IBM

The IBM Solution Architecture for Energy and Utilities Framework

Providing a foundation for solutions across the energy and utility value chain

Market forces are impacting the landscape of utilities around the world, requiring the transformation of business models. Climate change and the environment have become enduring public policy priorities. Growth in renewable generation and distributed resources are enabling utility companies to manage more green energy and a more bidirectional, less predictable network. And at the same time, consumers are demanding a new and direct role in personal energy management and conservation. Internally, there is increased pressure to keep rates low but increase operational efficiency and workforce productivity to deliver higher quality, more reliable utilities (electricity, gas, or water). While the pressure on rates is a constant, the new business models driven from these market forces are a high priority in the utility industry today.

> **"The SAFE framework allowed CenterPoint to establish new capabilities while integrating and maintaining the existing functionality of its current IT investments."**
>
> Dr. Steven Pratt
> Chief Technologist
> CenterPoint Energy

Whether they manage power, gas, water or all three, utility companies around the globe are approaching these market forces with three imperatives. They are transforming their utility networks from rigid, analog systems to dynamic and automated energy delivery systems by driving operational excellence. To address consumer demands, some utility companies are improving customer satisfaction with near real-time, detailed information about their energy usage. And, to meet or exceed environmental regulatory requirements while maintaining a sufficient, cost-effective energy supply, companies are investing in greener energy sources as well as a more efficient infrastructure.

How does IBM help with these challenges? Through hardware, software and service offerings, IBM provides a rich portfolio of solutions to help utility companies adapt business processes for power generation optimization, transmission and distribution operations, customer operation transformation and corporate support services. Many of these offerings are connected through a software platform, called the IBM Solution Architecture for Energy and Utilties Framework. Software helps utility companies drive network transformation with standards and flexibility and turn data into actionable information throughout the company.

Industry Frameworks—an IBM approach to industry challenges
IBM's Industry Frameworks combine the power of award winning IBM software with industry-specific assets and best practices configured to meet an industry's unique challenges and needs. IBM Industry Frameworks help clients deploy business solutions faster while lowering project cost and risk. IBM leads the industry in helping clients implement business solutions that deliver quantifiable business results and support their strategic roadmap to achieve increased innovation, agility and competitive advantage—one business project at a time.

The Solution Architecture for Energy and Utilities Framework
The Solution Architecture for Energy and Utilities Framework (SAFE) is an innovative, powerful software platform, uniquely designed to provide network visibility and control, process automation and business collaboration for solutions across the energy and utility value chain.

The framework brings the capabilities of IBM software to power smarter utility solutions across all areas of a utility, including plant operations, mobile workforce management, asset lifecycle management, smart metering, grid operations and customer care. By integrating and optimizing assets, devices, networks, servers, applications and data across the enterprise, utility companies can drive business agility and more 'intelligent' networks.

Each utility company can leverage the technology compo-nents of the Solution Architecture for Energy and Utilities Framework to build unique roadmaps for transformation. The framework approach will help increase the reuse of assets for each successive project, improving ROI and speed of implementation.

The Solution Architecture for Energy and Utilities Framework strengthens line-of-business and IT collaboration by support-ing seven software capabilities critical to smarter energy and utility solutions:

- *Asset, Device and Service Monitoring*
- *Asset Lifecycle Management*
- *Informed Decision Making*
- *Improve Customer Experience*
- *Business Process Automation*
- *Regulatory, Risk and Compliance Management*
- *Security Solutions*

Asset, Device and Service Monitoring

To improve outage management and speed time to resolution, utility companies need real-time control and analysis tools that can help visualize network, device and infrastructure availabil-ity and performance.

Asset, Device and Service Monitoring provides tools to monitor and manage events from all elements of the network infrastructure including power devices, communications/data network, systems and infrastructure. Real time measurement and analysis of utility network data provides operational dash-boards for utility LOB applications. Powerful workflow auto-mates business processes on an agile technology platform enforcing best practices and knowledge capture from a skilled workforce. Better, more real-time decisions result in a healthier, integrated and responsive infrastructure.

Solution Architecture for Energy and Utilities Framework
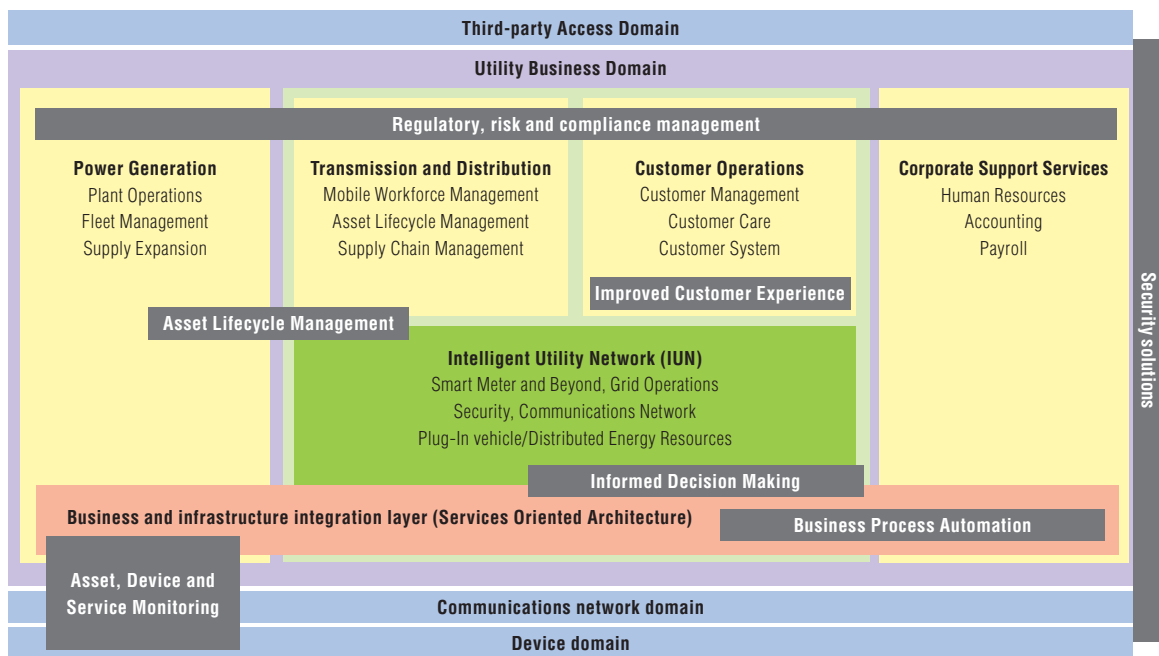
The IBM Solution Architecture for Energy and Utilities Framework integrates information and processes across a utility company.

Climate change and environmental issues have become enduring public policy priorities
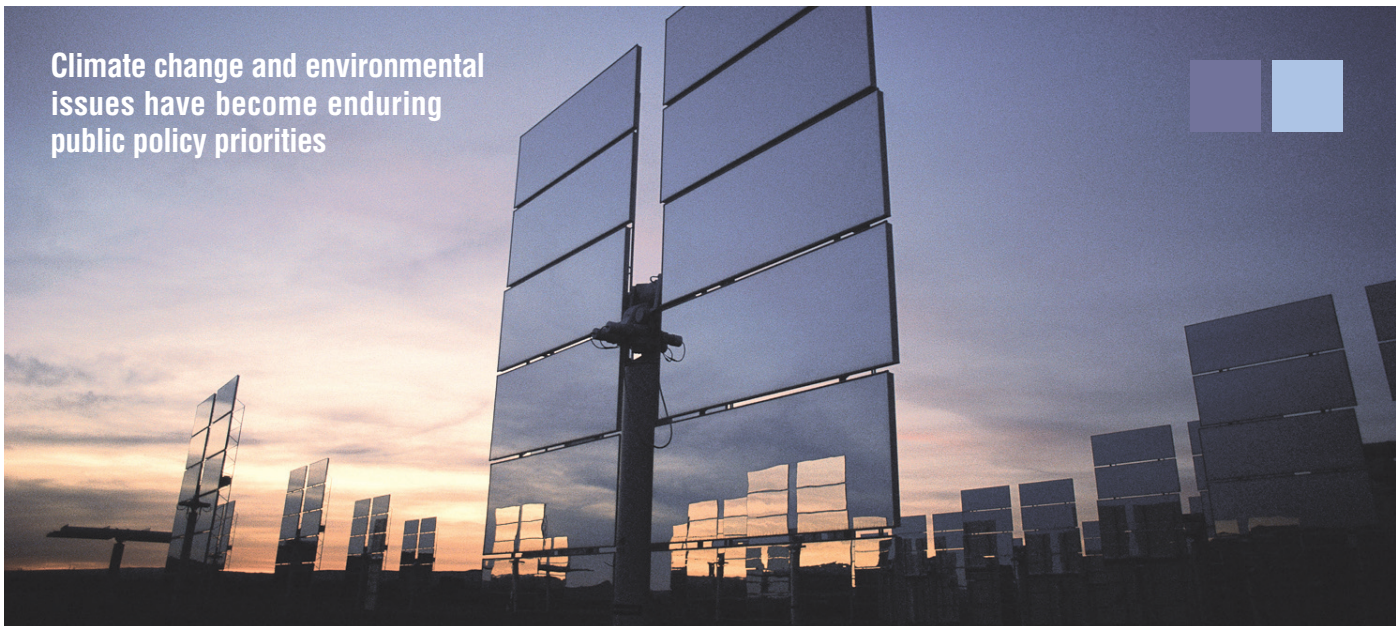
Asset Lifecycle Management

Asset management is often a manual process full of cost and complexity. Consider Asset Lifecycle Management tools to help track, document and make decisions about the procurement, deployment, operation, maintenance, and disposal of field assets.

This capability of the framework can help manage every aspect of the life cycle of an asset or meter (including acquisition, compatible unit estimating, work management, inventory control, location, configuration, preventive mainte-nance, safety and disposal) reducing the cost and complexity associated with redundant asset management infrastructure and manual processes. It helps improve the availability and longevity of strategic assets by managing the content needed to operate and maintain them.

Informed Decision Making

As the rate and pace of change to utility systems and technology increases, companies that can analyze events, develop insights and correlate reactions to change in a timely fashion will benefit from improved business flexibility and performance.

Projects within this area of the Solutions Architecture for Energy and Utilities Framework help you turn real time data into actionable information. With strong analytics and effective business dashboards, you can assess carbon reduction pro-grams to see if they are effective, optimize energy line load profiles or analyze workforce metrics to help create strategic plans. You can also drive new interactions with customers as you enable them to monitor personal utility consumption, costs and power sources. You can target new time-of-use energy packages to encourage users to save electricity during peak periods.

Improved Customer Experience

Environmental and economic issues are leading many con-sumers today to look for ways to be actively engaged in the understanding and management of their personal utility use. Utility companies can now deliver a convenient, personalized customer experience by combining self-service capabilities with interactive communications, enabling consumers to have more control of their utility management and helping Customer Service Representatives to better serve customers.

Solutions built around this framework capability can improve outage management and supply/demand through two-way communication with customers. Utility companies can deliver new tools that provide consumers with more information about, and control of, their sources and uses of utilities.

IBM Business Partner ecosystem enriches the framework

IBM Business Partners augment the Solution Architecture for Energy and Utilities Framework when they enable their solutions on one of the seven framework software capabilities. Through a unique and comprehensive validation process, IBM works with business partners to ensure their solutions are enabled on IBM software and industry standards (like the IEC Common Information Model) to facilitate simple integration and deployment of partner solutions.

IBM Business Partner applications enhance the framework and provide several key advantages. They can reduce the need for internal integration testing by providing pre-certified compatibility between solutions. Utility companies are better able to accommodate new requirements and components, further streamlining operations. These validated solutions drive innovation by deploying new applications faster and integrating them more easily.

Business Process Automation

Utility transformation calls for companies to create new approaches, integrate existing applications and optimize business processes to drive pro-active network management, increased customer satisfaction, and improved business productivity.

Today, process logic and user interfaces are often tightly bound together within business applications and changes to systems are difficult and costly. The Solution Architecture for Energy and Utilities Framework provides tools and best practices to help create or redesign, model, simulate, implement and support new core business processes as well as extend the investment in legacy CIS applications. By leveraging an SOA-based infrastructure that is open, scalable, flexible and based on E&U industry standards, you can better identify and reduce bottlenecks in your business workflow and improve the distribution and sharing of data in real time.

Regulatory, Risk and Compliance Management

Every utility must address changing regulatory requirements, managing large quantities of utility documents and processes to comply with government-mandated regulations. Utilities must also manage regulatory interactions, including rate case management and federal audits.

To meet increased regulatory oversight, new regulations and enforcement initiatives, the Solution Architecture for Energy and Utilities Framework enables a flexible approach that helps you make smart, cost-effective decisions. While each mandate has its own specific requirements, all have a common denominator: the need for greater visibility and control of content and processes to lower risk. This capability helps you effectively manage regulatory interaction including rate case management and federal audits, while providing security-rich content, data provenance and change control for regulatory compliance.

Security Solutions

As security standards for the Smart Grid are refined, the grid's control networks will take advantage of technology already used in IT networks from other dynamic industries. One of the biggest advantages of this transformation is the ability to use TCP/IP technologies for remote monitoring of energy devices, as well as managing grid assets and operations. But this could also increase the opportunity for some to exploit the more open protocols of the Smart Grid for cyber-attacks. And the stakes are enormous.

The good news is that hardened TCP/IP security technologies and software architectural frameworks have evolved to the point where they can be used to help keep the utility network secure. The key is implementing an end-to-end security architecture within the utility network. Security solutions can encompass everything from grid and distribution management, to finance and administration, customer management, HR and procurement.

> **"It turns out that the real key isn't the fact that we've got visibility into the grid, though that was our initial goal. It's that we now have information available on grid performance that we didn't have before. We can do a lot with that information."**
>
> Peter Vinter
> Power grid specialist
> DONG Energy

Security solutions within the framework can help to detect patterns of traffic and actions that are suspicious, going beyond a 'perimeter defense' style of security. Software can also help manage access to business systems and information to ensure integrity and compliance as well as assess the overall security and compliance status of the business infrastructure to defend against potential security threats and business risks

Getting started
The Solution Architecture for Energy and Utilities Framework helps you deploy solutions that can be built upon and extended for years to come and, as a result, extend the business value of your systems.

As you begin your implementation, you'll need to refine your key business needs, along with dependencies or sequencing imperatives. Consider beginning your framework adoption with starter projects. These might be small in scope, but deliver immediate business value and help establish buy-in from the rest of the company.

For example, you might launch a project to improve your network visibility and control in order to identify outages and restore service faster, improving customer satisfaction. A project such as this can help highlight the practical benefits of a framework approach to your users by reducing complexity and delivering return on investment quickly and can be leveraged by successive smart metering deployments and/or customer energy management tools.

Contact your IBM Representative today to discuss a Business Value Assessment. Before you begin implementation, a Business Value Assessment can help identify the value points among framework projects that deliver quick ROI or time-to-value for your company.

For more information
To learn more about the IBM Solution Architecture for Energy and Utilities Framework, contact your local IBM representative or **ibm.com**/software/industry/energy_utilities/

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