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MAJOR TRENDS

Harnessing big data with Predix

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⋙ ASSET MANAGEMENT   ⋙ BIG DATA
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The Industrial Internet of Things (IIoT) will generate huge volumes of data in the coming years. But harnessing that data to generate meaningful insights is a challenge. Leveraging the power of a specially designed platform can help industrial companies obtain the information they need to optimize assets and gain competitiveness.
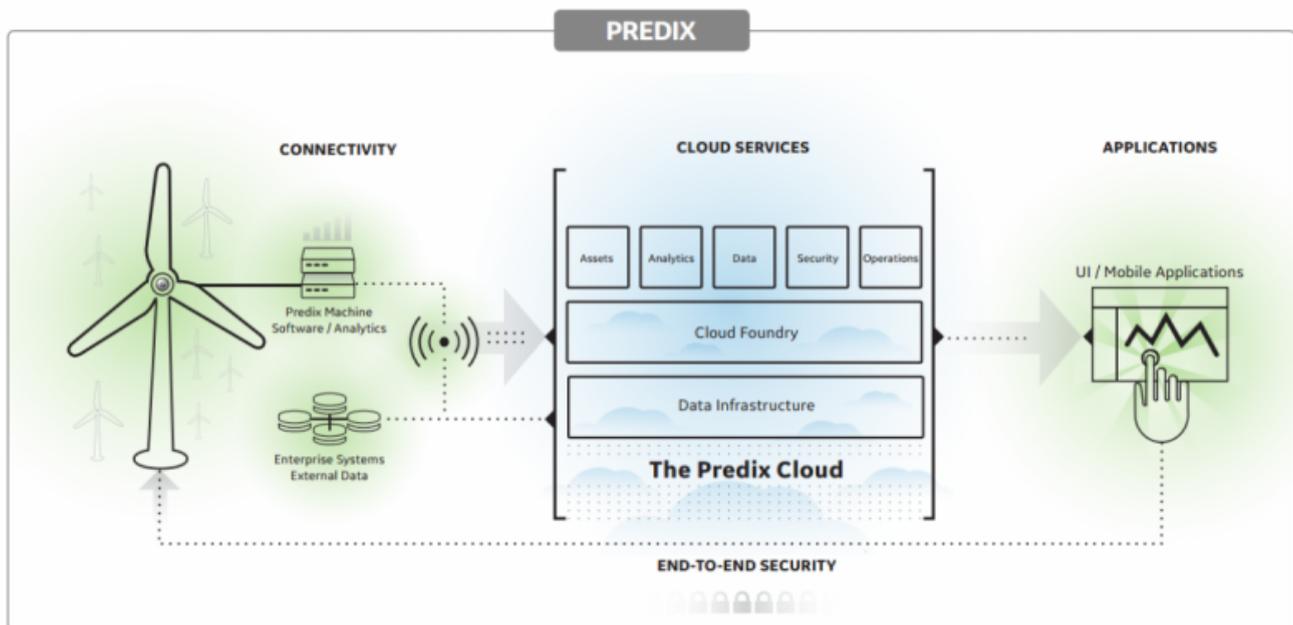
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"GE has developed its Predix operating system to help customers exploit the data emanating from the IIoT," says Greg Petroff, GE Chief Experience Officer, Digital Predix Products & Technology. "Predix is a software platform as a service that runs in the cloud and at the device edge so that customers can tap into it, collect their data and run analytics on them at machine, plant and cloud level. It is designed for industrial and infrastructure companies to handle their very large volumes of data—much of which was not even saved in a consistent way in the past—and run intense analytics computing on them to generate insights into asset life cycles, performance, service optimization, maintenance and upgrading/replacement, investments, CAPEX and other needs."

The platform offers a standardized vehicle to enable enterprises to quickly take advantage of operational and business data. By tapping into a platform designed around a set of re-usable building blocks, developers can rapidly build and deploy applications, reduce the sources of error, lower costs and be sure that their investment is durable over the long haul. The cloud offers the economics of a centrally managed and shared infrastructure with an adjustable scale to meet expanding needs. It also offers connectivity for all the assets of industrial companies and, in

particular, analytics that provide insights and diagnostics to ensure that the assets operate at optimum levels.

PREDIX

CONNECTIVITY

Predix Machine Software / Analytics

Enterprise Systems External Data

CLOUD SERVICES

Assets | Analytics | Data | Security | Operations

Cloud Foundry

Data Infrastructure

The Predix Cloud

APPLICATIONS

UI / Mobile Applications

END-TO-END SECURITY

Predix overview
https://www.predix.com/overview

"These are major benefits for utilities," adds Phil Robinson of GE Grid Solutions, Software Solutions. "They can spend much less time on deploying and configuring their applications and more on developing solutions to drive business outcomes, enhancing their productivity. They have access to a full-function environment that is always up and running." "Furthermore," notes Petroff, "Predix is made up of a broad palette of building bricks called microservices, so customers can subscribe just to the services they need. And these microservices are provided not only by GE, but also by its several partners, startups and even other customers. In other words, a whole ecosystem built by industrial stakeholders who are familiar with the equipment, devices and data that industry uses and who are focused on solving industry's problems."
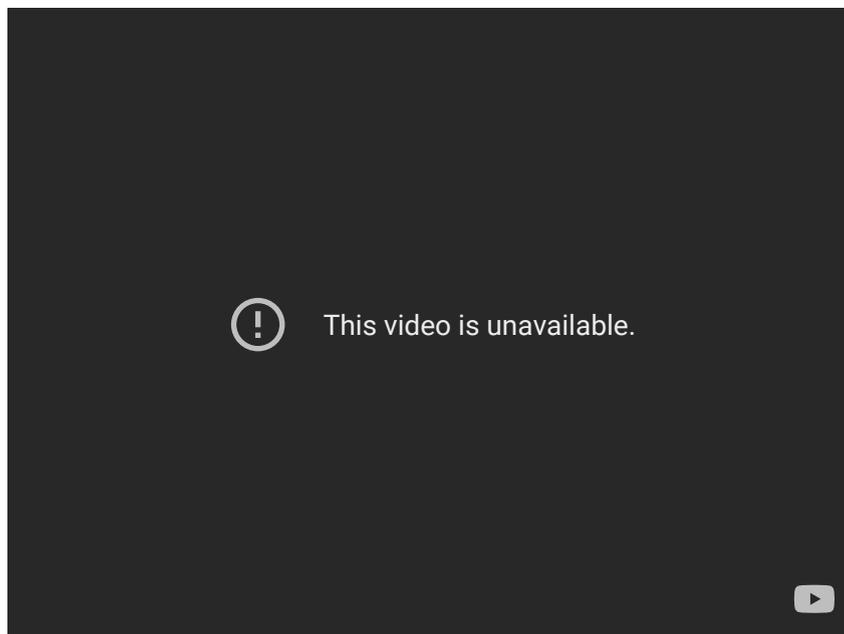
Challenge and opportunity

Perhaps the biggest challenge for Predix is convincing customers of its benefits. Says Petroff, "This is a new model for them for building their software and managing their assets with groundbreaking new capabilities unavailable in legacy software systems. They have to feed their data into the cloud, and many have not realized the value unlocked by doing this yet. And, although GE has been using Predix internally for years—to great advantage—general availability is still quite recent, so there is not as much evidence of ROI yet than we would like to present to customers. The evidence we do have, however, is compelling." Then there is their concern for data security and anonymity. Robinson points out that "Predix takes care of the multi-tenant issue. Data is physically segmented based on identity, and authorization and authentication are always needed to access the databases." Petroff adds, "Predix respects all legal data privacy and security frameworks and operates with two-key encryption. And remember, Predix is not a control system—there is a firewall between the SCADA data and the analytics in Predix, so if there were to be a security breach, the data cannot be tampered with."

Of course, there are other cloud platforms on the market. However, existing platforms are aimed at consumer or enterprise uses. Predix, on the other hand, is designed specifically for industrial clients with industrial problems to solve. "The assets are the critical element," Robinson states, "and GE is a manufacturer of many of those assets." Petroff continues, "For example, GE has more than 120 years of experience with rotating machines and with power conversion, transmission and distribution

equipment. We know how material behaves in operation and we know the devices. That considerable industry expertise means that we can deliver better insights for customers."

In addition, Predix is built on Cloud Foundry, an open source Platform-as-a-Service from Pivotal, with its support for existing languages and programming tools, its expanding library of services, and its cutting-edge development and operations (DevOps) environment. It allows application developers to quickly build, test, deploy and scale applications.

Application development made easy

A key advantage of Predix is its ease of getting started. "Customers can actually start playing with Predix in a 'sandbox' environment for free," Robinson points out, "so there's no big up-front investment required to get going. The technology is open and mainstream, not proprietary, with sample applications and components that anyone can take a look at. The development ecosystem offers numerous tools, videos, blogs, training, tutorials and a collaboration environment that caters to all levels of expertise. With a starter application, for example, a customer can spend 15 minutes on a tutorial and then begin."

GE Grid Solutions runs a number of applications on Predix that are crucial to utilities. The intelligent mapping service, for example, that records the different asset locations in the network and presents them visually for field engineers, providing them with status information on the network, equipment and devices. Robinson also points to the Asset Performance Management System. "This is a service optimization solution gathering real-time monitoring and diagnostics information on assets in the field. It runs analytics and makes near- to long-term predictions so that a reliable life cycle strategic plan can be established. Of course, the output of such analysis may be work, so Predix also has a mobile element so that work orders can be sent to field engineers on their laptops, tablets or phones." These are just some of the applications already available on Predix. Others will follow, making Predix an essential tool for forward-looking utilities.

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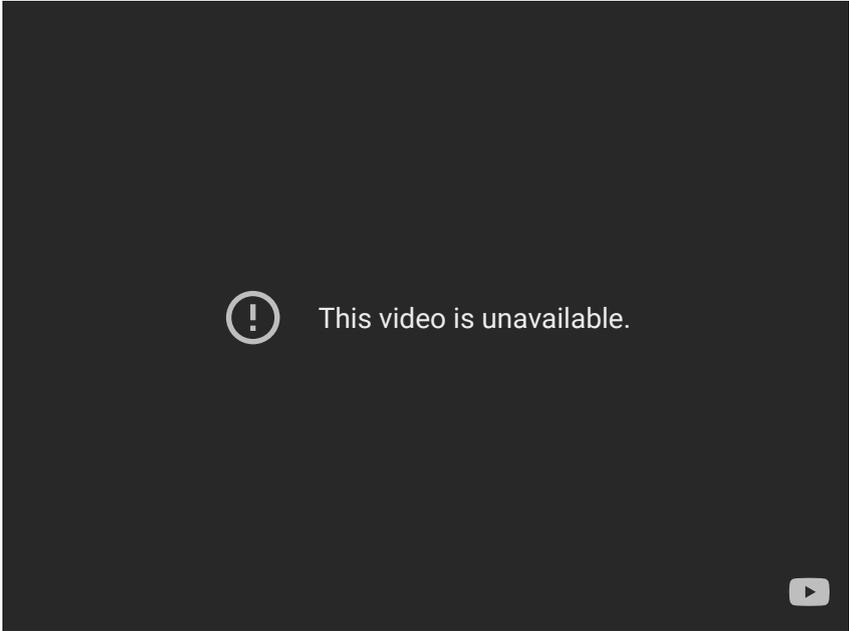
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EXPERTS

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