



Blueprint for Success

The power industry is one of the biggest generators of data in the world," says John Kalanik, President of US-based InStep Software. "One of the goals of our customer base is to get a better understanding of how their systems act, how they are performing and how they can improve upon that performance."

Improving performance is important to every player in competitive energy markets such as the US and Europe, as a result, generators, traders, transmission companies and others are constantly seeking accurate, timely data on plant performance, transmission information, fuel costs, electricity prices and more.

Chicago-based InStep Software is one of several companies helping to meet this need in the power industry for accurate, real-time data for reporting and analytics. The company provides software products and consulting solutions for the power, telecommunication and process industries, aiming to close the gap between plant engineering systems and back office IT systems. InStep's customers include major energy companies such as Southern California Edison, Exelon and Ontario Power Generation, all of which are using InStep's enterprise data historian product known as eDNA.

Ontario Power Generation is one of InStep's most recent clients and is currently working with InStep as well as UK energy company Innogy, to install eDNA.

Innogy itself is no stranger to the use of data historians and is using its understanding of their value to help other energy companies such as Ontario Power Generation to install and use them. For the last 12 years Innogy has been using OSI Software's PI data historian, but over the last year has become familiar with InStep's eDNA product while working with other power companies.

Innogy's experience with data historians has enabled it to develop its own applications to run on operational data archives. "We have produced added value applications based on analysis of plant operational practices," says Robin Gomm, external project manager at Innogy. "[Our clients have] asked us to replicate some of those processes in their environments. While we have been doing that, they have been in the process of selecting the most suitable operational data historian for their business, which has encouraged us to take a close look at the products on the market."

Gomm continues: "The one that came to the top in terms of being of a high standard was eDNA, and from that, and from our relationship with generators in North America, we started to port some of our applications on to the eDNA platform. We have therefore become familiar with the various facilities of eDNA and what it can do."

Accuracy is key

eDNA was developed around 15 years ago by PG&E in California, according to Kalanik. It became available as a commercial product on the market around eight years ago through a company called Industrial Peer to Peer, which InStep acquired three years ago. InStep has sold eDNA to companies across North America, and recently broke into the European market with an installation in Sweden.

At its core, eDNA is a process historian - i.e., a high-speed compression database that captures, archives and timestamps historical and real-time data from power plant operations sources. It takes data from any data generation product in the plant - for example, distributed control systems, maintenance systems and diagnostic systems - and passes it to the historian for storage and long-term compression.

The stored data is made accessible across the enterprise via the web or a client server and can be integrated with other systems for preventative maintenance, forecasting and other analytical functions. Users can look at both real-time data as well as historical data to help them analyze plant operations, improve the accuracy of trading bids, and reduce plant-operating costs.

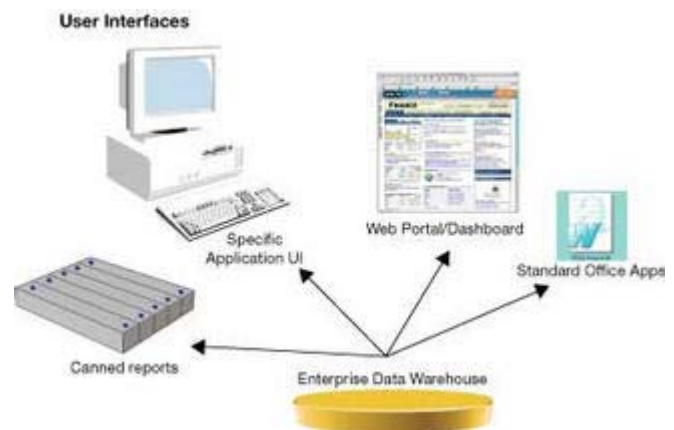


Figure 1. Data historians allow power companies to accurately analyze their performance and improve operations

According to InStep, eDNA can store more historical and real-time data than any of its competitors on the market. It has the ability to collect and store values from a 15 000 data point system for decades, and crucially, it is highly accurate.

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"One of the key issues which is becoming more and more important is that it's great to get that data in but it's very important that when you capture it and store it, it's a very accurate representation of what is going on," says Kalanik. "It's nice to have all that data but if you put in a '1' and get out a '0.7', it's not all that useful."

"One of the things that eDNA brings to the table is the ability to bring in that data accurately. We feel we have the most accurate compression algorithms in the marketplace today to store data for long-term archiving purposes."

In addition, eDNA caters for the 'modern' company with assets spread out over wide geographical areas, says Kalanik. "In the old days there were a set of predefined geographical boundaries that we had to stay within, but today a lot of organizations have assets across the US and across the world that they have to maintain, control and monitor."

To cater for this, eDNA has a distributed architecture and uses a proprietary message-based technology that brings together different historians based in different locations. "So we have the ability to gather real-time data in an accurate manner anywhere that the organization requires it," comments Kalanik.

The message technology also allows large amounts of data to be distributed to many people across an organization. Users request data from the historian by sending a message to the system. The server has the capability to prioritize requests coming in, giving priority to the real-time service, and uses the messaging system to distribute the data. Importantly, data is distributed in a compressed format. This reduces the load on the servers and network, and ensures that the right data gets to the right people. "Everyone who has a stake and can influence the performance of a company can do so because of that message-based technology," comments Kalanik.

Detailed analysis

Built into eDNA is a modular product suite comprising a number of server applications, or services, that allow the user to recall and distribute data for analysis as well as carry out other functions. One of these is the calculation server, which sits in parallel with the historian and the real time services to provide the user with a detailed analysis of the data coming in.

Power plants generate a huge amount of data, says Kalanik, and it is important that plant operators can sift through this quickly and obtain information that will actually be of use to their daily business operations. The calculation server can do this and "is one of the more powerful tools on the market."

Outputs from the calculation server can include, for example, information on steam quality, efficiency, heat rates and fuel flows. It is customizable through its own scripting language in which users build their own equations. Users can also plug in calculation libraries to the calculation server to do more detailed analysis.



Figure 2. eDNA provides high end graphical data

eDNA also includes a resolution agent known as the service directory, which gives end users the ability to maintain the data historian. "Maintenance can be costly," says Kalanik, "but by providing this type of network management tool, our customers can from one location manage an entire enterprise very efficiently."

Web functionality

Other server applications available with eDNA include high end graphical and trending tools, security server, notification and alarm servers. The eDNA Web allows the user to gather and display data from eDNA as well as other data capture products that a company may have installed (for example an Oracle or SAP system). This way, all pertinent data can be seen together.

According to Gomm, eDNA's web functionality is one area where the product has an advantage over competitors. "I would say that eDNA has been very good at addressing the serving of the product through various web technologies," says Gomm. "It is an impressive product when seen using standard web views and building applications for access through the web. This was one of the things that [Innogy] thought was very good."

Innogy's clients are attracted by eDNA's price, says Gomm: "One of the drivers in the current power market is price, and it is safe to say that eDNA is competitively priced."

Gomm is in no doubt of the benefit that data historians can bring to power companies: "The benefits are clear," he says. "We believe that as we have a data historian installed, we have been able to optimize the way that we start and run our plant. For example, we have reduced the start-up time for a particular plant, and by doing that, we have used our fuel more effectively and have been available for the market operator to dispatch us and that in turn increases our income."