T&DWorld

EXECUTIVE SUMMARY

Data: The Renewable Resource for Digital Reinvention

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Bryan Sacks, Head of Work and Asset Optimization Solutions, IBM

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KEY TAKEAWAYS

- Technology is driving fundamental change in the utilities industry.
- Utilities need to go digital.
- Mobility offers unrealized potential, especially for field workers.
- Artificial intelligence and machine learning are technologies that are coming fast.

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Data: The Renewable Resource for Digital Reinvention

OVERVIEW

New technologies are fundamentally transforming the utility industry. As this transformation occurs, it is necessary for utilities to "go digital" and to take advantage of the massive amounts of data being produced. In leveraging data, companies can make faster, better decisions; improve operational efficiency; and reinvent how they operate.

IBM is working with businesses to help develop digital strategies that leverage data to address the complex challenges companies are facing.

CONTEXT

Paul Davis described major technology-driven changes taking place in the utilities industry and shared examples of how utilities are leveraging data to dramatically improve their operations. Bryan Sacks discussed the benefit of mobility solutions in the utilities industry.

KEY TAKEAWAYS

Technology is driving fundamental change in the utilities industry.

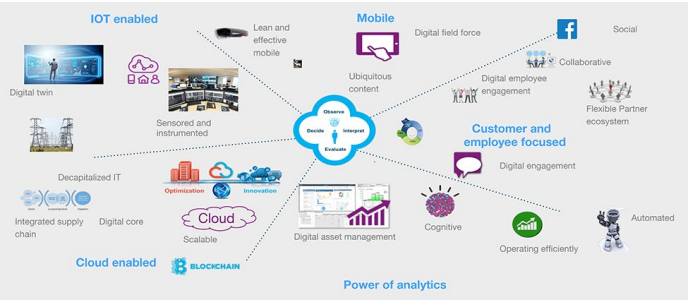
Four key technology forces are driving fundamental change in the utilities industry:

1. **Enabling energy technology.** Solar, storage, wind, fuel cells and micro-grids are fundamentally changing how networks work, moving them from centralized networks to decentralized.
2. **Interactive consumer technology.** Smart appliances, apps, electric vehicles, and social platforms are moving power to the consumer and changing how people use energy. Prosumer enablement is allowing consumers to produce their own energy.
3. **Powerful information technology.** Internet of things (IoT), blockchain, cognitive computing, cloud, and big data analytics allow businesses to capture and analyze more data than ever.
4. **Core business disruption.** Embedded micro-processing, smart grid and grid digitization, automated demand response, advanced network management, and situational awareness make the network much more efficient and effective.

Utilities are responding to these changes by going digital in order to take advantage of the information coming from the technology.

Utilities need to go digital.

As technologies change the utilities industry—pushing the supply chain from a traditional linear model to something more atomistic—utilities must be ready. To be prepared, utilities need to go digital, taking advantage of IoT, the cloud, analytics, and mobile technologies. Utilities that go digital and focus on data will be best prepared.



Digitization of the business brings in a wealth of new data. When considered and analyzed as an integral part of the business process, data can help utilities:

- Maximize efficiency
- Make and act upon decisions quickly
- Find new areas of value
- Reinvent how the utility operates in the modern environment

> View data as a renewable resource. It's the fuel for your business. It's going to drive your value.
>
> *Paul Davis*

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Use Case: European TSO Optimizes Work and Asset Management with Data

Changing regulations and a need to reduce operating costs nearly 23% drove a European transmission systems operator (TSO) to make fundamental changes in how it did business. IBM helped the TSO optimize its work and asset management data with an analytics solution built around user needs.

IBM helped the TSO move from a time-based asset maintenance approach to a more predictive approach using analytics. The solution, which was rolled out over time, focused on four areas

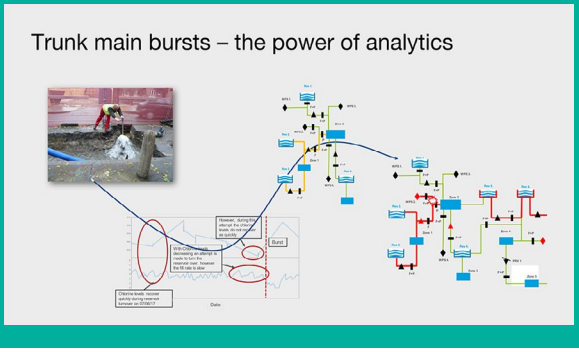
- **Operational analytics**, which allowed the TSO to start understanding what was happening on the network and with its assets from a holistic view. This helped the TSO understand how the changes would impact the cost of the business.
- **Asset optimization** took data that was historically disparate and difficult to combine and turned it into information that employees could interpret in near real time.
- **Visual analytics** took information historically presented as numbers and made it visual. Using tools like dashboards, information from geographic information systems (GIS), asset management systems, operational systems, and other monitoring systems was presented in a coherent and consistent visual way.
- **Use cases** ensured the solution was built in a way that solved employee problems. IBM ensured the solution was delivered iteratively to help build momentum within the TSO.

Use Case: Water Utility Uses Data to Predict and Prevent Water Main Failures

Water main failures and bursts are rare, but when they occur, they are extremely expensive in terms of water lost, regulatory targets unmet, and finding and fixing the problem.

IBM helped a water utility use existing data from past breaks to predict and prevent future water main failures. With IBM's help, the water utility was able to develop a visualization of what a stressed network looked like. With data-driven predictive analytics, the water utility changed how it operated so it could use existing data to identify potential problem areas.

Trunk main bursts – the power of analytics



Mobility offers unrealized potential, especially for field workers.

Mobility continues to evolve at a staggering pace in the consumer space, and also offers potential in enterprises, including utilities.

System and component sensors and monitors collect data that can be used in analytics. Mobility can enhance this data. This can be done by giving field employees tools to capture and correct information when they are on site. Mobility provides field workers with on-the-spot insight based on data analytics that allows them to perform their jobs more efficiently, with more accuracy.

Mobility solutions available today are often what Bryan Sacks calls "first generation," focusing on pushing out data from a single system of record to the field worker, without any thought as to whether that information is useful. Instead, utilities should focus on "next generation mobility," which starts with end users to ensure that their use cases and needs are captured so solutions provided are useful to them.

> A larger number of [current mobility] projects fail because we're not providing something that provides value to the actual end worker.
>
> *Bryan Sacks*

After understanding end-user needs, utilities should identify systems used within the mobile solution. These systems may be internal, like from a supervisory and control data acquisition (SCADA) system, or external, such as from a weather application. Information shared through the mobile solutions should also include cognitive and analytic data that can provide the worker real-time insight enabling them to take appropriate actions when they are in the field.

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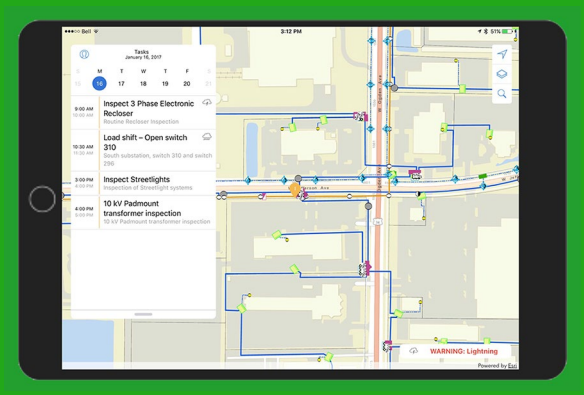
Use Case: RWE Mobile Apps Enable Worker Efficiency

In focusing on end-user needs, German utility RWE, alongside IBM, developed mobile solutions that improved worker efficiency.

RWE and IBM began by developing an application that helped workers in their coal mining facilities increase the amount of time available to work on and maintain equipment. After proving out the concept, they began to look at other areas due for improvement, such as logistics management for getting parts on-site for their generation plants and mining systems.

At this time of this webinar, RWE was readying to roll out an app to 1,300 field workers on the transmission and distribution (T&D) side of the business. Based on feedback from these employees, the experience is based on ESRI GIS maps, with data from other systems—like work order management systems—shown in an overlay on the map. With this tool, workers can self-assign work as well as quickly fill out work completion forms.



With these mobility solutions, not only are employees more efficient, but they have a higher quality of data captured for downstream analytics use.

Artificial intelligence and machine learning are technologies that are coming fast.

Technology is always changing. While utilities look into how to use data and move into the digital world, artificial intelligence (AI) and machine learning (ML) are quickly emerging.

IBM has formed an alliance with Apple, integrating IBM's Watson cognitive AI platform with Apple's Core ML technology, which runs on Apple devices. Mr. Sacks identified ways in which utilities might use a combined AI and ML solution in the future.

Four Potential Uses for AI and ML	
1. Identify	Watson Services for Core ML provides immediate in-app visual recognition on the device, assisting with: – Parts identification – Visual defects – Wear and tear – Training techs
2. Diagnose	Combines human intelligence with ML for quicker problem solving and troubleshooting, such as: – Diagnosing error codes – Adding issues and symptoms – Recommending solutions
3. Repair	Workflow optimization and enhanced repair process through augmented reality maintenance: – Support maintenance and repair – Build a library of known symptoms – Recommend solutions – Act as a training tool
4. Chat	Watson Conversations creates dialog between the app and users using Watson Discovery, automatically connecting to Watson on Cloud for deeper insights and the right fix plan: – Answering frequently asked questions – Recommending best fix plans – Pulling optimized content from technical manuals

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BIOGRAPHIES

Paul Davis

Executive Partner, IBM

Paul Davis is an Executive Partner at IBM and is currently part of its E&U global centre of competence. He focuses on asset management, analytics and enterprise transformation. He has spent nearly 25 years in the energy and utilities sector, leading projects in over 30 countries. A substantial proportion of this has been spent in the networks industries, helping them meet regulatory, competition and technology challenges with the new tools available to support then, such as data science and cognitive analytics. He has also worked extensively in power and gas market design and regulation.

Bryan Sacks

Head of Work and Asset Optimization Solutions, IBM

Bryan Sacks is the Head of Work and Asset Optimization Solutions for IBMs Energy, Environment & Utilities Industry. In his 20+ year career, Bryan has held various roles in architecture and offering management, primarily focused on helping utility clients apply innovative solutions to achieve business results. He has been the lead architect on emerging technology projects including Advanced Distribution Management Systems, Meter Data Management Systems, advanced analytics and mobility. Bryan is currently focused on developing utility specific offerings in asset management, asset analytics and workforce management.