The big data dilemma
Big data is a big deal for the world’s P&U companies. Utilities are grappling with much bigger data volumes along the entire value chain because of numerous trends currently impacting the industry:

- In generation, the decentralization of supply required by decarbonization has created millions of small renewable assets, each generating its own data, with the opportunity to combine them in a virtual power plant.
- Fluctuating and weather-dependent renewable energy production made it profitable to build weather forecasting data for increasingly sophisticated production schedules.
- In transmission, the focus on energy efficiency and reliability has swelled the amount of data produced by controllable substations and improved grid monitoring systems.
- In retail, the trend is toward online smart meters and smart home applications, which continuously generate data about consumption behavior.

While most P&U companies understand the need to master their data, the industry is generally less mature than others in doing so. For most utilities, the potential of insights from big data to drive better decisions and create competitive advantage lies unfulfilled, particularly as they work to modernize the grid, improve customer relationships and offer new products and services.

Overcoming challenges

Significant barriers threaten to prevent many P&U companies from making the most of the potential insights offered by big data. These include:

- The inability to deal with real-time analytics
- A shortage of specialist talent
- Data privacy issues and customers’ increasing reluctance to share their data

Legal issues around data protection are a particular challenge. Any big data strategy that fails to consider these issues will leave its company vulnerable to regulatory and reputational damage. The relevant risks vary widely by region (see inset box for a comparison of the situation in the US and Europe), making it essential to seek professional advice from teams such as ours.

It’s the business phenomenon of our time but how exactly can power and utilities (P&U) companies derive real value from big data? Frank Fleischle reports on the key issues and best strategies to overcome these challenges.
The US and Europe: different approaches to data protection
The different definitions of concepts, such as “protection of privacy” and “personal data,” in the US and Europe present challenges to global utilities. While the European Union (EU) operates under a single basic regulatory regime, in the US, federal laws sit alongside the laws of each of the 50 states, with numerous laws to protect data.

There is also a philosophical difference. While privacy law in the US aims to achieve a balance between privacy and effective business, the EU sees respect of privacy as a citizen’s fundamental right.

One crucial difference is the emphasis placed by US legislation on the protection of data security – especially the obligation to declare breaches of security. In Europe, no such obligation currently exists, though the European Commission proposes to introduce something similar in its forthcoming overhaul of EU data privacy legislation.

Asking the right questions
Asking a series of key questions can help utilities overcome these challenges and find the answers to how big data can add value:

1. **What decisions do we face?** Rather than trying to decide how to use big data, utilities should instead ask themselves why they want to – what are the key decisions currently facing the business? For many utilities, these decisions may be around offering new products and services, moving into new markets, improving customer relationships and the management of assets and infrastructure. Data from smart meters and smart devices, in particular, can enable P&U companies to make informed decisions about these issues.

2. **What data is relevant?** With a better idea of which issues they wish to tackle, utilities can start to work out how to capture and analyze the relatively small amount of data they need. This data may already be available through existing businesses process. Sometimes, new initiatives, or even external partnerships, may be required to access the required information.

3. **Where is the business benefit?** Big data projects will only be successful if they can reduce costs, increase profitability or create a competitive advantage. Developing ways to measure the specific impacts of analytics and data is crucial.

4. **How can the entire company embrace big data?** Extracting the full value from big data requires all aspects of the business to get involved. This is not an issue solely for the IT department – all C-suite roles will need to work together to embrace big data and empower executives to use its insights.

5. **What are the practical considerations?** Generating insights from big data will require addressing practical considerations, such as data storage, analytics tools and the availability of talent. Specialist roles, such as chief data officer and chief analytics officer, may need to be created. Some companies are even building centers of excellence to provide a single point of focus and a platform for information exchange and the sharing of insights.

6. **How will insights be applied to the whole business?** A successful data strategy is one that is driven from the center and interactively exchanges insights and operating experience with the entire organization.

7. **How will we manage risk?** The need to minimize and mitigate risk is an ongoing challenge. Risk-planning, scenario mapping and fire-drill-type exercises will build awareness throughout the business of key risks, and an emphasis should be placed on flexibility, adaptability and responsibility.

Reaping the rewards
While overcoming the challenges of mastering big data will be difficult, the potential rewards are significant. EY research shows that companies that successfully use data are outperforming their peers by as much as 20%. Utilities keen to reap this competitive advantage must first ask themselves the right questions to gain an honest appraisal of the drivers of value within their business, their existing big data capabilities and other challenges preventing them from realizing this value. Importantly, big data should not be left to the IT department only but championed at a senior executive level and tackled by the business as a whole.

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