Advancing a Business into the Fourth Industrial Revolution, One Step at a Time

Achieving something large or complex takes time. Take manufacturing a car for example, which can require over 17 hours and 30,000 parts to complete. Similarly, implementing Industry 4.0 technologies should also be taken little by little, gradually adding layers to build a successful and robust system. Johan Jonzon, CMO and co-founder of pioneer in edge analytics for the Industrial Internet of Things (IIoT) Crosser, explores how to advance a business into the fourth industrial revolution, one step at a time.

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Implementing the IIoT can be an intimidating challenge for manufacturers. Faced with a large overhaul of existing systems and operations, many manufacturers don't know how or where to begin. Taking on too many large projects at once can lead to none of them running to completion. In fact, a 2020 survey of over 400 companies by McKinsey found that just 26% have scaled Industry 4.0 projects successfully, with the rest stuck in a phase dubbed "pilot purgatory."

In order to effectively scale Industry 4.0, manufacturers must start with small projects that are easier to implement and finish, then gradually build up to more advanced and complex plans. Let's take a look at two use cases that demonstrate the importance of taking a step-by-step approach.

Monitoring system availability
Manufacturers may want to connect to the IIoT to ensure their systems are running continuously. On its simplest level, this involves constantly checking the system's availability by sending a test call to the system being monitored, such as a programmable logic controller (PLC), every minute. If the test fails, the system is unavailable and the engineer can receive a notification through a SMS message.

Once this basic system has been successfully set up, it can be enhanced further. For example, engineers may find that receiving a text message every minute while the PLC is unresponsive too disruptive. This can easily be avoided, by adding a rule that the message is only sent out once the PLC changes from being responsive to unresponsive.
Even then, if the PLC keeps switching from online and offline states, then the engineer may still receive more notifications than preferred. Then, another layer can be added that ensures there is no more than one message sent per hour.

To make the monitoring even more advanced, a time counter layer can be added. This can provide data on how long the PLC spent in online or offline mode over a specific time frame, with an uptime report scheduled for when is convenient—once a day for example. By adding all of these improvements, what once started as a basic system has been upgraded to a sophisticated process that provides valuable data with minimal interruption to engineers.

Ensuring data integrity
Starting with simplicity is applicable to many other areas of the IIoT, including data integrity. Crucially, manufacturers require data, such as sensor data, to be updated at a certain rate. If sensor data is not updated frequently, it can disrupt a number of manufacturing scenarios—causing bottles of juice to be overfilled in a food manufacturing plant, for instance.

To achieve this, a flow can be set up to check that the data changes every second, and that can be advanced by adding an alert that notifies when there are no changes within 70 seconds.

This simple flow can be expanded by adding more sensors, potentially monitoring thousands of sensors for failures. The results of this monitoring can be sent to enterprise resource planning (ERP) software or a manufacturing execution system (MES) to prompt further actions. ERP software can integrate all of the data collected and display it in real time in one unified interface. An MES can turn

off the devices in the production line associated with the faulty sensor until it is fixed to avoid defective products being created.

Keep it simple
In essence, when implementing an IIoT process, manufacturers must try to scale down the project to the absolute minimum, while still adding value. Then they should add on features incrementally until the final goal has been met.

To make it easy to add new rules and processes, the Crosser edge analytics platform has a simple drag-and-drop system with pre-built modules, providing a straightforward way to build a simple flow into a complex system. For example, the Time Counter module can provide a summary of how long a piece of equipment stays in an offline or online state. In addition, the Timeout module can order test calls to sensors at a specified frequency to monitor for failures.

When implementing the IIoT, slow and steady wins the race. If manufacturers are going to successfully scale Industry 4.0 and avoid being stuck in pilot purgatory, they must start small. By applying changes little by little to gradually develop an advanced and secure system, manufacturers will find that it's actually the small actions that can provide the best results.