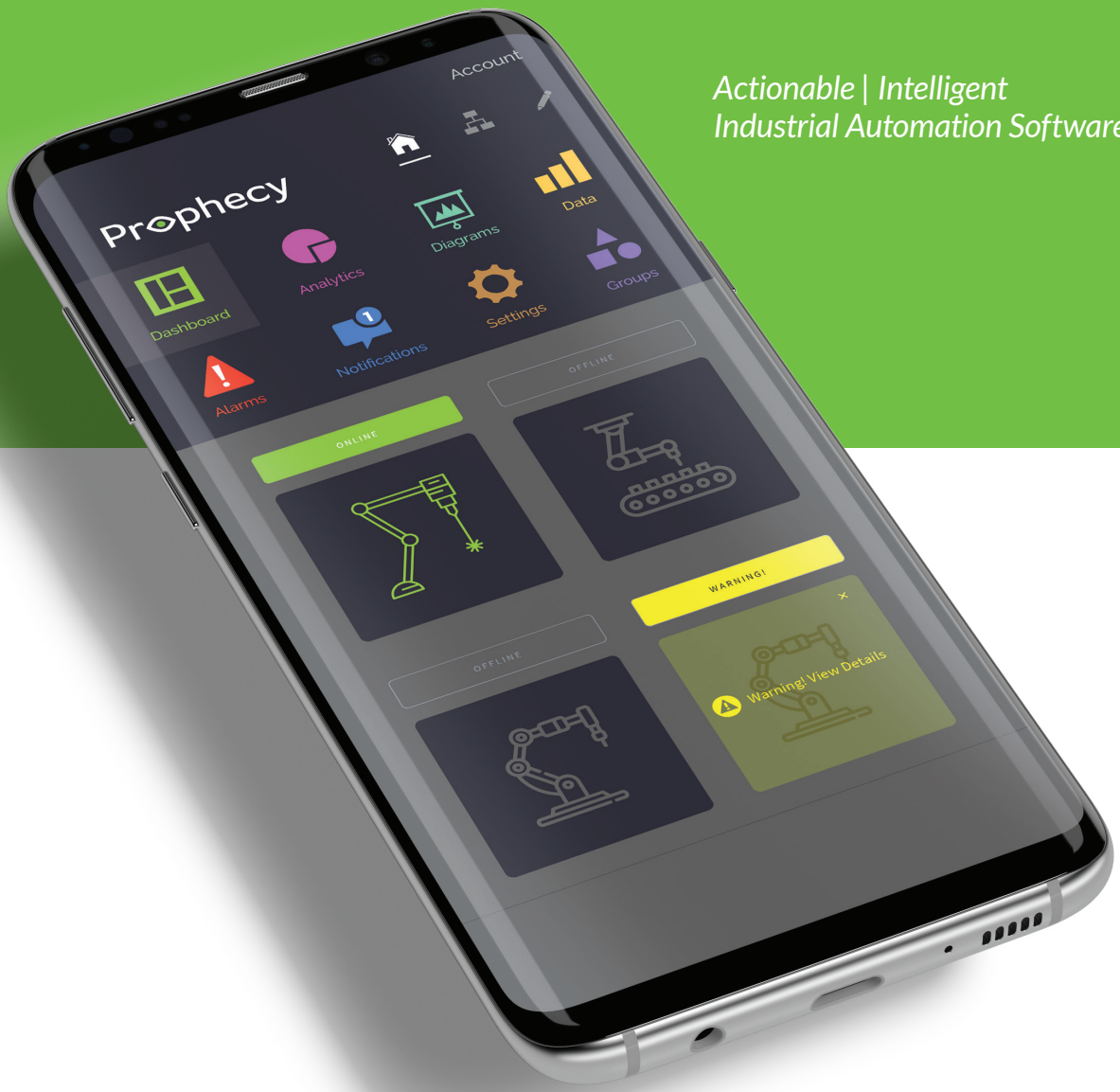
Actionable | Intelligent
Industrial Automation Software



Prophecy

The Vision to Succeed


IoT is one of the hottest and most highly rated technologies for manufacturers today. Picking the right partner and solutions provider is paramount to success.

Executive Overview

As a manufacturer, there's no doubt you have seen the high levels of information, stories and hype surrounding the Industrial Internet of Things market and the large number of providers that make claims to their expertise in the market. Recent numbers such as from IDC and their December 2017 forecast of $772 billion for IoT spending and Gartner's March 2016 claims of 43% of companies using IoT would indeed indicate a market that is growing rapidly. Indeed, if you were to perform a simple Internet search on IoT or more specifically Industrial IoT which is what industrial manufacturers should be looking at, you will fund hundreds of companies making claim that they can provide systems and expertise. So how can you be sure that these suppliers have the right skill set, experience, and best delivery track record and will provide your company with a solid investment. Make the right choice of IoT Suppliers and avoid going over 40 miles of bad road to a place you don't want to go.

By doing some simple investigation into the supplier's background, you can validate their approach to understanding your business objectives, manufacturing methods and even your company culture. You can sort out the best suppliers from those that will provide sub-optimal solutions. In this document we will provide some guidance of what to look for and what to ask for of an Industrial IoT provider.

Your Industrial IoT provider must bring in-depth knowledge and experience in the manufacturing / ERP industry. This is critical to configuring IoT in the most effective manner to capture and analyze “the right operational data” along with precise ERP integration. Providers without this expertise will likely fall short of delivering a complete, process oriented solution.

Expertise in Manufacturing

Industrial IoT is an extension of manufacturing processes that are already in place in your organization. It is a way to automate the acquisition of machine / production equipment data. Capture that data with the intelligence of in-context relationships of product requirements and machine capabilities. Then present that information in ways that can benefit manufacturing. To accomplish this relationship of the voluminous amounts of machine generated data in the context of manufacturing processes, the IoT provider must have expertise in manufacturing. By knowing what data is important to capture and how to align it with the requirement for KPIs and process improvement metrics; capturing the right data versus data that has no bearing on making process improvements. An example may be the measurement of a dimension of a punched hole in a part. With a punch and die, the circular dimensions do not change unless the punch and die breaks. Collecting this data in real time for analysis may not be as useful as collecting the temperature of the punch and die which would indicate a dulling of the tool before catastrophic failure. A strong IoT supplier also can assist in setting up the proper sensors or even assist with providing PLC and automation hardware so to offer the best and optimal data acquisition of information. To accomplish this, an IoT supplier must be able to bring together Operations Technology (OT) with more traditional Information Technology (IT) into a single and unified group, to reach levels based on synergies and expertise of both. The value of amalgamation of IT and OT should not be underestimated. According to Aberdeen in their October 2017 publication, best in class manufacturers will create unified IT and OT leadership and guidance with 43% establishing a formal organization.

Expertise in manufacturing also should bring with it the expertise in ERP. IoT will rely on ERP integration for obtaining process targets, run rates, operation details and the financial metrics to provide the in-context display and analysis of the machine data. A supplier should know how to access critical ERP data easily and reliably without having to be overly dependent on the client's IT staff as they are typically fully consumed with daily operations. The supplier also should be competent to work with the ERP to place data generated from the IoT system back into the ERP with security and accuracy and provide the client's IT staff with recommended best practices for IoT to ERP integration.

IoT providers that have years of experience in core manufacturing and updated technology skills (that grew from those past years of SCADA and MES), are the most qualified to provide true Industrial IoT with the in-context manufacturing concepts.

Work with an IoT provider who follows a logical and collaborative approach. They should invest in a comprehensive onsite discovery session and apply their expertise in Industrial Automation, Business and Process Analysis and Manufacturing acumen. This will result in well-defined requirements, a solid delivery approach, and plan to insure on time and on budget success.

Completeness in Solution Discovery and Specification

To properly understand the requirements and provide the best IoT solution, effective discovery and investigations of the production system are required. This typically requires an on-site meeting with shop floor walkthroughs to capture information as to the types of equipment, PLC manufacturers and versions, sensor types, and network infrastructure that is in place. The IoT supplier must have deep expertise in industrial automation and SCADA. Knowing which PLC protocols are in place and are easily accessible versus adding new custom hardware can save a client significant investment. Typically, it's better to directly connect to the machine's PLC to read actual tags and data points. This is assuming it can be done securely and reliably without harmful effects to the PLC. To accomplish this, deep knowledge of industrial automation systems is required. Typically, manufacturing equipment have long lifespans. Therefore, the IoT supplier needs to be able to work with older hardware that may predate current networking. Understanding such connectivity technologies such as RS485, Modbus RTU and how to convert these to more current ethernet protocols is a requirement.

The ideal IoT solutions supplier will also understand manufacturing processes. They will be able to determine if add on hardware will be needed and what the performance characteristics of this hardware should be. For example, if a high speed punch press needs to have a sensor to count strokes which could run at 800 strokes per minute, a sensor that has an acquisition rating of 50ms should be used in order not to miss strokes of 13 per second (76 ms per stroke). Along with a high-speed sensor, a PLC should be used for local counting to avoid network propagation issues. The IoT software will interrogate the PLC at a lesser rate, say 1 poll per second and capture the aggregated counts.

IoT providers that have perfected formal discovery techniques can effectively gather critical data such as tags from your PLC devices. They will work with your OT professionals to capture this information into standardized templates that can be used then in the subsequent proof of concept demonstrations.

You as the client should expect the IoT provider to produce a detailed discovery which includes an inventory of the devices plus suggested sensors and measurements techniques based on the machine types and technology. This detailed discovery document will be the basis for which a qualified IoT provider will implement your industrial IoT solution. As a result, the recommended solution and implementation scope will be properly aligned with your business objectives.

The availability of Human Capital is now constrained at historic levels. Operations Technology and Information Technology must work in unison for success in Industrial IOT projects. A proper implementation plan executed by experienced manufacturing professionals is key to reaching the goal.

Implementation Done by Manufacturing Experts is Key

Even the best software created by manufacturing experts with perfect alignment is of little value unless proper implementation, training, and support are included in the process. Just like having the most powerful race car on the track will not get you to the checkered flag - unless the driver and pit crew are aligned and working together.

Implementations of manufacturing Industrial IoT software requires a unique set of skills and processes. Today's manufacturing workforce is operating at capacity or overtime in many cases, unable to spare time on new projects. Manufacturers also are also faced with silos of staff, specifically with operations technology staff and Information technology staff. This OT versus IT gap is becoming evident, particularly in organizations that wish to implement Industrial IoT solutions.

The issue of limited Human Capital availability, which is becoming more critical, as well as the disconnect between OT and IT must be addressed to have a successful Industrial IIoT project. Working with a provider that has been in manufacturing performing ERP implementations can be a great benefit because they understand critical manufacturing processes. Disciplined and efficient project management coupled with training processes that do not consume excess employee bandwidth is required. Software that comes pre-configured and nearly plug and play is also critical. You'll save countless hours of implementation with simple wizards and end user-enabled design tools that require little training, because the layouts and techniques are intuitive.

To effectively bring the OT and IT staff together, you'll require tools and interfaces that enable OT to talk PLC and automation language. At the same time, solutions are required that work within the IT infrastructure (such as Active Directory for SSO, Windows Server and SQL) to keep OT and IT teams on the same track and working tightly together. Taking it a step further, when a key requirement is to maintain Intellectual property control and retention of process data, it is desirable to deploy on-premise. Many companies also want the simplicity of a "cloud solution" experience in relation to support, maintenance and updates. Prophecy IoT provides a fast an on-premise deployment with pre-configured hardware like a cloud-like experience that will save considerable IT resource bandwidth and enable OT to get to their goals faster. It's a win-win approach for the whole organization.

Ready to make the move to business improvement – contact the Prophecy team to find out the details. Through our onsite Discovery / POC approach and years of manufacturing experience, we're confident we can provide a complete, cost-effective solution.

Your Machines Hold the Answers

As you and your organization realize the benefits of a sound Industrial IoT solution, keep in mind that picking the right partner and solution provider is the first step in the journey. This decision can make or break the success of the project. As you know, manufacturing is not simple and easy. So picking a partner that understands and has the history and experience in the manufacturing environment is critical to success. Second, working with a partner that takes the time to understand your process and technology requirements in depth - both Operations and Information Technologies is required. Third, a provider that can demonstrate their solution live, in your environment and showing real information live from your equipment will be the difference between a trusted provider that will deliver a solution and one that you may regret.

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