



# THE DISRUPTIVE TECHNOLOGIES SET TO DRIVE CHANGE IN EAM—AND HOW TO PREPARE

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## HIGHLIGHTS

### P1

EAM is becoming even more critical as businesses undergo digital transformation and demand more connectivity and real-time data communication

### P3

Machine learning and predictive analytics are two key benefits organizations can realize with the intelligence IoT is bringing to the workplace—making sense of all that data

### P6

Organizations need an agile and future-proof EAM solution that evolves alongside businesses without disruption

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# THE DISRUPTIVE TECHNOLOGIES SET TO DRIVE CHANGE IN ENTERPRISE ASSET MANAGEMENT —AND HOW TO PREPARE

**Businesses are currently undergoing massive digital transformation, creating opportunities to leverage emerging technologies and enable fresh approaches to business practices. These are not just flash-in-the-pan technologies, they are long term shifts in the way we use technology—requiring a strategic approach if they are to provide bottom line benefits.**

The driving force behind the disruptive trends we are seeing today is connectivity and real-time data communication. In a recent global IFS survey<sup>1</sup> of business decision-makers, Internet of Things (IoT) and cloud computing as the two most important technologies driving digital transformation, with cognitive computing and machine learning coming second and third respectively.

Enterprise asset management (EAM) is an area of business that is particularly influenced by these advances in technology—with more asset-centric, real-time data available to be fed back into centralized systems. But in order to realize maximum asset availability and benefit from greater business intelligence and a 360 degree, enterprise-wide view, businesses will need the right EAM approach, one that is geared towards streamlining asset management and maintenance.

## 1. THE INTERNET OF THINGS

IoT is more than just a technology. It encompasses a whole raft of various technologies which rely on connectivity and real-time data availability.

IoT enables organizations to collect more granular information and quickly respond to changes, or act on new business intelligence. This change in the way businesses are starting to use technology is set to have a big impact on every stage of production and distribution.

A single asset might have anywhere from dozens to hundreds of sensors continually monitoring performance—a whole enterprise might have hundreds of thousands or even millions of sensors. This move toward increased connectivity is developing fast, and a recent report from Gartner<sup>2</sup> predicting 6.4 Billion connected “things” will be in use in 2016, up 30 percent from 2015.

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<sup>1</sup> [ifs-world.com/us/sitecore/media-library/assets/2016/07/06/ifs-digital-transformation-survey-2016-infographic/](https://www.ifs-world.com/us/sitecore/media-library/assets/2016/07/06/ifs-digital-transformation-survey-2016-infographic/)

<sup>2</sup> [www.gartner.com/newsroom/id/3165317](https://www.gartner.com/newsroom/id/3165317)



With more real-time data facilitating real-time operational decisions, it's the EAM's job to produce business actions to minimize the disruption to operations.

With enterprises starting to build their own connected networks, this introduces new project and supply chain management challenges. As we move into a world where everything is connected, a new 'smart infrastructure' will need to be put into place and organizations will need planning and asset management tools capable of dealing with the scale and lifecycle of dispersed IoT assets. This is where the unique IFS Project Asset and Lifecycle approach really comes in to its own, as it can manage the asset over its entire lifecycle and track where the asset is. If the asset is swapped around, moved, repaired, sold or scrapped, you need full supply chain visibility to manage it effectively.

### The connected EAM

The number of connected objects collecting and sharing data continues to grow, and there is a growing pressure, not only to reliably capture all this data, but to convert the relevant data into real business actions.

This is where the modern enterprise asset management solution shows its worth. For example, IP enabled remote cameras are starting to make their way into the cockpits of large earthmoving vehicles used in mining. To combat potentially disastrous accidents resulting from operator fatigue, these cameras can be connected to centralized systems that use facial recognition software. This can monitor for signs of tiredness and either trigger an audible alarm to alert the driver or even trigger a response from HR and pull the operator from active duty.

While this can undoubtedly minimize the risk of serious accidents arising from human error, it will of course have an effect on operations with increased downtime. With the right EAM in place however, a dynamic scheduling tool can automatically adapt to these changes and reschedule a suitably qualified and available alternative employee, avoiding any downtime. This is the type of scenario that will play out across the entire enterprise. With more real-time data facilitating real-time operational decisions, it's the EAM software's job to produce business actions to minimize the disruption to operations.

### A new formula: CBM+IoT

Condition based maintenance (CBM) strategies may not be a new development in managing complex assets, but IoT is taking this approach one step further by enabling the EAM software to automate intelligent responses to potential faults. CBM monitors the condition of assets in order to determine any maintenance that is required, with sensors in the asset monitoring for specific indicators which signal asset deterioration or performance decrease.

Connected IoT-enabled assets mean CBM is now finally being acted upon as the technology exists to capture, share and analyze data streams. This can then be fed directly into the EAM solution to get an enterprise wide view of

asset status and automatically schedule work-orders or locate the correct spare parts—all in real-time. In addition to this, it allows organizations to build up aggregate data sets on performance and operations which can be analyzed to inform future planning.

### **Adapting to change...**

With new and unique data driven technologies that capitalize on IoT flooding the enterprise space, there is an absolute necessity for an EAM solution to be flexible and open enough to accept a wide range of output messages—whether from the cloud, a control system or a process information historian. At the same time, the solution needs to be agile enough to adapt to changing requirements as business and operational needs evolve and organizations grow and develop these technologies.

The agility of IFS Applications is routed in its core design and moves away from the traditional and inflexible monolithic systems. Based on the principle of modularity, IFS Applications is built up of separate—but integrated—business components which allow organizations to implement an EAM solution with competencies directly suited to their business needs. As asset and data technology evolves further and new business processes and models arise, it's important to avoid the 'big-bang' approach and select EAM designed to support change within asset-centric environments.

The modular approach allows additional components to be added to solve immediate pain points without disrupting the components already in place, resulting in a stable operational system able to tackle urgent requirements as quickly as they arise. This avoids the need to implement a broader and more rigid solution, and instead evolve the solution in parallel with business requirements—reducing disruption and business costs.

## **2. MACHINE LEARNING AND PREDICTIVE ANALYTICS**

The internet of things is expanding rapidly, both inside and outside the enterprise, and the important question this raises for business decision makers is 'what actionable intelligence is it producing?' If IoT is the capture, exchange and storage of information across network infrastructure, then it is the analytics capabilities of enterprise solutions which will be providing answers to that question. But the sheer scale of all that big data can seem overwhelming.

To take an example from the aerospace and defense industry, it is reported that the Pratt & Whitney PW1000G family engine has around 5,000 sensors able to generate up to 10GB of data a second. A single twin engine aircraft with an average of 12 hours flight-time can produce up to 844TB of data. How can strategic planners and maintenance teams deal with data when it is this big?

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It's impossible to rely solely on data scientists to sieve through all this information to uncover the two or three percent that might be used to affect decision making. This is where the developing field of machine learning will allow IoT to prove its worth, providing organizations with the information they need to maximize resources, maximize operational uptime and stay competitive.

### **The rise of the machine...learning**

In the past, if something broke you fixed it. Now, with increased integration and the automated process of modern industry if something breaks, we run the risk of entire production lines grinding to a halt or supply chains being disrupted. Condition-based maintenance was designed to combat this by providing real-time maintenance indicators about impending problems, allowing quick responses to faults that are happening right now. The logical progression of this is to ask 'can we take this further and predict what maintenance will be required ahead of time?'

Machine learning is a field of computing—developing 'machines' that can learn from the data. A type of automated intelligent analytics that doesn't rely on pre-programmed algorithms, but enables 'the machine' to learn from huge aggregate data sets to identify new trends and insights. Because these machine learning systems use data collected from IoT-enabled sensors, they can constantly refine models to make analytical predictions on asset performance and efficiency.

### **The future of asset management**

To think about how this can be put to use, let's take something relatively simple like vibration analysis. An operating motor creates its own vibrations and feeds back this information in real-time. If vibrations suddenly spike outside its threshold, an engineer might be scheduled to perform maintenance. But what if the spike was caused by a truck driving too close to the machine rather than a fault in the asset?

Machine learning will allow for analytics software to look at the vibration and know to ignore such spikes. Only when it receives signals of asset degradation in a way that fits the data will it trigger the EAM software to dispatch an engineer to perform maintenance. The engineer will not be out there to solve a problem which doesn't exist, or perform more analysis on why the spike took place, as this will already been achieved by leveraging machine learning and analytics. The EAM software will schedule a work order for an available engineer with the right skill set to perform maintenance work that has already been identified, and identify the right tools and the right parts for the job.

Not only will this dramatically streamline resource allocation for maintenance and repair operations, but these advanced warnings will allow organizations to leverage the global supply chain much more efficiently and reduce local stock levels for spare parts.

### 3. FUTURE MOBILITY

Greater mobility via mobile technology has been impacting business for some time now, with improved communication, field access to computing functionality and documents, accurate data recording and so on. But there are a couple of key technologies which are starting to make their way into the enterprise which are set to have a significant impact

#### Can augmented reality solve resource shortages?

The combination of mobile technology—smart-phones, tablets or wearables—with augmented reality (AR) is starting to generate new ideas for implementing context aware technology within the enterprise.

A common problem facing asset heavy organizations is having people with the right skill-sets in the right place at the right time—even with the right scheduling tools, workers can't be in two places at once. IFS is working with XM Reality™ to bring forward a remote expert to assist in complex maintenance—broadening the capabilities of maintenance engineers on the ground by 'augmenting' worker's skills with virtual over-the-shoulder coaching.

With the XM Reality solution, when a field technician encounters an asset they are unfamiliar with or are experiencing difficulties, they can simply put on a pair of smart goggles or use a tablet device to feed live images and data back to an experienced colleague. Not only can the expert see the issue at hand, but with augmented reality can guide the technician through the correct procedure using visualized hand gestures and tools. This enables engineers to complete the job without heading back to base to gather the needed information and allows highly skilled experts to be in many places at once, bridging any skill gaps which might be hindering operations.

This is just the type of technology that could be extended to provide mechanics and technicians virtual 'sight' of components hidden from view behind other systems or structures, or pin-point exactly where a fault lies by augmenting reality with reference plans and drawings. Context-aware AR technology's key benefit will be reducing the time it takes to complete complex maintenance tasks in difficult environments.

#### Interactive Voice Control

The role of an engineer or a maintenance technician can be a hands-on job.

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Working in confined spaces or in challenging environments is nothing unusual. This is why the growing list of potential benefits from interactive voice systems in mobile apps should make strategic planners take notice. Productivity, accuracy and efficiency would all rise as a result of engineers no longer needing to down tools and take trips to report data back to base, or input data manually.

This technology has the potential to transform how engineers work, with an engineer asking their mobile device to report the status of the IoT enabled asset they are standing in front of. If the readings from the asset did not match what was expected, the engineer could then verbally instruct the system to assign a maintenance task, or locate the correct asset drawings or work log. This handsfree, heads down, approach allows engineers to focus on the task ahead and connect with the enterprise asset management solution in a natural and streamlined way.

## PREPARE FOR CHANGE

The world is still moving forward and technological innovations are appearing all the time, with newer and smarter ways of handling your data and systems. But the fundamental fact remains that there is still a need to manage assets in a safe and reliable way that guarantees their availability. This requires an EAM solution to be able to manage that change and for the EAM software itself to evolve as new demands are placed on organizations.

This is not possible with the inflexible, slow to implement, monolithic solutions of the past, and it is why IFS developed its modular approach to building enterprise solutions. Whether an organization needs to introduce automated processes, dynamic scheduling, or enable real-time control of resources across entire asset lifecycles, IFS EAM solutions are designed to evolve alongside business change with minimal business disruption.

### ABOUT COLIN BEANEY

Colin is the Global Industry Director for Energy and Utilities within IFS where he has worked for nearly 18 years. Colin has been involved in implementing and project managing IFS software into many Project and Asset Intensive organizations in Europe and world-wide. These cover many industries including Energy, Utilities, Pulp & Paper, Aviation and Defence. Prior to this Colin worked as a Management Consultant specializing in maintenance continuous improvement philosophies such as TPM and RCM. He completed a Mechanical Engineering apprenticeship many years ago and spent over 15 years working in Automotive manufacture including time as a Maintenance and Facilities Manager.



## 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 2,800 employees support more than 1 million users worldwide from its network of local offices and through a growing ecosystem of partners.

For more information about IFS, visit [IFSworld.com](http://IFSworld.com)

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