

Transforming Your Manufacturing Business Model with IIoT

No two factories are the same. They vary in size, in the products they make – from high precision devices to commodity products – and in the volumes they produce. But all manufacturers, who want to stay competitive, share the challenge of needing to incorporate the Internet of Things (IoT) into their products and facilities, and enabling their staff to use and exploit it.

But, how do manufacturers build and incorporate both the old and new technologies, often in the same space? Without a comprehensive strategy, you may feel like you are barely keeping your head above the water.

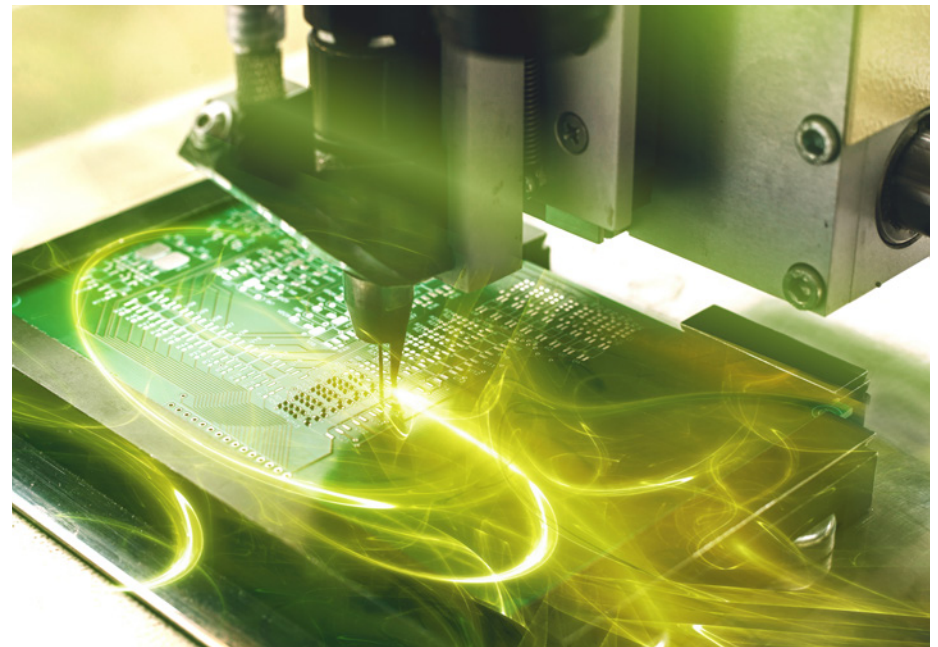
This ebook looks at how your organization can create a strategic plan to include Industrial IoT (IIoT) and transform your factories. This strategic framework, built on a solid foundation of facts, with built-in flexibility so you can adapt to the changes in your business, must be one that:

- Can be shaped, extended, adapted and managed as your business needs change
- Will support planning for asset investments, staffing and on-going operations
- Will be an actionable plan that integrates with your company's overall business strategy



The Internet of Things presents an enormous opportunity to transform the way we live and do business. McKinsey's Global Institute predicts IoT will have an economic impact of between \$4 trillion and \$11 trillion by 2025. "

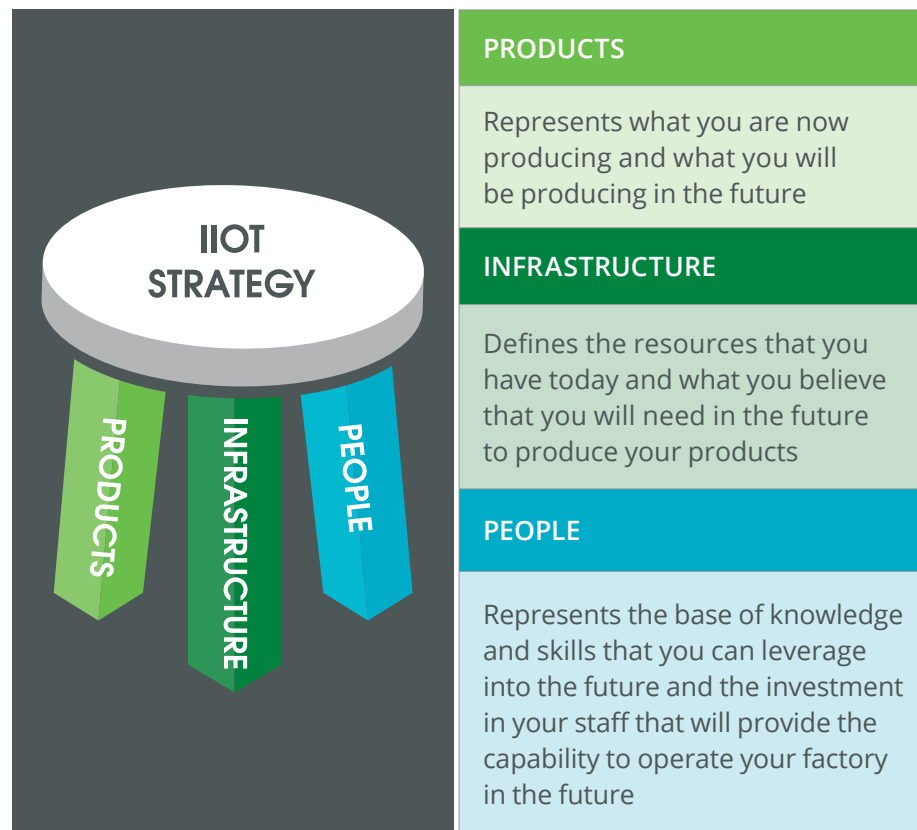
-McKinsey & Company



Establishing a foundation for your IIoT strategy

Preparing your facility to be flexible and adaptive will allow your organization to use new manufacturing methods that are created, managed and continuously improved by a skilled workforce that is both IIoT and IoT savvy.

There are three core pillars – think of them as legs of a stool – that need to be considered in your planning strategy to ensure balance and stability.



PRODUCTS

Prepare your facility by considering that the products being built in your factory will need be operated the same way your customers will be using your product. This implies a proper set of secure networks that can protect your factory equipment from intrusion and at the same time provide access to external products and services that will be used during manufacturing and testing of your products. For example: If your IoT enabled product relies on satellite communication paths, you may need to provide satellite signal transparent areas or repeaters inside your factory to support in line testing after configuration.

INFRASTRUCTURE

Prepare your processes and infrastructure by considering that your products will most likely be tailored for specific customers or applications. The product options and configurations may be changing with each order. Managing and tracking configured products in your factory that look almost identical will require innovative approaches. Managing an inventory of firmware or software that goes into the product and the matching the factory equipment software needed to load and test each individual item will bring new challenges.

PEOPLE

Prepare your people to work with the new products that are very different from your current products. Invest in “feeder” programs to create a pool of resources that can support both your factory equipment and can work with the products being built. Engage your people in organizing and assembling your factory to be nimble and technology enabled (not technology controlled).

The bottom line: If you create a strong and flexible manufacturing strategy that embraces both product and Industrial IoT technology, you will have created a factory that is adding to your bottom line and is building top quality products for your customers.

Building your Strategy within a robust framework

Now we are prepared to use the foundational knowledge of your business for your Industrial Internet of Things Strategy. This foundation will support a set of actions within an IIoT Strategy Framework.



To build on the foundation, and fill in the strategy framework, manufacturers need to:



Summarize the gaps between what is in place today and what will be needed in the future.

Organizations will need to do an initial GAP analysis for each NPI release point to identify missing manufacturing capability that will be needed to build the new products. To do this, they will need to:

- Break the requirements down along a timeline that aligns with NPI start of production plan
- Compare against the current OT inventory combined with plans for core infrastructure improvements



Engage the help of IoT technology experts to understand the options that are available now and what is coming to close those gaps. Some of the technology that is identified will hold more promise than others due to cost, risk, availability, etc.

Organizations will need to:

- Use external OT / IT supplier roadmaps and technology reviews
- Engage product R&D and Advanced R&D experts
- Work with Universities and government funded programs such as Smart Manufacturing in the US, Industrie 4.0 in Europe, and Made in China 2025



Using this insight, manufacturers must **target the IIoT technologies** that will have the lowest risk and the greatest reward.

- They must agree on how to quantitatively measure both the risk and reward
- They need to consider the risk of failure and business disruptions, the organizational change impact (people and processes), and both tangible and intangible rewards (bottom line and opportunity creation)
- Manufacturers need to think long-term and short-term



Define the actions needed to frame up the strategy – these actions are critical to proving out technology and preparing your business to incorporate the Industrial Internet of Things into the daily operations.

- Build a notional timeline to test and deliver the Targeted Technology and ensure your plans include: Benchmarking, Proof of Technology (PoT), Proof of Concept (PoC), Pilot(s) and production
- Describe Alternative / Contingency Technologies
- Plan “Pivot Points” for alternative technologies



Communicate the strategy describing:

- The investments – both money and personnel – that will be needed for the individual pieces of technology
- The methodology that you will be using to validate and prepare the technology for use
- A detailed description of how the technology will be integrated with the overall business processes, the IT/OT systems and personnel

- The key risks that include mitigation options and outline realistic actions
- The timeline that includes your business plans beyond the factory

It is important to note that although these actions are listed in a sequence, the creation, communication and implementation of a strategy is very much an organic and dynamic process. This means that your organization needs to establish a continuous strategy definition process with a budget for staffing and facilities to support the activities that are needed by these five action areas.

Summary

Leveraging the potential of IIoT, however, will require that manufacturing organizations develop a strong and flexible Manufacturing Industrial IoT strategy.

Establish a Foundation

A key step is to take the actions to establish a foundation of knowledge about your current and future products, infrastructure, and people. The resulting foundation, with all elements for those legs, will give you what is needed to support a strong and flexible Industrial IoT Strategy.

Build a comprehensive strategic plan

Build your strategy using a robust framework of actions on top of your foundation of knowledge. The result will be a highly resilient plan that has built-in flexibility and it will be an actionable plan that can respond continuously to changes in your business environment.

And some final tips:

- You can never start too soon or focus too much on Organizational Change Management issues. The process of preparing and communicating your Strategy, plans and expectations to your team will naturally increase the quality and completeness of your strategy.
- Building a Strategy is like building a product. Expect adjustments for changes in the environment and new requirements. Plan for a continuous process.
- Lastly, the success of your Industrial IoT Strategy depends on your staff adopting – not adapting to – your Industrial IoT technology and supporting processes.



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