



UTILIZING DYNAMIC SCHEDULING IN A PREDICTIVE MAINTENANCE WORLD

KEY QUESTIONS:

P3

How do advanced scheduling, predictive maintenance and Internet of Things link together?

P4

What is the first step in moving from reactive maintenance to predictive maintenance?

P5

What are the benefits of implementing an IoT solution?

IFS WHITE PAPER

Christine LaVoi, Senior Client Manager, IFS in North America, March 2017



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UTILIZING DYNAMIC SCHEDULING IN A PREDICTIVE MAINTENANCE WORLD

CHRISTINE LAVOI, SENIOR CLIENT MANAGER, IFS IN NORTH AMERICA

People assume that machines will talk to each other as part of IoT, but it seems that the integration of data from IoT projects is something that is lacking. In fact, it's common to see organizations working with multiple IoT projects because of the disconnected flow of data. Effective use of real-time data from IoT projects enables operative predictive maintenance, which can link to advanced scheduling, more effective delivery of service, and higher customer satisfaction ratings. But how do these three business strategies link together?

In the context of this white paper, IoT means using data coming from sensors, in combination with data interpretation to predict maintenance needs. From those predictions of maintenance needs, the most efficient field schedule can be created through advanced scheduling based on data provided from the machine in the field, technician skills, and parts and tools needed for maintenance. These predictions in combination with advanced scheduling take the schedule beyond drive time and identify the most effective use of your most important asset—the field service engineers.

IoT STRATEGY

No matter the industry, any company can leverage an IoT strategy. Mobile phones, tables, machines and other devices continuously collect information that can be analyzed and acted upon. Cisco IBSG predicts there will be [50 billion internet-connected devices by 2020](#). This is an astonishing 100 percent increase from 2015. This increase in internet-connected devices provides the opportunity to embrace IoT in a big way by leveraging large quantities of data from connected devices.

IoT sensors provide information on devices in the field indicating types of maintenance necessary for each service repair. Data collected from these sensors can range from runtime, motion, temperature, humidity, vibration, trajectory, velocity, altitude, and much more. The real-time data provided by IoT sensors enables a company to make more informed, educated decisions and reduce assumptions about machine runtime. This prevents parts from being replaced prematurely or part failure because of overdue service given unexpected wear of the part from substantial machine runtime.



DATA COLLECTED CAN INCLUDE

Runtime, motion, temperature, humidity, vibration, trajectory, velocity, altitude and much more.



PREDICTIVE MAINTENANCE

As unplanned downtime can disrupt an entire organization, diminishing downtime is invaluable to organizations. Equipment downtime often results in significant losses. [A survey conducted by Nielsen Research](#) demonstrated that downtime costs an average of \$22,000 per minute. Because downtime can be so costly, most organizations invest in predictive maintenance in an effort to replace worn-down parts before they cause downtime. A well-designed IoT solution is a step in the right direction.



The first step to predictive maintenance is moving from a reactive form of service to a conditioned-based service. If an organization receives accurate, timely information about how its equipment is being used and updates of its current state, the organization can more effectively schedule preventive maintenance. This improves the service an organization delivers and reduces the wastage of sending engineers to perform preventive maintenance tasks before they are needed. Going one step further, IoT enables an organization to shift from reactive and even conditioned-based service to a predictive form of service. Simply put, the pain of downtime cannot be eliminated when an organization can only react to downtime; at best it can only be minimized. If an organization analyzes data coming at real time from devices, facilities and assets in the field, and compares the information against historical data, that organization can begin gathering insights into when downtime may occur before it happens and perform the preventive maintenance beforehand.

LEVERAGING REAL-TIME DATA WITH ADVANCED SCHEDULING

When real-time data from an IoT solution connects with an advanced scheduling solution, a field technician can be notified of high-priority maintenance, prioritized by the advanced scheduling solution's ability to adjust a schedule by responding to customer SLAs as appropriate. The solution generates the most efficient, cost-effective schedule, identifying travel routes for the technician in closest proximity to the site of maintenance, with the right tools and skillset to meet the maintenance needs.

DOWNTIME COSTS

“A survey conducted by Nielsen Research demonstrated that downtime costs an average of \$22,000 per minute.”



CONDITION-BASED SERVICE

If an organization analyzes data coming at real time from devices, facilities and assets in the field, and compares the information against historical data, an organization can begin gathering insights into when downtime may occur before it happens and perform the preventive maintenance beforehand.

An advanced scheduling solution should possess the ability to schedule maintenance for complex service equipment. This benefits a service organization by providing optimum usage of service tools to complete preventive service maintenance for customers in the most efficient manner possible. The scheduling solution should also take into account customer calendars with requirements of peak periods of shutdown. All of these functional pieces of an advanced scheduling solutions, paired with an IoT solution, deliver high customer satisfaction and a step in the direction of predictive maintenance.

BENEFITS OF AN IoT SOLUTION

To move from reactive maintenance to predictive and preventive maintenance, an IoT solution providing real-time data should be implemented. By attaching sensors to equipment and facilities, an organization can gain information about the condition of the equipment and facilities and how they are being used. Is the robotic arm vibrating too much? Is the refrigerated room too cold for what it stores? The sensors collect data, and by using a communication platform, they transmit data to a cloud-based IoT listener. The IoT listener analyzes the data to determine if it is actionable, and if so, the data is sent to the organization's field service system. The field service system analyzes the data and issues prescribed actions that automatically lead to tasks being performed based on rules defined by the user. For instance, a task could be assigned to a field technician who travels to a customer site to address an issue before a customer is even aware that they have an issue. Talk about a high customer satisfaction rating!

An IoT solution should receive all information from devices in the field and process the data efficiently to determine what data is actionable versus what is observable. The right IoT solution will have enough bandwidth to handle all of the data and determine what is actionable and send those items to the field service solution. The solution should operationalize and optimize data that is received. It should receive the actionable data from the field and generate an appropriate prescribed action based on the actionable data. In order to execute these tasks, an IoT solution should have access to all items in a field service system. This means the solution is able to automatically apply a service contract if one should be applied, automatically apply a warranty if necessary, or even look up an assigned contact for a customer. This saves back office time as well as time in the field, leading to faster service response times and higher customer satisfaction.

WHAT'S NEXT IN IoT AND ADVANCED SCHEDULING FOR FIELD SERVICE

An IoT solution should work naturally with a field service system with seamless flows of data. By having full-access, seamless connection to a field service system, the IoT solution offers the full power of a field service solution combined with valuable real-time data that can be used in any number of combinations to move an organization from reactive maintenance to predictive and preventive maintenance.

BENEFITS OF AN IoT SOLUTION

A task could be assigned to a field technician who travels to a customer site to address an issue before a customer is even aware that they have an issue



IFS IoT Business Connector™ and IFS Field Service Management (IFS FSM™) are designed to help achieve better efficiency, increase revenue, provide the opportunity for organizations to deliver new offerings and improve the quality of both the service and product an organization sells. This is all made possible by obtaining more information and making better and faster decisions based on the real-time information received from the IoT solution and seamless connectivity with IFS FSM.

IFS Senior Client Manager **Christine LaVoi** has worked in information technology for more than 25 years, primarily in the field service management space. She holds a B.S. degree in Business Administration from the University of Wisconsin-La Crosse.

ABOUT IFS

IFS is a globally recognized leader in developing and delivering enterprise software for enterprise resource planning (ERP), enterprise asset management (EAM) and enterprise service management (ESM). Founded in 1983, IFS brings customers in targeted sectors closer to their business, and helps them be more agile and prepare for what's next in their industry. IFS's 3,300 employees support more than 1 million users worldwide from its network of local offices and through a growing ecosystem of partners.

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AMERICAS	+1 888 437 4968
ARGENTINA, BRAZIL, CANADA, ECUADOR, MEXICO, UNITED STATES	
ASIA PACIFIC	+65 63 33 33 00
AUSTRALIA, INDONESIA, JAPAN, MALAYSIA, NEW ZEALAND, PHILIPPINES, PR CHINA, SINGAPORE, THAILAND	
EUROPE EAST AND CENTRAL ASIA	+48 22 577 45 00
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EUROPE CENTRAL	+49 9131 77 340
AUSTRIA, BELGIUM, GERMANY, ITALY, NETHERLANDS, SWITZERLAND	
EUROPE WEST	+44 1494 428 900
FRANCE, IRELAND, PORTUGAL, SPAIN, UNITED KINGDOM	
MIDDLE EAST AND AFRICA	+971 4390 0888
INDIA, SOUTH AFRICA, SRI LANKA, UNITED ARAB EMIRATES	
SCANDINAVIA	+46 13 460 4000
DENMARK, NORWAY, SWEDEN	
FINLAND AND THE BALTIC AREA	+358 102 17 9300
ESTONIA, FINLAND, LATVIA, LITHUANIA	



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