WHITE PAPER

A better way to IoT: buy and build

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Original equipment manufacturers (OEMs) are feeling the pressure to deliver new products and capabilities faster than ever. More and more, these capabilities are built on a foundation of **smart, connected equipment**.

So, when OEMs look for an **IoT platform** to support connected equipment, "buy or build?" is often the first question. It's also the wrong question. See why a *buy and build* strategy can deliver a solid foundation for launching IoT services quickly, while enabling you to customize and extend your solutions to best meet your customers' needs.

Original equipment manufacturers need an IoT strategy

Machine operators are looking for equipment and digital solutions that enable them to improve performance. They are on the hunt for equipment providers who can help them reduce downtime, enhance efficiency, improve product quality—and ultimately improve their margins.

According to McKinsey, **remote asset condition monitoring** can **reduce maintenance costs by 30% and cut machine downtime by 50%**. Uptime equals revenue for equipment operators, giving OEMs every incentive to build smarter products that monitor equipment health and catch problems before they arise. Products that enable you to be more proactive and efficient with service calls, fixing problems faster. Products that enhance equipment performance for your customers to enhance the efficiency of their operations and improve output quality.

To survive and thrive in this new era, OEMs must start offering connected products. Smarter equipment that integrates the **Internet of Things** (IoT) helps build a future in which you deliver a better customer experience. With insights into how your equipment performs, and which features are most important to customers, you can increase the cadence of product development.

The value of connected equipment goes beyond uptime. For equipment makers, the source of value is steadily shifting from hardware to software and services. With intensifying global competition and increasing commodification, margins are eroding quickly. IoT-connected equipment opens the door to offering new revenue-generating services that bring in more, and more consistent, cash flow than a traditional one-time sales model. These services range from remote monitoring and aftermarket sales to new business models such as **Equipment-as-a-Service**. Creating an IoT strategy is complex, and executing it is even harder. Building solutions on your own can be challenging, leading many OEMs to look for a trusted advisor that can accelerate the creation of resilient **IoT services**.

If you don't take action now, trust that your competitors will—and soon. The benefits are too great to ignore.

Buy, build, or both? Choosing the best approach to develop smart, connected products

So, how do you get started on your journey to offering smart, connected equipment?

It is not a question to be taken lightly. The decisions you make at the beginning of your process to transition away from a traditional equipment sales model depends on your current resources and customer engagement strategy, and will shape the way you can plan and execute for years to come.

What path offers the most scalable approach, the fastest time to implementation, and the most cost-effective to build and maintain? This is the foundation for the question facing many equipment manufacturers: should you build an **IoT solution** in-house from the ground up, with unlimited customization geared to your specific needs? Or should you buy a commercially available platform as the basis of your strategy, even if it is missing features you want to support internally-facing operations or externally-facing customer services?

There are pros and cons to either approach. Soon, we'll also see why "buy or build" is a false choice.

Building your own IoT solutions: the pros and cons

You might think it's best to create your own solution. After all, you know your products well, and have a sense of the information and services your customers want. Let's see what you can expect if you build your own IoT solutions from the ground up.

The pros

The benefit of building your own IoT solutions is clear: the freedom to start from a clean sheet of paper and create a solution tailored to your needs, and the needs of your customers. You have control over the scope and function of your IoT solution. You can take advantage of in-house expertise to identify the information you want to generate for in-house consumption, or performance metrics to share with customers. You can decide on how best to integrate solutions with your current systems and processes. You can also align the IoT solution to your existing IT strategy, deploying on the systems and clouds that you already use, in harmony with your IT architecture.

The cons

Yet for all the perceived advantages of building your own IoT solutions, the list of cons is far longer. Together, these cons introduce headwinds that make it harder to launch new IoT-based services quickly, and harder to keep them delivering sustained value. When you build your own solutions, it's all too easy to approach IoT projects from a technology angle rather than focusing on your intended outcome. When project teams get bogged down by technical details, meeting end user needs takes a back seat to engineering.

- **Slower time to market lets competitors outpace you.** When building an IoT solution from scratch, you'll need to spend time assembling technology building blocks before you can even start building the value-added applications. For a point of comparison, think about the weeks and months it takes to procure, build and configure an on-premises data center, versus the hours and days it takes to spin up cloud computing resources. And when it comes time to update the software, you are on your own. Plus, speed is key to learning: the faster you can launch IoT solutions, the sooner you can measure what works and update your strategy.
- **A bigger up-front investment means a longer payback period.** Building your own IoT solutions generally means investing a larger upfront amount. You need to build the baseline, non-differentiating components of an IoT platform you would otherwise get out of the box. Higher up-front costs makes corporate buy-in challenging—to say nothing of the resources you are diverting from other parts of the business.

- **In-house skills are at a premium.** You'll need developers and engineers with a broad range of skills to **connect IoT devices**, create user-friendly platforms, and align IoT services with business goals. Expertise is scarce. Can you attract and retain that talent? Beecham Research has found that in-house expertise is rare—87% of companies they surveyed felt that they **lacked the right expertise to select and procure the right approach to device connectivity**, for example.
- **Scaling on your own is incredibly difficult.** Companies with sufficient in-house expertise can build a workable pilot project. But approaches that are feasible for a handful of machines or dozens of sensors can quickly run into roadblocks when it is time to add true enterprise capabilities to your project. Manufacturing services using connected equipment require **enterprise-grade IoT solutions**: high availability, security by design, scalability to tens of thousands of devices, multi-tenancy, fast recovery times, and efficient management.
- **IoT solutions are a service, not a product or a project.** IoT solutions you develop are not projects with a defined start and end date. They are not products in the traditional sense of build, sell and forget. Rather, they are services with a lifecycle that you have to support. They require continued maintenance, customer support and improvement. Because the lifecycle for software products is much shorter than for equipment (your area of expertise), you can expect multiple software updates for every generation of hardware you design and ship. As developers shift from building new products to supporting, maintaining and updating existing products, they become a cost center—leading to inevitable tradeoffs between maintaining what you have and building new innovative products.

In other words, when pursuing a "build" strategy for your IoT initiatives, with the right talent, you have the opportunity to build an exquisite solution. The solution may be beautifully engineered, but it will likely be slower out of the gate to launch. A custom-built solution tends to be inflexible to change. It requires upkeep that draws resources from your other initiatives. Costs scale fast, so you can't afford to have successful pilot projects scale without breaking the bank.

All these limitations mean that far more often that not, in-house projects ultimately lead to a dead end.

Buying an IoT platform: the pros and cons

What about the other end of the spectrum? Does buying an out-of-the-box IoT platform tailored to specific use cases lead to IoT solutions that fulfill your smart equipment strategy? There are numerous IoT platforms offering plug-and-play capabilities out of the box—what's the value of using a standardized approach?

The pros

When you purchase an IoT platform, you can expect to gain a partner that offers a certain level of industry and application expertise. Take advantage of pre-built tools that help you launch services around common use cases, such as **remote monitoring** or **predictive maintenance**, to see faster value. With the IoT partner hosting and managing your IoT solutions, your team can focus on adding customer value rather than managing infrastructure, configuring device communication, building security measures, and other aspects that make IoT challenging. In addition, many IoT providers build a partner ecosystem that make it easier to adopt complementary technologies from a group of industry providers.

The cons

There are clear advantages to buying a platform. However, the wrong choice of platform can be constraining.

- **Opportunities can be limited.** For equipment manufacturers, the world of IoT is large and expanding. Buying a point IoT solution, such as one designed for remote monitoring, will help you launch a service faster than building it yourself, but it is inherently limiting. When you want to move to other use cases, such as smart field services or performance management, you will have to start from scratch. It will also be more challenging to build a competitive differentiation because you will be limited to the vendor's pre-configured solutions.
- **You may be locked into a single environment.** IoT spans the continuum from on-premises to hybrid cloud to public cloud to edge. Your vendor may only operate in a limited set of environments, leaving you out of luck if you need a fast, efficient way to expand. There is value in bringing the same IoT solutions to new environments without changing your approach.

In reality, most OEMs will be unable to literally start using a platform right out of the box. Every deployment takes some level of configuration unless it is for a narrow, inflexible, and often niche use case. It's far more likely that an IoT platform you buy will need some level of customization because your products, strategy and customers are unique. The best approach, then, is to harness the benefits of buying a platform that accelerates the execution of your strategy, while making it easy to customize with extensions and capabilities that differentiate your business.

The solution: *buy and build* your IoT platform

The fastest, most sustainable path to IoT innovation is not to buy or to build—it's to *buy and build*. This means buying a flexible IoT platform as the foundation for innovation and differentiation. Ready-to-use solutions help you achieve strategic business outcomes fast, while intuitive tools enable you to easily build your own services on top. You get a solid, reliable, scalable IoT platform as the foundation, with the ability to drive innovation and differentiation. The buy and build approach helps you execute on your IoT strategy quickly and in a sustainable manner. Your IoT strategy represents your move to smart, connected products—in other words, digital equipment—from every perspective. It includes the ways your use of IoT fits in with your customer engagement and go-to-market plans. The customer-facing services you want to launch, and the internal systems to deliver the insights that support these services. And, the technology architecture and roadmap to execute on your vision.

CUSTOMER STORY

Buy and build success story: SMC prevents equipment failure with a predictive maintenance solution.

Learn more

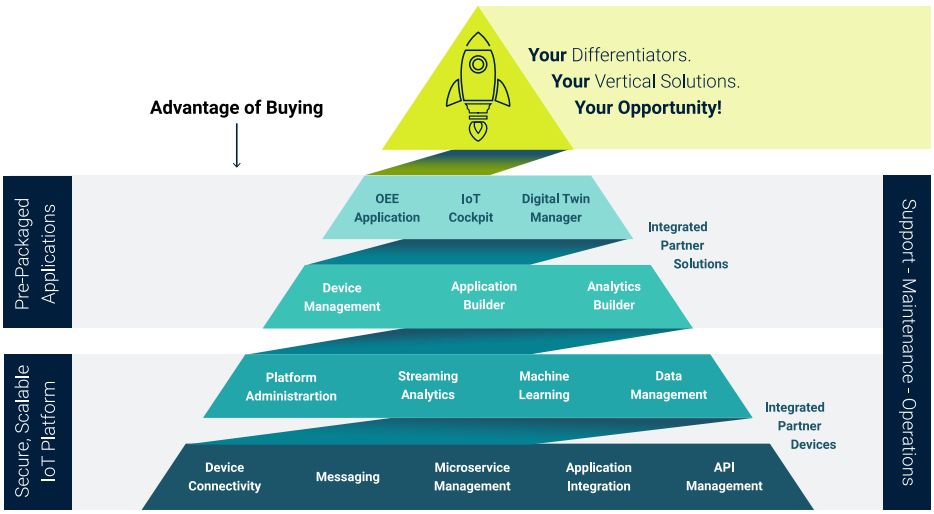
How buy and build unlocks IoT value

When it comes to choosing an IoT strategy, buy and build is the best way forward. Rather than using resources to reinvent the wheel, re-creating functional building blocks of an IoT platform, you can invest your time and energy in focusing on what differentiates you from the competition.

When you buy and build, you start on day 1 with 80 percent of the IoT functionality you'll need, right out of the box. Buying the right platform offers a rock-solid foundation with features and capabilities you'll need for enterprise grade IoT: security by design, the ability to scale from a pilot project to a global portfolio, integrations to make the most of your IoT data, and more.

Then, you can focus on building out the remaining 20 percent of your IoT strategy based on what makes your business great and delivers an outstanding customer experience.

There is one prerequisite to a successful buy and build strategy: the ability to build new services, integrations and applications efficiently with the IoT platform you've bought. Go too far down the one-size-fits-all vendor approach and you lack the flexibility to optimize your solutions for your customers. Choose a platform that provides minimal pre-configured solutions, and you will be forced to build your own approaches to non-differentiating IoT platform features such as device management at scale.



The business benefits of buy and build

- **Minimize total cost of ownership.** The cost to build—and maintain—your own IoT capabilities in-house is significant. Buying the right IoT platform means you can avoid the substantial costs of development, instead maintaining a focus on winning, serving, and retaining customers.
- **Scale from pilot programs to global operations.** Look for a platform that expands to multiple sites. You should be able to manage devices and data points using the same platform and interfaces as the initial proof of concept. ·
- **Integrate with existing applications.** IoT analytics benefits from easy integration with your existing enterprise applications. You'll want a platform that offers plug-and-play integration with leading software, plus a wide range of extension options, so you can use business data, models and output.
- **Run with reliable, secure operations.** Security is table stakes for enterprise grade IoT. Build on a platform that enables efficient, accurate firmware/software updates to patch vulnerabilities, plus security from cyberattacks such as DDoS.
- **Enhance the customer experience.** With the rise of fast, responsive self-service apps in the consumer space, your manufacturing customers now expect more from their business apps too. Create solutions with platforms that offer information and control through an intuitive, modern user interface (UI). You can build these innovate and differentiating solutions, specific to your market, customers and products, on top of a solid, pre-configured IoT platform foundation.
- **Serve every stakeholder.** Remember all those stakeholders we mentioned—your product managers, operations technicians, developers and more? The buy and build strategy gives each role pre-configured solutions that meet their needs, so they get the information and the capabilities they need to contribute to your organization's strategy.
- **Achieve strategic outcomes faster.** Taken together, all the benefits listed above help you achieve strategic goals faster. Even when building new differentiating solutions, you can build more quickly and at lower cost by taking advantage of a solid foundation with robust device management, scalable architecture, integrated data management, security, and other features.

Keep in mind, these benefits are not universal to commercially available IoT platforms. These are the benefits of a buy and build strategy, which relies on choosing the right platform as your foundation for innovation

Cumulocity IoT for buy and build

Cumulocity IoT is the award winning, industry-leading IoT platform that enables organizations to deliver groundbreaking IoT-enabled business transformation projects quickly. It empowers equipment manufacturers to create and deploy smart, connected devices to achieve strategic goals: delivering machines that operate more reliably and efficiently with higher-quality output, increasing revenue from maintenance and aftermarket sales, and transforming business models with a more flexible range of equipment purchase options.

Key capabilities of the Cumulocity IoT platform help our customers outperform:atio:

- **Rapidly build, test and scale IoT based solutions.** Self-service tools accelerate your implementation and adoption of customer-focused IoT solutions. You can quickly create new, innovative product capabilities by enabling your experts and your customers' subject matter experts to enhance your IoT solution's capabilities.
- **Leverage ecosystem of partners to create end-to-end solutions.** Through Cumulocity IoT's partner ecosystem, we provide pre-integrated and validated offerings. This includes technology partners who contribute functional capabilities embedded in Cumulocity IoT; device partners that provide plug-and-play interoperability to gateways and sensors; solution partners who create domain- or use case-specific applications for verticals; systems integrators who help our customers stand up IT and OT solutions; and a developer ecosystem of technical users who use and contribute reusable assets such as microservices.
- **Enterprise grade security and reliability.** Cumulocity IoT is built for the future of manufacturing, when entire lines of business rely on dependable IoT performance. Run with an enterprise grade platform that helps you manage millions of devices efficiently, maintain uptime in the face of a mass disconnect or DDoS attack, and protect your valuable data.
- **Integrate with any enterprise app.** Integration is a value multiplier. Make the most of your IoT data by integrating applications and functions including field services, customer care, CRM, and ERP systems, wherever they are running. This helps you streamline operations, with common use cases including automatic condition-based monitoring, maintenance scheduling, and proactive ordering of parts—the possibilities are as limitless as the number of applications you can talk to.
- **Empower domain experts with self-service tools.** Create an army of citizen developers from your staff and customer base with intuitive tools that let them contribute to the process of creating innovative new products. And provide your machine operators, process engineers and plant managers with streaming analytics tools and predictive capabilities so they can detect trends and anomalies in areas such as predictive maintenance. It's possible with powerful tools, delivered through a simple UI.

The Total Economic Impact of Cumulocity IoT

Forrester Consulting found the following benefits in its Total Economic Impact™ Study of the Software AG Cumulocity IoT Platform.

The TEI of Cumulocity IoT:

- **339% ROI.** Forrester created a composite organization based on the makeup of interview subjects. This value is based on the organization's ability to grow revenues, enhance the customer experience through new services, streamline field-force operations, and reduce the level of effort to deliver IoT services to the organization.
- **$8.1 million savings over 3 years.** By partnering with Software AG, the composite organization avoided the substantial costs of development—and was able to focus instead on winning, serving, and retaining customers.
- **Less than 1 year to payback.** The fast payback reflects lower operational costs for the Software AG Cumulocity IoT platform, and the ability to capitalize on new revenue-generating services.

The (many) ways Cumulocity IoT supports a buy and build strategy

The platform you buy matters. **Cumulocity IoT** stands out as a scalable, enterprise-grade platform that helps you generate value faster and reduce TCO.

Faster ROI through pre-built applications

IoT Cockpit
A single dashboard to manage and monitor IoT assets and data from a business perspective. Customize your view with widgets, smart rules and visualize data.

Digital Twin Manager
Pursue a self-service application building experience at scale, bringing devices into business context, visualizing and interacting with assets, integrating with business processes, monitoring all the important device properties at one place, and syncing across a multi-tenant architecture.

Streaming analytics
Access, analyze and act on both historical and real-time, fast-moving live data from IoT devices. Powered by Apama, the industry's leading streaming analytics engine, you can define streaming analytics with easy-to-connect building blocks—no coding required.

OEE app
Customize and deploy a pre-built **overall equipment effectiveness** (OEE) app to measure machine availability, performance and quality.

Analytics Builder
Apama Analytics Builder is a no-code, drag-and-drop approach to building analytic models that use streaming data to generate new data or output events. User-defined operations can trigger alerts, trigger new operations, or change how your devices operate. Plus, integration with **TrendMiner** self-service industrial analytics empowers engineers with immediate insights into decades of time-series data.

Application Builder
Quickly develop HTML5 web applications without coding. By using widgets connected to Software AG's GitHub, your applications will receive regular updates

Professional services
Accelerate the development and deployment of new solutions with **services** delivered by IoT and business solutions experts.

CUSTOMER STORY

PRAB uses streaming analytics to show equipment performance, prevent downtime, and improve ROI

Learn more

Future-proof your IoT success

Easily scale to thousands or millions of devices
The bulk device management capabilities allow you to onboard, update, and manage as many devices and IoT gateways as necessary from a single screen.

Develop once, deploy anywhere
Cumulocity IoT is an independent, open platform that can run in any combination of the cloud, on-premise or at the edge, giving you the flexibility to grow in the future and deploy on almost any device and infrastructure, integrating with any enterprise app. Analytics can even be pushed to the edge, running autonomously on low-powered, miniaturized devices in the field to decrease network usage and handle significant events when connectivity is down.

Cloud agnostic: Freedom for your future
By working with a cloud-agnostic platform, you can avoid vendor lock-in for your cloud storage providers. As pricing for remote storage continues to evolve, you can take advantage of the freedom to optimize on cost across vendors.

Outsource API and microservices updates
As the Cumulocity IoT platform continues to evolve and improve, responsibility for ensuring compatibility with your integrations remains with Software AG. You can be confident that system upgrades will not impact your existing integrations.

True multi-tenancy
Use different tenants across different cloud providers for different customers, ensuring true data segregation.

Get started fast with buy and build

Equipment makers have an opportunity to build connected products that deliver greater value and improve the customer experience. A buy and build approach is the fastest, lowest risk strategy to produce tangible business outcomes. And with IoT initiatives, success breeds success: the more successful you are with creating and scaling one solution, the more support you will gain for future initiatives—whether they are new lines of connected products, new digital services, or new business models incorporating EaaS.

When you employ a buy and build strategy, you get 80 percent of the capabilities ready to go out of the box. You can then focus on building the last 20 percent of your capabilities to best serve your customers. Focus on what makes your business special, and leave the technology for building IoT to those who have made it their core business. To find out more, see what **Cumulocity IoT** can do for you. And when you're ready, sign up for your free **Cumulocity IoT Platform demo** to start doing great things with the #1 low-code, self-service IoT platform.

You may also like:

ANALYST REPORT

A Leader in the Gartner® Magic Quadrant™ for Global Industrial IoT Platforms, 2022

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