



7 Steps to Grow Profits in Industrial Automation

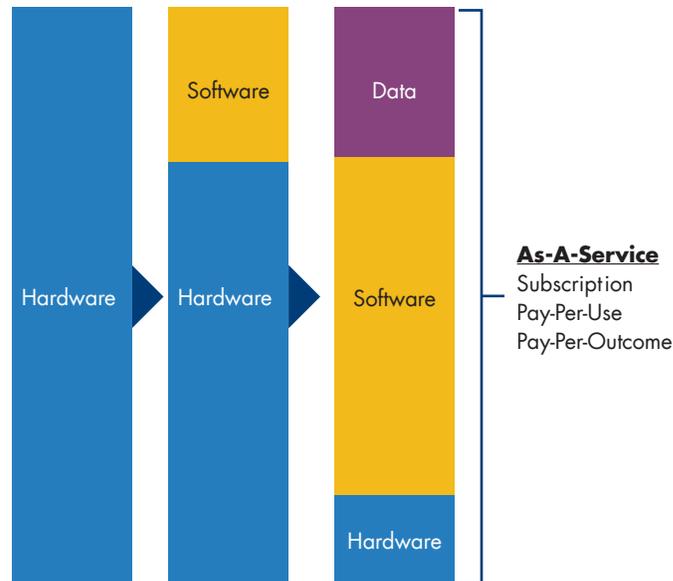
Create New Revenue Streams with Software Monetization Processes

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The Industrial Internet of Things (IIoT) is changing the way goods are planned, produced, sold and used. Manufacturers are moving from traditional hardware-centric business models to new digital business models that leverage the value of software, data and services.

This trend is especially apparent in industrial automation, where manufacturers are under increasing pressure to innovate, maximize revenue and deliver an excellent customer experience.



Manufacturers that successfully make the IIoT shift gain a competitive edge by:

- Continuously delivering new functionality, services, product improvement and smart data
- Easily adapting products and features to customers' needs
- Provisioning new functionality faster, with less effort and cost
- Reducing expensive downtime and support costs with predictive and preventive maintenance

And as they shift, the monetization opportunity of a one-off hardware sale blossoms into multiple monetization opportunities with the as-a-service model.

This white paper will discuss the realities of IIoT and review the 7 key success factors for software monetization, including:

1. Get Ready
2. Identify Your Objectives
3. Plan for Revenue Growth
4. Increase Operational Efficiency
5. Increase Customer Satisfaction
6. Strengthen Security and IP Protection
7. Prepare Your Business



REALITIES OF IIoT

As with every new business model, there is no simple formula that works for everyone and everything. Even so, it is clear a transformational change is occurring due to IIoT.

Many industrial automation companies now employ three to four times more software developers than hardware developers. Leading manufacturers are rolling out new offerings based on software, services, and data. This focus is enabling a more elastic approach to product development, flexibility for customers and an ability to monetize solutions throughout the entire product lifecycle.

“Software is inside almost everything we interact with” said Amy Konary, research VP of Software Licensing, Provisioning, and Delivery at IDC. “Manufacturers are increasingly looking to leverage the software assets embedded within their devices in various ways, including monetization as well as using software to protect and control the feature set delivered to customers.”

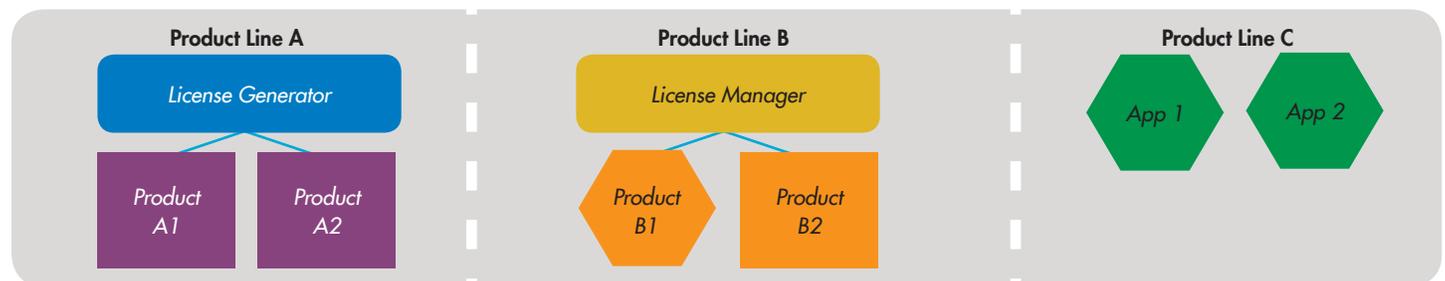


7 STEPS TO IIOT SUCCESS

STEP 1: GET READY

CONSOLIDATE YOUR SOFTWARE BUSINESS

Software has been playing a big role for manufacturing companies for many years. With a lack of standardization across product lines, many manufacturers now face a disparate business where their software products cannot be tracked and managed professionally. This has resulted in inconsistent approaches to licensing, monetization and the customer experience.



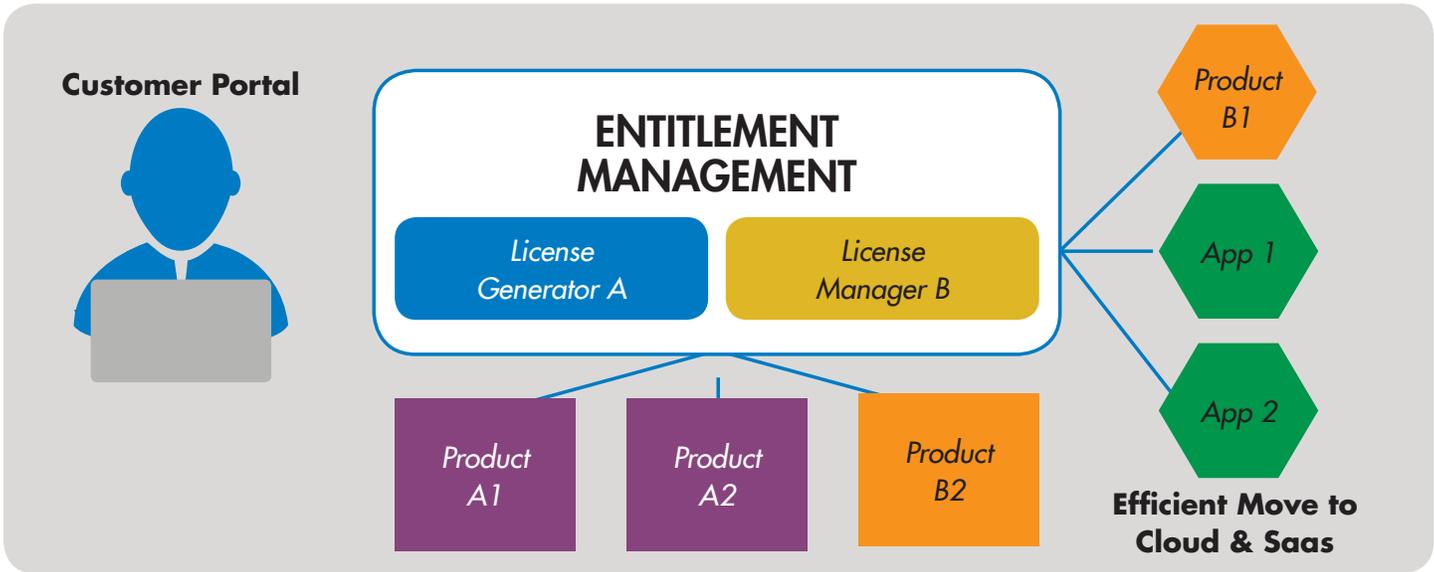
Many manufacturers operate a disparate software business.



As a first step, manufacturers should look to centralize key processes in their software business to manage products throughout the lifecycle, keep them secure and deliver software and updates to customers.

A central entitlement management system will help consolidate the software business as well as offer other benefits:

- Delivers a unified customer experience, even if different products still use unique license generators
- Enables a smooth transition towards Cloud and SaaS offerings
- Reduces operating costs
- Pinpoints up-sell and renewal opportunities
- Creates better visibility into channel sales
- Improves overall insight into market dynamics



Centralize the software business with a central entitlement management approach.



ANALYZE YOUR NEEDS

The skill with which manufacturers structure the monetization of their software – and the diligence with which they manage their customers' entitlements – may well turn out to be what separates market leaders from other players.

Ultimately, you should be able to ask and answer specific questions about all software products in your business. Here are some key considerations:

- Which customer is using what version of my software?
- What has been purchased vs. what has been activated / is being used?
- How do customers get access to new software versions or security patches?
- Do we have the right data and right processes in place to notify customers of new releases or security issues?
- Are we able to provide customers with a central end user portal with the visibility they need regarding their software licenses, entitlements, activations and usage?
- Are we able to integrate new software products quickly?
- Do we know at all times who has an active maintenance contract or an active subscription?
- Can we automatically adjust the delivery of software and upgrades to make sure we only deliver to eligible customers?

Know what Software is Running Where

In a manufacturing environment, it is essential to know what software is running where. With a unified view, the business can:

- Guarantee compliance in highly regulated and controlled production environments
- Keep a high security level by analyzing software for vulnerabilities and deploying software upgrades and patches
- Reduce support cost and field service activity by enabling appropriate remote diagnostics and maintenance procedures.



STEP 2: IDENTIFY YOUR OBJECTIVES

These 4 objectives, typically used by manufacturers, offer a great starting point when incorporating digital solutions:

- 1. Grow revenue** – monetize software, flexible pricing models, add new features and services over time
- 2. Increase operational efficiency** – eliminate manual processes, implement remote monitoring/services/maintenance, increase order accuracy and reduce downtime/waste
- 3. High customer satisfaction** – provide a consistent and low touch end-user experience, customer self-service and end-to-end processes
- 4. Protect IP** – minimize unauthorized use, stop grey market abuse and improve compliance for a diverse range of technologies



REVENUE
GROWTH



OPERATIONAL
EFFICIENCY



CUSTOMER
SATISFACTION



IP
PROTECTION

STEP 3: PLAN FOR REVENUE GROWTH

ENABLE FLEXIBLE MONETIZATION MODELS

Flexible monetization models will enable you to deepen and extend the relationship with your customers throughout the whole product lifecycle. For producers, they can transform the product sale from a huge upfront transaction to a continuous value chain over time. For customers, they can pay for what they need without a huge upfront investment, have more flexibility and move capital expenses to operational expenses.

The industrial automation industry is shifting to selling “use rights” rather than the product. When the whole device is monetized that way, the producer retains ownership and can deliver as-a-Service models, including:

- **Subscription** – customers pay for use rights for a defined period (often yearly). The fee will contain the device, the software on it or connected to it as well as maintenance upgrades and other services.
- **Pay-per-use** – the customer pays for usage. Usage can be everything that can be metered (hours used, transactions completed, gigabytes of data processed). In other types of usage-based models, customers pay for usage bursts (pay for burst or pay for overage)
- **Pay-per-outcome** – the customer pays for successful transactions. Such a model would only count the actual results such as cars produced, scans taken etc.

Monetize the Full IoT Stack

Intelligent device manufacturers are moving to new software-centric business models to protect revenue, including:

Cloud: IaaS, PaaS, SaaS

- Provision software and features in a Cloud environment and enable flexible monetization models
- Provide transparency and a single pane of glass on usage and usage trends
- Offer flexibility for customers to add and remove functionality and pay for what they really need

Client/Server Software

- Protect software solutions from hacking and accidental over-use
- Monetize and protect software in virtual environments and manage virtual machine cloning
- Build different packages to provide customers with the functionality they really need and to lower the entry barrier for those that want to start small
- Provide customers with updates and important security patches

Embedded Software on Devices

- Use software licensing for feature clipping (enabling/disabling features on demand) to provide more flexibility on the production line and standardize hardware products
- Quickly change capacity and capability online
- Collect smart data from edge devices
- Provide new functionality with electronic software updates to increase the value of the device throughout its lifecycle



Some manufacturers offer hybrid models by continuing to sell the hardware while applying monetization models to the software only.

The key idea is to align price with value, so your customers can justify the investment and make a direct connection to the value they're getting from your products. When defining metrics for usage and outcome based pricing models, make sure they relate to customer value.

COLLECT DATA AT THE EDGE AND ENABLE IN-PRODUCT ANALYTICS

Collecting data from edge devices and storing it in a local datacenter (or the cloud) has become a priority for industrial automation companies.

Usage data and in-product analytics provide insights on how software is being used, on what platforms it is deployed and if it has been updated. Knowing which software functionality is being used (or not used) can dictate product development strategies.

The identification of high-value features provides new monetization opportunities, enabling adaptation of a pricing strategy to the actual product usage. It is also an important cornerstone for usage-based pricing models.

PROFIT FROM VIRTUALIZATION

As IoT takes a clearer shape, value shifts even more quickly from the device to software and services. Manufacturers are adapting virtualization techniques that offer benefits on multiple levels:

- **Hardware Consolidation:** virtualization of controller functionality enables control of more connected hardware, like tools on the production line, with fewer controllers. It enables rebalancing load, functionality and capacity quickly.
- **Open Platforms:** manufacturers are offering their devices as platforms for running third-party applications

- **Datacenters:** virtualization results in more flexibility and performance when running high-value software applications

In virtualized environments, licensing will play a major role in protecting your applications from accidental cloning. Depending on your compliance strategy, you can either prevent cloning altogether or use notification to track and manage any cloned applications and compliance.

STEP 4: INCREASE OPERATIONAL EFFICIENCY

STANDARDIZE HARDWARE

The challenge for industrial automation solution providers is to bring devices to market quickly that can meet the unique needs of a particular segment or market, while keeping manufacturing costs low.

By adopting the right licensing models, industrial automation providers can:

- Produce different products on the same hardware chassis. This drives down costs by eliminating the need for additional production lines and minimizing inventory.
- Create innovative products on existing hardware chassis. This reduces the cost and time it takes to bring differentiated products to new or existing markets.
- Up-sell existing customers by simply activating additional device capabilities or capacity. This makes it easier to capitalize on incremental revenue opportunities.
- Meet evolving customer needs without requiring them to swap out hardware or otherwise disrupt their operations. This makes for a more positive ongoing customer experience.



ENABLE CONTINUOUS SOFTWARE AND FIRMWARE UPDATES

Software and firmware updates are crucial for security, compliance and efficient support processes. In prior years, software updates may have been rolled out every few months or so. But with connected IoT devices, updates will have to be done more frequently.

Most industrial automation companies, however, do not have automated processes in place to manage these updates. Manual and disjointed processes will not deliver the automation needed and will not scale as you increase your customer base, the number of software products and versions or the frequency of updates.

What's at risk:

1. Considerable revenue leakage from customers that are receiving upgrades although they are not on maintenance. Some software vendors report revenue losses which can reach 30% or more.
2. Security issues from software vulnerabilities in older versions that can be exploited if these older versions are in use.
3. High support and software development cost as your support teams will have to support multiple versions and guarantee compatibility.

Managing software updates with an entitlement management solution, built specifically for this purpose, creates visibility for manufacturers to:

- Track which customer is using what version
- Show what has been downloaded vs. what is being used
- Uncover at-risk customers running a version which needs a security patch
- Reach out to customers running a version that has a new upgrade available

STEP 5: INCREASE CUSTOMER SATISFACTION

PROVIDE SELF-SERVICE

Because new monetization models involve dynamic business information, manufacturers need to offer direct access (self-service) to end users in the interest of transparency and customer agility. Consider an intelligent device manufacturer that wants to lower costs by moving manufacturing to a 3rd party. Or a factory that is operating with an entitlement of 5000 executions on a pay-per-outcome. By enabling self-service information, they can see what they have, what they are using and can react as necessary.

In today's tech savvy world, self-service portals have become an essential, expected and valued by customers.

STEP 6: STRENGTHEN SECURITY AND IP PROTECTION

PHYSICAL SECURITY NOT ENOUGH

Security and the protection of data and intellectual property are a high-priority topic in industrial automation.

Security can be effective if it is designed into the product and applied in layers. In the past, hardware vendors normally would rely on physical security. Now, manufacturers need to look at all the security layers that make up the IoT.

Most importantly – because hacking is always a threat and possibility – the key requirement is to make sure that manufacturers have self-healing and

self-updating capabilities to deploy a fix or patch quickly.

KNOW WHAT'S IN YOUR CODE

Everyone is using Open Source Software, and this is great! You bring products to market faster and save time on internal development. But let's face it: Do you know what components you are shipping? And how do you manage vulnerabilities? Do you know the license obligations?

Embedded Software is often based on Linux systems and 9 out of 10 IoT developers use open source. So if you know if or not, staying in compliance with open source licenses and managing vulnerabilities in the components you are using will be an issue.

Manage OSS License Compliance

Find out what's in your code! Implement tools and processes that help you identify and track Open Source and third-party components. Once you are able to quickly locate OSS components, you can create a Bill of Material. And you can implement permission workflows so that new open source components are registered before they get used and shipped.

Manage OSS Security Vulnerabilities

Once you know what you are using, implement tool-based processes that notify you of vulnerabilities in your open source components. Knowing what you have, will help you mitigate the risk. Once a vulnerability comes up, you should be able to mitigate it quickly and send software and firmware updates out to the software and devices.

MANAGE CONTRACT MANUFACTURING AND PREVENT GREY MARKET ABUSE

Intelligent device manufacturers who outsource their manufacturing processes are discovering that some third-party manufacturing shops are over-producing the device and then selling the overage stock on the grey market for personal profit.

Unlike the device, the software embedded on the device or that controls the device can be easily modified or updated if the right software licensing technology is implemented.

For example, manufacturers can require that any new device “call home” to a cloud-based license server to obtain an activation license so that the device becomes operational. If an illegally manufactured device tries to do this, it will not be granted a license and, in turn, will not function.

Another common approach is to add a software license during the manufacturing process. The device manufacturer can, for example, provide a license for 10,000 devices. Once the 10,000 devices are made by the third-party manufacturer, they can no longer get licenses to produce additional product. When the devices wake up, they check for a license and will not operate if the 10,000 device licenses are exceeded.

STEP 7: PREPARE YOUR BUSINESS

Since Implementing new monetization models requires operational change, it’s important to prepare your organization:

- Product offerings will change as your value proposition will focus on digital solutions, data, and outcome. This will change pricing and product packaging.
- Employees used to selling hardware will have to embrace the new digital offerings. Compensation plans will change. Sales, support, field service and engineering will all be affected.
- Flexible monetization will change cash-flow. Customers may have the option to pay in a perpetual licensing model or a new flexible way, which offers flexibility and decreases the impact on cash-flow.

“When a hardware company starts focusing on the business of software, a key step is the development of a software licensing organization. This organization should be centralized, at least initially, and led by a high-level individual who is tasked with building definitions, structure, and policy around licensing, as well as determining the appropriate license management approach and enabling technologies.”

– IDC Opinion, “Hardware Companies Face Unique Challenges in Growing Software Revenue”

AUTOMATE THE DIGITAL SUPPLY CHAIN

As the IoT software stack becomes more prevalent in industrial automation solutions, manufacturers increasingly recognize that there is more than just the traditional hardware supply chain to manage. To tackle this, manufacturers should be looking for a digital solution which can manage the customer lifecycle, along with products and software use rights.

“The operational side of software licensing is very important, and often overlooked or considered secondary. However, without technology to enable the licensing life cycle both inside the vendor and at the customer site, it is easy for customer frustration and noncompliance situations to occur.”

– IDC Opinion, “Hardware Companies Face Unique Challenges in Growing Software Revenue”



NEXT STEPS

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