WS trends

- High performance
- Real-time analytics
- Rapid development

WS trends builds smart energy management system on InterSystems' technology

When it comes to the "greening" of the world's energy landscape, innovation is taking place on two fronts – energy conservation, and energy generation from renewable sources. WS trends, a software developer in the Czech Republic, has used **InterSystems Caché**®, **InterSystems Ensemble**®, and **InterSystems DeepSee**® to build an application for managing energy grids that provides breakthrough capabilities for both consumers and producers. The Smart Grids Management System (SGMS) gathers data from "smart" utility meters and analyzes that data in real time to provide a number of services.

"European governments have set a goal that, by 2020, twenty percent of their total energy will come from renewable sources," says Ludek Volf, Business Development Manager of WS trends. "That's good news for producers of solar and wind power, but it poses some technical challenges when it comes to integrating green energy into the overall energy distribution system. Renewable energy sources are notoriously unpredictable. It's easy to see how a green energy source might produce too little power – if the sun doesn't shine or the wind doesn't blow – but few people realize that, at times, a renewable energy plant might produce too much power for the

energy grid to handle. When that happens, distributors have the right to disconnect the green energy plant from the grid. It's wasteful and it's expensive, but it's preferable to having the grid fail."

Volf continues, "A better idea is to even out the level of power a renewable energy plant provides, and our Smart Grids Management System helps producers do that. Smart meters monitor energy production in real time. If too much energy is being produced, the system can automatically absorb the excess by turning on select machines or appliances – thereby stabilizing the output."

"Stabilizing the level of demand is the other side of the coin," says Volf. "In many areas of Europe, large energy consumers 'subscribe' to a certain maximum level of energy usage per fifteen-minute period. There are significant monetary penalties for exceeding their subscription level, so they need a way to monitor and control their energy usage minute by minute. SGMS gives them that capability through real-time dashboards and alerts. The control provided is so granular, consumers can use SGMS to monitor and regulate individual appliances."

"That level of control is only possible because SGMS can analyze data coming from hundreds of thousands of smart utility meters in real time," Volf says. "Caché is the only database technology we found that can handle very high volumes of data with the perform- ance we need." WS trends estimates that, running on a single industry-standard server, SGMS can process the data from a million smart meters.

Volf goes on to say, "By using Ensemble to integrate SMGS with other IT systems, we can provide extra value to our customers. For example, by combining smart meter data with information from the billing system, we give energy producers the capability for advanced financial analysis. We even make innovative pricing models possible."

According to Volf, DeepSee is used as part of a unique "artificial intelligence" module. By analyzing current and historical data, SGMS can alert energy producers to any sudden changes, and irregular or unexpected situations in the energy distribution network.

WS trends' innovative approach of designing a solution that manages both energy production and consumption has helped facilitate the establishment of green energy "islands" – self-contained energy networks that make all of the power they use. "Our first deployment, which took only 3 months for the initial development and about 12 months to completely roll out, was for the LUMEN Distribution Network in Prague," Volf says. "Since then, we've added another Czech distributor with more to come. We've built a breakthrough application with InterSystems' technology, and business is good."

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