You can begin to understand your customers' common pain points by talking with your sales team or any of your teams that come in contact with your customers. After a few collaborative conversations, the greatest opportunity will reveal itself. Another way to identify opportunity areas is by conducting a survey. It is very important to connect the dots between how a data solution will return real value to the consumer and positively impact the business.

Take the smart bulb as an example - many manufacturers rushed to create a smart bulb because it seemed like the appropriate use of new technology, but the product didn't address known customer pain points or connect to real value. The smart thermostat, however, was immediately associated with energy cost savings and widely adopted.

- Gain support from stakeholders and internal teams.
- Research. Talk with your sales and customer support teams to discover common issues. Conduct user surveys to learn where the opportunity areas are.
- Pick one problem that can be solved with data.
- Align on how the results are tied to real value for the organization.



2 / PARTNERS

"Partnerships are critical. I always use the quote if you want to go fast, go alone; if you want to go far, go together. I am really fascinated by the fact that companies in our industry have to work together now to really create a solution. It's not the one, lone wolf. Partnerships are required for IoT. They are a necessity, not just a nice to have. The fact that this happens means companies can share information, you can leverage best-of-breed technology across the ecosystem and actually deliver the best solution for the customer. Partnerships are really exciting in IoT."

PADMA DUVVURI

HEAD OF BUSINESS DEVELOPMENT ELECTRIC IMP







"Our partners are vital components of our customers' success. Whether bringing technical expertise in sensors, communication networks or hardware, or vertical application knowledge, their contribution augments the Losant IoT platform. We know that IoT solutions can come in all shapes and sizes and there really isn't a "one-stop shop" that can deliver the entire value of the ecosystem. Losant continues to bring in partners that can fill crucial needs within the IoT solution stack."

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PAT HUGHES STRATEGIC PARTNER MANAGER LOSANT

2 / PARTNERS

The IoT landscape is complex, and your project will undoubtedly require more than one partner. This guide will help you understand the value of the partner ecosystem and how to navigate. The quality of your partners will determine your level of success. Cisco conducted a study of 1,845 IT decision-makers from three countries and it was revealed that partnership and expertise accounted for 48 percent of successful IoT implementations.

SOME ASSEMBLY REQUIRED

Enterprises use IoT to gather data from any number of internal or external sources. Using LoRa, WiFi, cellular NB-IoT or other connectivity options, data from IoT devices including sensors, gateways, machine controllers or business CRM software is collected, visualized and analyzed with a cloud-based software platform. No one supplier offers a complete out-of-the-box IoT solution.

Many organizations partner with a solution builder to combine hardware, connectivity, and an IoT platform into a working solution. At Losant, we provide our clients with another option. In addition to providing an application enablement platform to streamline development and quickly utilize data, we provide in-house Solution Engineers to help your internal team design a proof of concept and orchestrate the partners you will need.

When evaluating potential external partners, it's important to ask questions about business continuity, infrastructure, security, and connectivity requirements. It is also important to know what level of support is available following production. Some partners may not have implementation specialists, or you may be limited to online support during certain hours. Manage your expectations.

PLATFORM EVALUATION CHECKLIST

- **⊘** INDUSTRY KNOWLEDGE
- ✓ IoT KNOWLEDGE
- **⊘** QUALITY AND LEVEL OF SUPPORT AVAILABLE
- ✓ LIMITS ON DEVICES, PAYLOADS OR DATA
- **⊘** STABILITY
- **FUNCTIONALITY MEETS USE CASE NEEDS**
- **⊘** SECURITY
- ✓ HIGH AVAILABILITY/DISASTER RECOVERY
- **⊘** CONTINUING EDUCATION
- **OCUMENTATION**

A platform is central to your IoT solution; it connects data sources to devices and helps enterprises visualize the data. Platforms provide security, storage and help you create the workflows that will create end-user experiences.

- Select partners based on the problem you identified in the first part of this guide and their industry expertise.
- Identify and select a hardware partner or partners.
- Identify and select the appropriate connectivity partner.
- Evaluate platforms using our evaluation checklist.







CONNECTIVITY

HARDWARE

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DEVELOPMENT SHOP



CONNECTIVITY

HARDWARE

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2



3 / PROOF OF CONCEPT

"Even the idea of a new IoT initiative can be overwhelming. By keeping it simple and focusing on one proof point, whether it's platform, hardware, or business process, a PoC provides a low risk, quick, and lower stress way of getting started."

ADAM DANIEL

VP / ENTERPRISE SOLUTIONS LOSANT







A proof of concept can help you get to "no" quicker. One of our clients wanted to improve its customers' experience and felt that the best way to do this was by offering a clean restroom environment. We began 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 and decided to use another technology to get to the best restroom experience possible.

"Basically, you want to fail fast - if it's not going to work, it's ok - you didn't commit to a huge investment. It wasn't a big deal and you can move on to the next one that will work."

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BRANDON CANNADAY CO-FOUNDER / CPO LOSANT

3 / PROOF OF CONCEPT

Now that you have identified a problem to solve, it is time to design a proof of concept. A low-risk proof of concept is the best way to introduce IoT to any 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. A PoC with clear goals defined by your team will help to avoid scope creep and help you to determine whether the technology is operating, capturing data, and automating actions in its intended design.

An effective PoC requires a commitment of capital (\$10K-\$100K), time (30-180 days), and team collaboration to be successful. Involve your team of cross-functional decision-makers at the PoC stage to provide transparency and gain support.

WHO'S IN CHARGE?

Internal IoT talent is very rare. Your IT team is tasked with troubleshooting, maintaining systems and solving problems. Naturally, this team will focus on core business functions, which means you will need to rely on external technology partners, usually a system integrator or solution-builder to help develop an IoT strategy and plan. Implementation will require collaboration from IT software, IT hardware, product management, and UX or UI. Depending on the nature of your project, engineers, plant managers or manufacturing specialists may have helpful input as well. As mentioned before, it's critical to achieve the right balance of internal and external partners.

GETTING TO THE POINT

Full-scale IoT implementation is not always the result of a successful PoC. Sometimes, the result is learning that data infrastructure needs to be built to support a full-scale implementation. In other cases, enterprises discover that technologies less advanced than IoT can solve the problem. As mentioned above, it is better to learn with a low-risk PoC than through experimenting with a full-scale solution at full price.

- Gather your team and commit to an investment of time, budget, and resources for the PoC.
- Define goals and what success looks like for your organization.
- Develop an execution plan: acquire hardware, arrange connectivity, configure software.
- Execute and test drive the solution with your team, in your environment.
- Evaluate by measuring results against defined metrics.









DEVELOP

Create an execution plan. IoT requires hardware, a platform and connectivity. Select hardware for your organization's environment, configure software and determine which connectivity partners will work for the IoT solution. Implement concepts and ensure the definition of success is appropriate and measurable.



DEFINE

Collaborate with your internal team and IoT experts to collectively define goals, inputs, metrics, scope, risks and a schedule. One of the most critical steps is to use this team to define success which the project will consistently be measured against.



FROM PROBLEM TO POC IN WEEKS



EXECUTE

Execute the plan. Secure the required parts and install according to the plan. Collect data, implement concepts and clarify the definition of success to ensure the results will be able to be evaluated.



EVALUATE

Review results and compare outcomes to success criteria. Develop a full execution plan and align with a decision to move forward. Note: a failed PoC is perfectly fine. The point of this exercise is to learn quickly whether or not the technology can solve your problem.





3 / PROOF OF CONCEPT / CVG TRAIN TRACKER POC



The passenger train in the Cincinnati/ Northern Kentucky International Airport (CVG) was a common source of traveler frustration. The existing signage did not properly indicate wait times and it was unclear to new travelers where the train stopped. The concept CVG wanted to test was whether or not sensors could be added to the tunnel to track the train's location and provide better information to the traveler.







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3 / PROOF OF CONCEPT / CVG TRAIN TRACKER POC



In order to begin this project, CVG obtained buy-in from the appropriate teams within the organization. This included the train maintenance personnel, terminal operations staff, the chief innovation officer, and even their CEO. The goal of the PoC was to obtain what this group deemed was the most important information that the traveler required: where the train is and how long the train will take to reach the traveler. The scope of the project was set to a single train and three months of operations.



DEVELOP

This PoC required four sensors to be positioned along the train tunnel. CVG chose less expensive development boards and sensors since longevity of the hardware was not a concern. Each time the train passed the sensor a single message was sent to the Losant IoT platform over cellular connectivity. Losant was then used to process the raw data into the higher level insights, which included where the train was, which direction it was heading, and how long it would take to reach each stop from its current location. A Losant dashboard was then used to present the information to CVG's team for evaluation.







EXECUTE

The PoC project ran in a single train tunnel for approximately three months. CVG's team periodically verified the data was accurate by inspecting the Losant dashboard while watching the train travel through the airport. In this case, three months was a sufficient amount of time to cover the various scenarios the train typically experienced, which included scheduled maintenance and holiday traffic spikes.

EVALUATE

At the end of three months, the CVG team deemed this PoC a success. It met the goals that were originally defined, which were to accurately communicate the current location of the train and how long it will take to reach travelers at each stop. CVG opted to move forward with a production roll out to both trains. Full-scale production sensors and screens with custom visualizations are live today, actively improving CVG's traveler experience.



4 / PILOT



IOT IMPLEMENTATION: FROM CONCEPT TO PRODUCTION





We encourage our customers to start small with a proof of concept, then a pilot, or a small scale roll out with a limited group of users. One of our clients, NimbeLink, launched new functionality for its asset tracking product by first offering it to a beta group of customers before rolling it out to all. This gave the company the opportunity to collect feedback and institute any necessary changes before launching full-scale.

4 / PILOT

The purpose of a PoC is to test out the technology and determine whether the solution your team has designed is capable of returning the data required for your organization. The purpose of a pilot is to test a solution with a small group of users in its actual environment. We encourage our clients to start with a smallscale rollout, or a pilot to eliminate any issues with hardware or operations in a limited group.

DRESS REHEARSAL

A pilot run should be as close to production as possible. This is an opportunity to identify any hiccups with custom hardware in a smaller run (dozens versus thousands of parts), and to iron out any kinks in the installation procedure. Additionally, the pilot gives enterprises a chance to develop a process for other business units and solve problems in operations. Many major software companies and manufacturers follow this practice to manage the everchanging environment. For example, T-Mobile rolled out its NB-IoT network in Las Vegas six months before launching nationwide.

There are several ways to conduct a pilot program. An enterprise can target a single product line or model; a regional group similar to the T-Mobile example; a limited run for a small percentage of the total; or with a set of early adopters who may be more accepting of disruptions and happy to help with bringing new functionality to life. In any pilot program feedback is one of the most critical components. Ensure your system has a seamless way to capture feedback from users.



- Identify a volume or acceptable quantity to get a meaningful amount of feedback.
- Create a set of procedures for others to follow as close to production as possible - to identify problems in business operations.
- Tap manufacturing partners to do a small scale run - this is an opportunity to identify issues in the production of custom hardware.
- Integrate a feedback mechanism to get information from users in the field.
- Optimize production performance according to pilot results.



5 / PRODUCTION

"Enterprises -both medium and large- are starting to grasp where the value is in the Internet of Things for their businesses. The ROI is found in how they can take advantage of data coming from sensors. [Once that is discovered] we see less and less science projects in the IoT space and more and more pilots, proof of concepts and new production applications."

CHARLIE KEY

CO-FOUNDER / CEO LOSANT







One of our construction clients started with one problem: water leakage on construction sites. The company, which manages multiple sites, used IoT to monitor water flow and shutoff to prevent water waste and damage from unmonitored leaks on construction sites. They began by conducting a PoC on one site, then deployed a pilot to a small number of sites and has now implemented the solution at a much larger scale.

"The time is now to take that initial step and once you do - even if it is just a PoC - you will never look back. You will only be trying to figure out how to accelerate opportunities within your organization."

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STEVE MANDERY DIRECTOR OF BUSINESS DEVELOPMENT LOSANT

5 / PRODUCTION

By now you've heard the numbers: by 2020, there will be more than 50 billion connected devices in place to transform the way we work and live. Yet, there is very little detail about how these systems will be placed. We recommend creating your enterprise's complete production plan (including requirements, timing, budget and device quantities) after executing a successful proof of concept and pilot.

WHAT'S NEXT?

Scale up. Adjust devices, connectivity or partners as necessary based on learnings from the PoC. Create a tactical project plan, budget, and timeline for internal and external teams to produce your complete IoT solution. The physical installation may require collaboration between your external IoT partners, an internal IT group, facility management teams or customer site managers.

The integration of IoT is an iterative process. We infused this guide with information we learned from working with our clients to enable you to start small and repeat the process to create additional data-backed solutions in your organization. If you have followed the instructions in this guide to this point, you will have been able to confront and move beyond many of the common issues that cause implementations to fail.

We believe in the power of IoT to connect our world and work every day to help simplify methods for enterprises.

- Collaborate with internal and external teams as defined in the PoC process.
- Identify any additional teams needed for production -IT, facilities management, contractors, etc. - to design a tactical plan for production.
- Ensure data is easily accessible and able to be utilized for a positive business impact.
- Continuously monitor the health of the solution with application monitoring software.





5 / PRODUCTION

PROJECT VOLUME

Use the results of the PoC and pilot to gauge how many of each item you will need and how the hardware functioned in its intended environment.

How many devices will be required?

Designing and manufacturing custom hardware can cost a considerable amount of money. This answer will help determine the budget.

Can the hardware in the PoC be used for production? Or will new hardware be required?

Consider the battery life, installation process and how people will interact with it. This answer will also help determine the budget.

DATA

An IoT platform that brings millions of data points together should also be able to help your team quickly visualize and use data in reports, dashboards, graphs, maps or in other ways. As mentioned before, your IT team's focus is on maintaining systems and problem-solving. Ensure your solution-builder or platform team has prepared your organization to receive and respond to the data.

How often will these devices send data to the cloud? This answer will help determine how much data your platform provider is required to process and how much room you will need to store it.

Do you need the ability to make decisions locally without always being connected to a network?

This answer will help you to understand if edge computing should be part of your strategy.

Is your cloud prepared to receive the amount of data that will return?

This answer will help you to know if your infrastructure is prepared.

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BEFORE PROCEEDING TO PRODUCTION, CONSIDER THE FOLLOWING

SECURITY

In a survey conducted by Forrester Consulting of 603 IT decision-makers across several countries, 77 percent of the group admitted that increased usage of IoT devices creates a significant security challenge. It's apparent that security is the number one concern for enterprises implementing IoT.

What are the security requirements of your enterprise, customer or internal stakeholders?

Ensure your IoT team has followed any rules already in place for the organization.

How have your partners incorporated security?

Every partner should have industry standard encryption methods. We also recommend setting up penetration testing by a third-party security firm.



SUPPORT

A digital product requires new support options that may be different than your organization's traditional processes. Digital consumers or even internal users are accustomed to faster feedback cycles, forums where they can interact with other customers, and quick product revisions that address issues. Many traditional manufacturing companies have support systems in place that aren't tailored to this new environment.

If this solution breaks down, how will this new process be supported?

Your existing support structure may need to be adjusted to include the support of an IoT solution. A team will need to be trained to respond to IoT-specific issues. Additionally, if you are selling a solution, your customer will expect a prompt response to issues.

How will this solution be regularly monitored?

Often times, small issues can be resolved before they cause large problems. But, if your IoT solution fails, you should be alerted first. If you choose an IoT platform, monitoring services are often provided, but if you build your own solution, you'll want to subscribe to a cloud service dedicated to infrastructure monitoring (Datadog, Google Stackdriver, or Amazon CloudWatch).









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POST-PRODUCTION FOLLOW-UP ACTION ITEMS

MAINTAIN YOUR INVESTMENT

There's a big difference between investing in a physical product and investing in a digital product. Physical products will often depreciate over time but digital products have the potential to inherit new value through updates. Choose partners who are still investing in upgrading their systems for solutions that can continue to bring new features and new value to your business. Additionally, ensure you are capturing feedback from users to continuously improve the solution.





STORE DATA FOR FUTURE USE

An IoT solution should drive present and future value. Your organization now has the power to solve the initial problem and use the data garnered from your IoT devices in different ways. Ensure the historical data is stored securely for future use. There is no cap on the value that can be derived from data.

BEGIN THE PROCESS AGAIN WITH A NEW PROBLEM

A digital business model isn't born overnight. When stakeholders can experience the value of IoT data without risking a big budget, they are more likely to agree to additional future projects. Start small, refine the process and scale up.

RECOMMENDED NEXT STEPS

- Implement a feedback mechanism.
- Implement processes to update software.
- Store data for future use.

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• Continue this process again and again with new problems and data solutions.



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Brandon Cannaday is co-founder and CPO of Losant. He gains insights through direct interaction with customers, engagement on the forums, and working with the Losant Solutions team. Brandon has worked for more than ten years in enterprise software, which includes experience in the government sector. He began his career at Griffin Analytical, where he worked with C++ to build software for chemical detection. He also worked for Interactive Intelligence, where he focused on enterprise software with .Net as the primary technology. In 2012, Brandon co-founded Modulus with Charlie Key where he served as the CTO in charge of all technology architecture and product engineering.

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Charlie Key is co-founder and CEO of Losant. Prior to founding Losant, Charlie co-founded Modulus in 2012, a Node.js PaaS, with Brandon Cannaday and the company was acquired by Progress Software in 2014. Charlie has worked for more than ten years in the software development and platform space in multiple functions. He started by consulting at Sogeti where he completed projects for Procter & Gamble, General Electric, and other various companies. As a consultant, he built applications using a range of technologies, including PHP, .Net, Flex, and others. He then began working for Hyperquake, a digital agency, where he built applications for more than a dozen clients with Node.js, PHP, or .Net as the primary back-end with a touch of Ruby.

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Adam Daniel, Vice President of Enterprise Solutions for Losant, helps partners and enterprise clients use the Losant platform to build secure and scalable enterprise IoT solutions. Adam has 20 years of experience in software consulting and development. During his time consulting at Sogeti, he built largescale applications for Ethicon Endo-Surgery, General Electric, and other enterprises. As the Technology Director at Hyperquake, he led the technology team which created custom websites and applications for some of the world's largest brands including Procter & Gamble, Warner Bros, and Welch's.

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Pat Hughes leads strategic partnerships for Losant, engaging with ecosystem partners to bring endto-end solutions to market. Losant partners with MNO, MVNO, and other connectivity providers looking to leverage Losant's IoT application enablement platform for their commercial solutions. Verizon, Optus, Sigfox, and Ericsson are among those. Additionally, companies in the IoT hardware and sensor arena are key go to market partners. Pat has more than 20 years' experience in telecommunications and industrial IoT having brought solutions to market for Verizon and Qualcomm. Talk to Pat about potential Losant partner opportunities.



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Steve Mandery manages and maintains client relationships as the Director of Business Development for Losant. He has worked on independent entrepreneurial ventures for more than 15 years. He started by founding and growing a Cincinnati-based landscape company. He found success by landing and growing large-scale commercial contracts and launched Steve launched Contract Spot, an online invoicing product designed for the blue collar workforce. He landed partnerships with several large corporations including Angie's List and Sage. Following a management position with Angie's List, Steve launched Think University, a mobile gaming company. While acting as CEO of Think University, Steve landed partnerships with major brands including Pillow Pets, Care Bears and MadBalls.

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John Scheels interfaces daily with enterprise clients as the Sales Account Executive for Losant. Prior to joining Losant, John served as the VP of Sales for a local investment research firm. He also managed a midsized team for a national industrial distributor. During his tenure, John eclipsed all sales and revenue goals and scaled the research firm from a revenue, product offering, and global footprint perspective to over 100 countries. Within six months of joining HD Supply, John was promoted to lead the largest territory in the Western Region.





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

