The Industrial Internet
at Work in Heavy Industry:

# A Strategy for Moving Forward in 8 Simple Steps

The Industrial Internet lets your organization connect industrial machines and systems, capture real-time data, share and analyze it, and ultimately gain insights that lead to better performance. Although that sounds complex, it doesn't have to be.

The good news is that you can start small. You don't need to implement an Industrial Internet solution for your entire plant at once. Your journey may well begin with a single priority issue that can produce a big win when you resolve it.

We've recently shared information on the Vision and Team for putting the Industrial Internet to Work in Heavy Industry. Now let's take a look at eight steps you can use to move forward with your Industrial Internet strategy.

## 1 Determine desired business outcomes

The main reason to embark on an Industrial Internet journey is to enable your company to reach its business goals. So start by looking at your business priorities. A common goal for heavy manufacturing companies is to reduce unplanned downtime. In fact, GE CEO Jeff Immelt says software and analytics are the path to zero unplanned downtime.

Then look at Key Performance Indicators that feed into that goal—here that might include maintenance cost, failure frequency, unscheduled maintenance downtime, maintenance related shutdown time and asset utilization. For each of these KPIs, project efficiency gains to determine which has the greatest impact on your business goals.

## 2 Identify key issues

If you're working in a heavy manufacturing plant, you can probably identify many opportunities for improvement. The key is to address the opportunity that will result in the greatest alignment with your desired business outcomes. So you need to unearth where bottlenecks and low yields and poor quality occur on the shop floor.

Then think about how to apply Industrial Internet tools to that application. Look for areas where data acquisition and analysis can be married to a business problem. Although we're focused on unplanned downtime here, that could include any issue that could improve efficiency, energy management, safety, productivity or visibility into products, processes, customers and partners. The possibilities are almost limitless.

# 3 Conduct an assessment

Before you take action, you need to go through a journey mapping process—in this case, understanding the current issues with equipment, tools and processes that are contributing to unplanned downtime and figuring out how to improve overall efficiency. You also need to assess the physical environment—the machines, their data capability, additional sensors needed to collect data and so on. Then you can map out a solution.
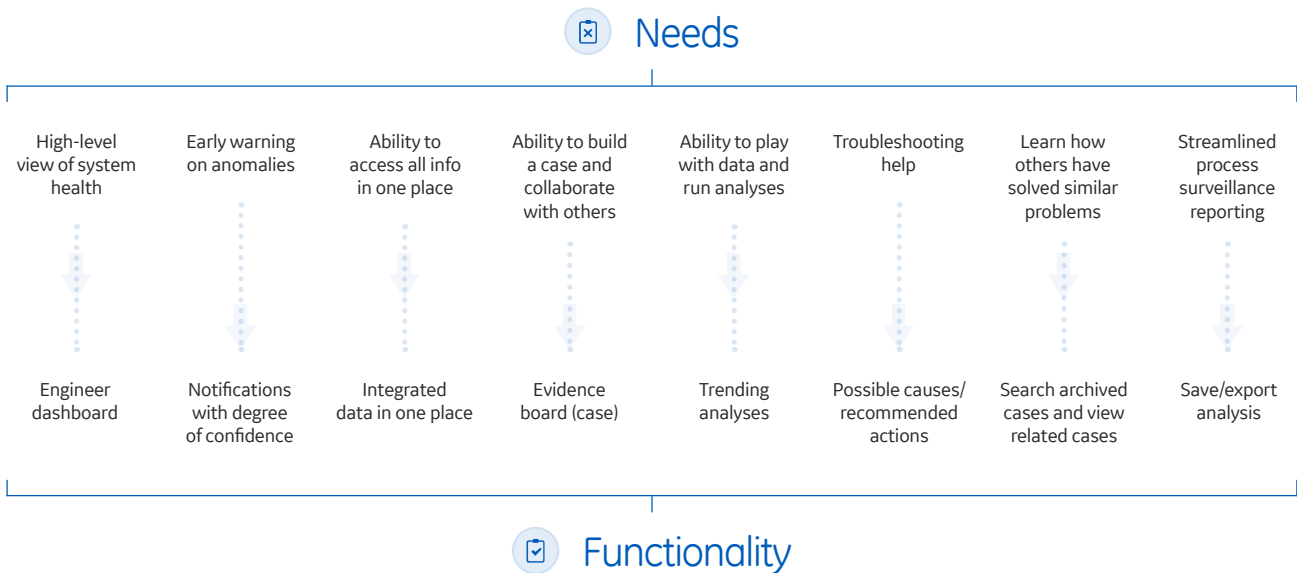
In most organizations, the team becomes accustomed to operating a certain way, because "that's how it's always been done." They get the job done, but have difficulties seeing inefficiencies or better ways to achieve a result. That's what makes an external partner invaluable. As an example, a partner could bring knowledge of specific types of data and ways to analyze it that indicate the need to reorganize or restructure operations to achieve significantly greater process yield or another improvement that aligns with your business goals.

# 4 Identify a solution

The solution to an issue related to unplanned downtime might involve getting all the right information in one place, so engineers can focus on analyzing problems faster, be proactive instead of reactive, and access all the underlying data instantly when they need to troubleshoot and resolve an issue.

The chart below shows what a solution might look like in terms of needs and the functionality required.

## ⊠ Needs

| High-level view of system health | Early warning on anomalies | Ability to access all info in one place | Ability to build a case and collaborate with others | Ability to play with data and run analyses | Troubleshooting help | Learn how others have solved similar problems | Streamlined process surveillance reporting |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Engineer dashboard | Notifications with degree of confidence | Integrated data in one place | Evidence board (case) | Trending analyses | Possible causes/ recommended actions | Search archived cases and view related cases | Save/export analysis |

## ☑ Functionality

## 5 Implement security

Almost every solution will require connecting assets in your plant—but as connectivity grows in the industrial sector, so does the issue of cyber security. At every level—software, machine, cloud, networking, and wireless services—security is a top priority. That's why GE acquired Wurldtech, a company that builds solutions to protect critical infrastructure from cyber attack.

Almost any piece of manufacturing equipment provides an opening into your corporate network. So segregating non-secure equipment is a first step. Every industrial operator needs to commit to staying ahead of the curve on cyber security through investment in people, technologies and practices that make their business and industry more secure.

## 6 Implement connectivity

To transform your real-time machine data into actionable insight, you need to lay the foundation by connecting your assets. How you implement the solution will vary depending on your current infrastructure. The availability of data will depend on which machine or device you're trying to interface with. A machine built last year will prove far less challenging than one 40 years old.

Software like the GE Get Connected Starter Kit can help to integrate production data and manage it for insight into operations, downtime and scrap. And pre-developed blueprints for different machine types support simple and fast connectivity.

# 7 Implement software

nnovative software is providing new ways for industrial companies to gain a competitive advantage—and you don't have to start from scratch. For example, GE's Brilliant Factory solution uses big data, software, sensors, controllers and robotics to increase productivity and optimize assets and operations. (See more on the Brilliant Factory software suite in the second article in this series.)

In asset-intensive industries, Asset Performance

Management (APM) software enables you to make the right decisions at the right time to keep assets safe, help them run better, consume fewer resources and receive service more efficiently.

And finally, GE's Predix cloud-based Industrial Internet platform provides powerful, consistent, secure and scalable support for solutions that optimize your business. It's also an environment you can use to build your own industrial apps.

# 8 Analyze results

Once you've connected machines and people, you're ready to analyze data, determine the root cause of issues and discover opportunities to improve or resolve problems. You can optimize the lifetime performance of equipment to increase availability, minimize costs and reduce risks.

Better still, you can solve problems before they happen. If a machine in your plant can detect tiny operational changes, determine if failure of a component is imminent and—if so—schedule maintenance before the component fails, you're one step closer to zero unplanned downtime. Do that regularly, and your organization is on the path to brilliance.

**About GE**

GE (NYSE: GE) is the world's Digital Industrial Company, transforming industry with software-defined machines and solutions that are connected, responsive and predictive. GE is organized around a global exchange of knowledge, the "GE Store," through which each business shares and accesses the same technology, markets, structure and intellect. Each invention further fuels innovation and application across our industrial sectors. With people, services, technology and scale, GE delivers better outcomes for customers by speaking the language of industry.

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