



# What is the Use of the IIoT?

The Basics of What the IIoT Means  
for Manufacturing

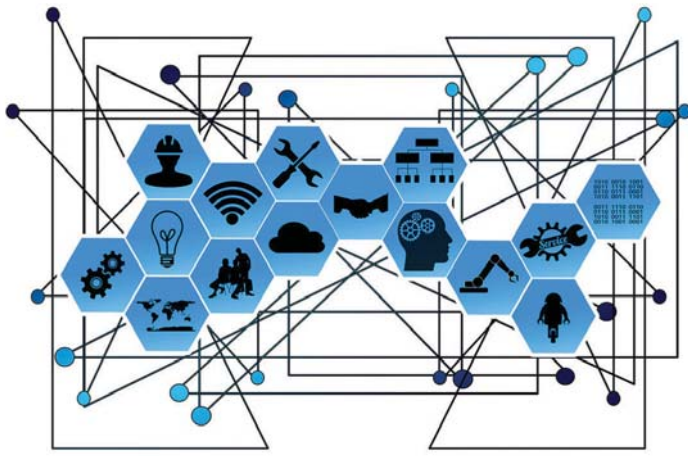


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## What is the use of the IIoT?

### The Basics of What the IIoT Means for Manufacturing

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Our world is becoming more and more connected every day. Connectivity can now be found in both consumer and commercial environments, from the smart phones in our pocket, to the equipment sensors in a factory. The IoT, and Industrial IoT, are becoming a part of our work and homelife. What is the “Internet of Things” and what does it mean for manufacturing?

### Smart Clouds and Oversized Data: What Are We Talking About?

First things first. There are many terms related to this concept. Let’s define a few of the more common words to lend some clarity to the situation.

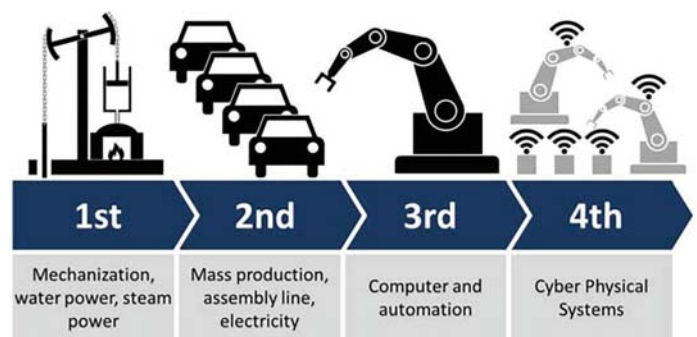
First, let’s examine some important differences between the IoT and the IIoT. The IoT (Internet of Things) is used to describe connecting the physical world to the digital world, as it relates

to “smart objects” used by consumers. Phones, cars, appliances, even your home itself can be a smart object if it connects to the internet, passing data between those objects.

The IIoT (Industrial Internet of Things) also deals with internet-connected objects. However, the usage is more specific to industrial purposes, such as manufacturing. Where the IoT focuses on connectivity to give convenience to consumers, the IIoT connects devices to provide greater data visibility, improve performance or enable automation in industrial settings.

Both the IoT and the IIoT are part of what’s being called Industry 4.0, also known as the Fourth Industrial Revolution. Industry 4.0 refers to the current trend of automation and data exchange in manufacturing technology. It was preceded over the past 200 years by a progression of technological advancements:<sup>1</sup>

- Industry 1.0: Water/steam power
- Industry 2.0: Electric power
- Industry 3.0: Computing power



To help manage the automation and data that the IIoT yields, software and services are often run on the Internet, rather than being stored locally on a computer. This process of Cloud Computing allows information to be accessed on any device with an internet connection.

Information collected through automation processes, consisting of billions or trillions of records—called Big Data—requires more powerful resources to calculate and process.<sup>2</sup> The Smart Factory or Smart Manufacturing process uses computer controls, modeling, big data and automation to improve manufacturing efficiency.<sup>3</sup>

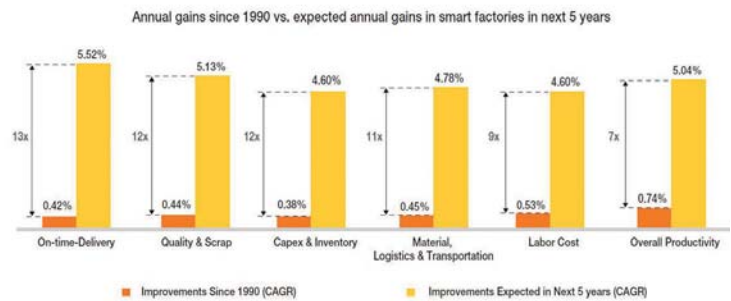
## What's in it for Me?

The IIoT connects devices with the digital world to provide data visibility. But the real value of the IIoT lies in how that data will be used by industry to realize the potential benefits of this connectivity. While the promise of the IIoT encompasses many areas, ranging from time savings to energy use and customer service, four of the main benefits which may favor manufacturers specifically are quality control, predictive maintenance, boosting production efficiency and seeing gains in profitability.

### Quality Control/Regulation Compliance

The IIoT can collect data from each stage of the production process, from raw material sources, to temperature thresholds to location status on

Figure 1: Manufacturers are expecting big gains from smart factories



the manufacturing line. This data can later be analyzed to identify potential quality issues and proactively prepare for audit or recall risks.<sup>4</sup>

### Predictive Maintenance/Machine Downtime

The IIoT allows easy visibility into maintenance schedules to help determine when machines are needing repairs. Not only can predictive maintenance minimize costly downtime, but can also limit labor to only essential maintenance.

### Production Monitoring

Without the need for monitoring by employees or managers, workflows can be optimized for peak efficiency, eliminating material waste and automating manual tasks.<sup>5</sup>

## IIoT helps work become more engaging and productive



Real-time data aids analysis



Intelligent machines automate tasks



Work augmented by wearables etc



New jobs and flexible organizations



## Profitability/Better Business Decisions

Connecting machines and systems, gleaned real-time data, yields faster insights into the manufacturing process. Manufacturers can use his up-to-the-minute data to quickly evaluate trends and identify areas for improvement.

## What's the Catch?

While the promise of the IIoT looks enticing, implementing a connected manufacturing environment isn't always smooth sailing. Before embarking on the journey to IIoT connectivity, beware some common roadblocks to success.

### Security

Cybersecurity is a term that's been in the news lately, and for good reason. As machines and systems become more connected, more points of entry to a potential network attack become available. Before joining the network, devices with an IP connection should be secured, along with ensuring the device allows for upgrades and patching.<sup>6</sup>

### Education

Is your workforce ready for the IIoT? If workers are currently using manual processes and disparate legacy systems, consider the training involved to bring them up-to-speed on the new system of connected devices, big data, and real-time production monitoring. Educating the workforce will be an on-going process as software and processes change or staff turnover occurs.<sup>7</sup>

### Connectivity

With the connection of multiple devices on a network, the potential exists for that network to go down unexpectedly, or need to be offline temporarily for maintenance. The risks scale higher for companies with global networks. What would this mean to your production process? As the IIoT im-

plementation is begun, steps need to be taken to ensure that key data won't be lost in the event a network issue occurs.<sup>8</sup>

### IT Integration

Connecting machines and systems is sometimes easier said than done. The concept assumes that the machines allow for effective connectivity. If not, companies may need to consider the costs of replacing or retrofitting existing equipment to be sensor-ready.<sup>9</sup>

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#### BARRIERS TO IIOT ADOPTION



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Source: Zebra 2017 Manufacturing Vision Study

## Taking the Plunge

Do you think you're ready to overcome the potential obstacles to bring the IIoT to your company? Yes, the IIoT may hold significant opportunities for efficiency and productivity gains. But if you're jumping on the bandwagon simply because you've heard the IIoT is the next big thing, your IIoT deployment may quickly run off the rails. Be sure to lay the groundwork with thorough planning before your IIoT project begins.

### Begin With The End In Mind

What is it you hope to achieve by implementing IIoT in your operation? Spend time upfront determining what the goals are and how you'll evaluate success. Identify areas of inefficiency in your operations and what data you'll need to be able to address these inefficiencies.<sup>10</sup> You'll also need to ensure you have the right backend systems in place to be ready for a successful IIoT implementation.

## Consider A Phased Approach

Rather than implementing IIoT across all your processes, choose one or two connectivity issues that have been long-standing problems for your organization such as machine monitoring and predictive maintenance, workforce efficiency, or inventory and supply chain management.<sup>11</sup> Implementing the IIoT in phases may help simplify the process, identify gaps in the implementation process and ease the transition for your workforce.

## Partner Up

Find the right technology partner that can address security concerns and implement IIoT connectivity to realize the potential of an effective IIoT implementation to reduce manufacturing downtime, increase OEE (overall equipment effectiveness) and boost profitability.

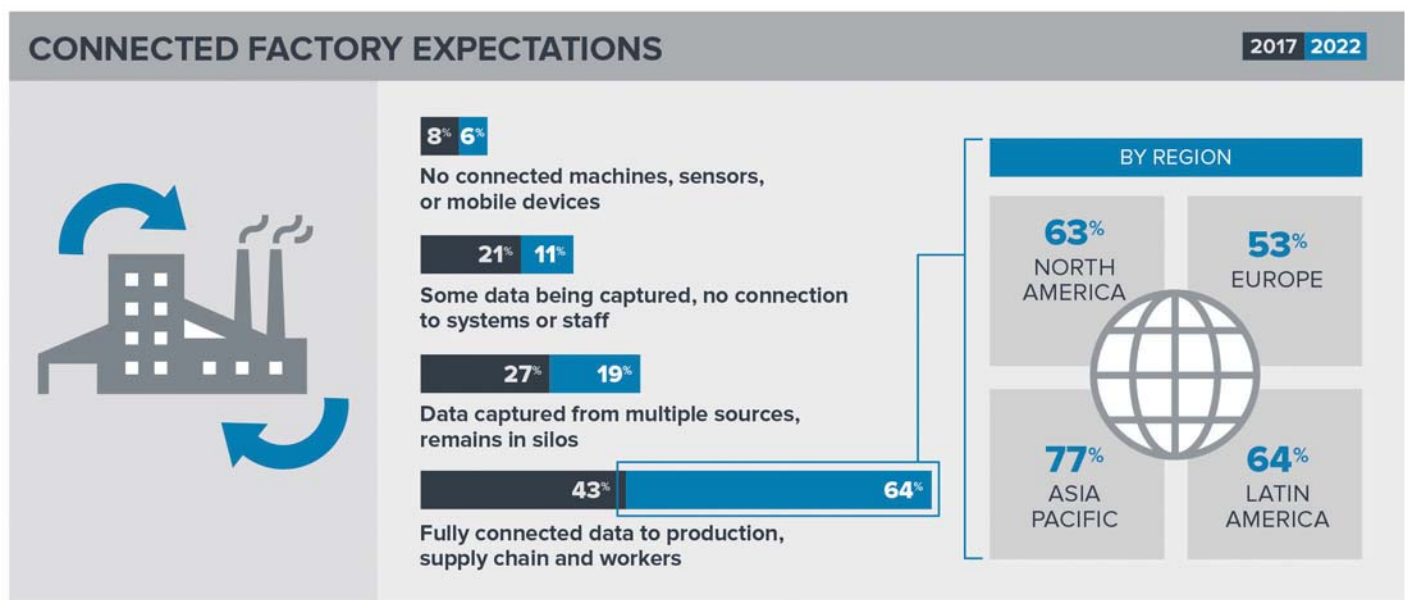
## Dig into Data

Once the IIoT is in place, the reality of big data sets in. The benefit of a connected network is not just more data. The value lies in how that data will be used. Is your organization ready to maximize

on real-time data to realize the business benefits? In your current processes, what data is available right now? Is it being shared with your internal teams, and how is it being used? To prepare for big data, think about how much data storage you will need, how will the data be analyzed and will you need to invest in additional resources to take advantage of the insights the data can provide?

## Summing IIoT Up

Many companies are preparing to capitalize on the potential the IIoT has for industrial applications. Connected systems can offer significant savings in time and costs associated with machine monitoring and maintenance, business intelligence, production processes and industry compliance issues. As was the case with past iterations of Industry 1.0, 2.0 or 3.0, if manufacturers proceed cautiously, map out their implementation plans and select strategic partnerships with IIoT solutions providers, the IIoT can truly be the next evolution in manufacturing operations.



Source: Zebra 2017 Manufacturing Vision Study



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