



High performance. Delivered.

The Accenture Intelligent
Network Data Enterprise:
Achieving high performance
in smart grid data management

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Utilities and communities around the world share their quest to transform existing power systems into modern, intelligent grids that are smarter, greener and more secure. With a goal of transforming utility systems to manage the two-way flow of power, utilities are adopting innovative technologies that monitor and control energy networks. Data captured by these technologies enables radical improvements in forecasting, analysis and decision making across utility operations—but only if the intense volumes of smart grid data can be transformed into useful information. This is one of the biggest challenges—and opportunities—facing the utility industry today.

The flood of data generated by advanced meter infrastructure (AMI), intelligent sensing, and monitoring and control devices that comprise the digital “smart” grid will tax traditional transaction-oriented utility systems, business processes, data collection and transport networks.

The Accenture Intelligent Network Data Enterprise (INDE) provides the blueprint, tools, processes, services, databases, analytics and visualization capabilities utilities need to make sense of this data deluge. INDE is designed to help utilities more effectively manage the massive amounts of real-time data generated by a smart grid network—and to transform this data into intelligent, actionable information. Not only does this create new insights into consumer behavior, but it also enhances network reliability, asset life-cycle management, regulatory compliance and integration of renewables and distributed generation, ultimately helping utilities achieve high performance.

The central nervous system of a successful smart grid

The Accenture Intelligent Network Data Enterprise platform can best be viewed as the central nervous system for a smart grid—a critical back bone that can dramatically accelerate a utility’s quest to achieve high performance. Providing a configurable set of capabilities that function as a software layer between “raw” grid data from head-end systems, and existing utility operations and enterprise IT systems, INDE’s function is to coordinate the activities of the various components of the smart grid network so that massive data inputs aggregated from operational and business systems across the utility can be leveraged to improve business performance, flexibility and adaptability.

INDE, combined with Accenture’s High Performance Utility Model, provides crucial support for managing new smart grid data that traditional utility systems and processes were not designed to handle. INDE also provides the integration platform to unify a diverse array of smart grid ecosystem products and processes. Finally, it provides the capabilities utility companies need to better observe smart grid intelligent device components.

Based on Accenture’s experience in utility smart grid planning and implementation, as well as expertise gained in helping telecommunications, financial services, airline, retail and other industries meet their

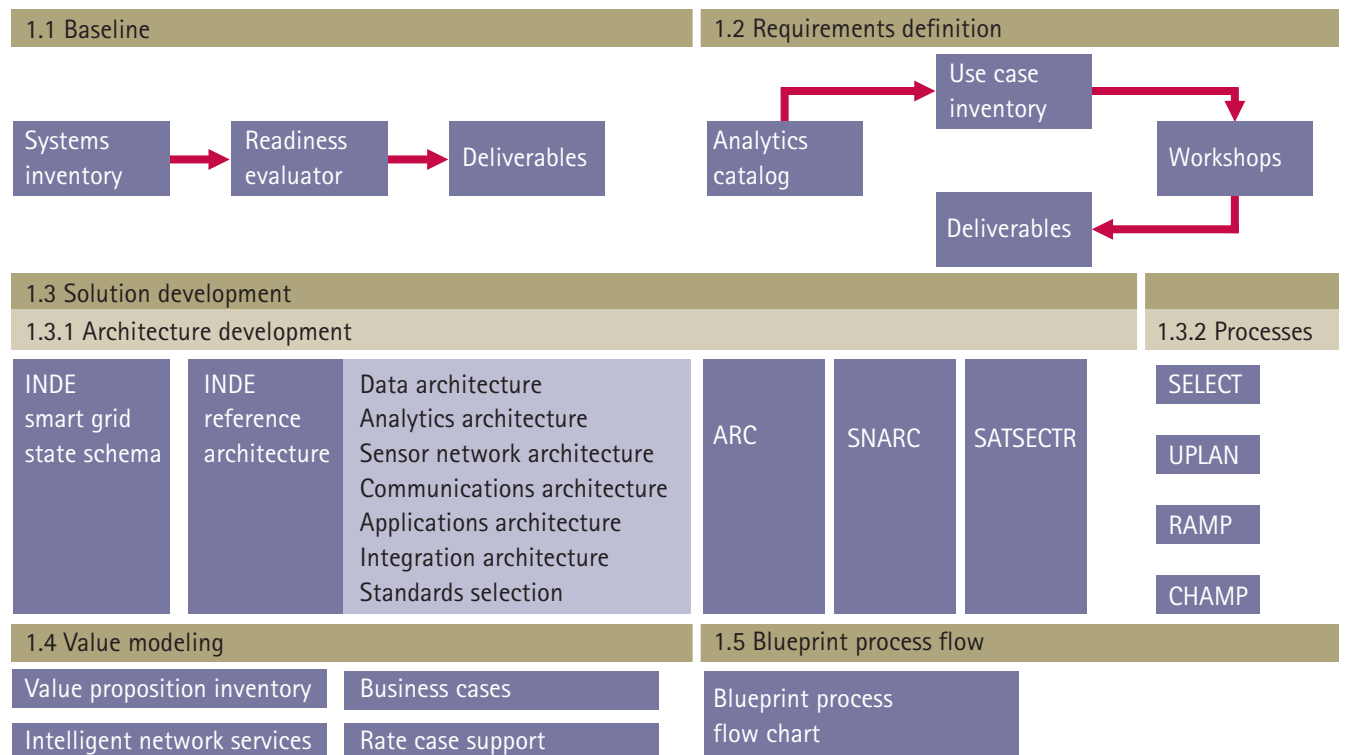
digital transformation goals, INDE addresses many practical challenges faced by utilities seeking effective management of smart grid data. Spanning the complexities of data acquisition, data transformation, information integration and end-to-end data management, INDE encompasses numerous time-saving, pre-engineered components that enable utilities to quickly configure scalable smart grid solutions uniquely tailored to their specific needs.

A blueprint for today and into the future

The comprehensive, field-tested smart grid blueprint methodology embodied in the Accenture Intelligent Network Data Enterprise provides not only a formal framework for smart grid definition and specification, but also the subject-matter content often missing in a typical information technology approach (see Figure 1). The resulting design addresses the range of smart grid possibilities, architectural choices, operating standards and proven practices, and provides a comprehensive smart grid view and roadmap for smart grid deployment across all operating groups and business functions.

Accenture's smart grid blueprint methodology is the plan phase specifically designed to enable flexibility in designing smart grids. It enables us to optimize the predictability of outcomes for clients by drawing on a tested reference model and smart grid-specific technologies, tools and processes, including observability strategy development. The blueprint methodology is tightly coupled with the Accenture Delivery Methodology to provide the overall plan, analyze, design, build and test approach for the complex needs of utility smart grid programs.

Figure 1. The Accenture Intelligent Network Data Enterprise blueprint development methodology.



ARC - Architecture Configuration

SNARC - Sensor Network Architecture

SATSECTR - Sensor Allocation via T-Section Recursion



A time-saving, risk-avoidance approach to a more intelligent grid

The Accenture Intelligent Network Data Enterprise reference architecture, with its analytics catalog, use-case scenarios and other rich, embedded intellectual property gives utilities a game-changing new ability to fast-track smart grid projects and accelerate business benefits. The INDE reference architecture provides a master template based on successful smart grid implementations around the world and embodies lessons learned from many years of accumulated experience along with a consistent set of leading practices. Leveraging reusable code and integration adapters, the standards-based reference architecture includes:

- A sensor network architecture that enables utilities to monitor changing network performance and anticipate faults, optimize asset utilization, perform condition-based and predictive maintenance, and improve reliability.

- A data integration platform to enable data sharing among multiple applications.
- Open, standards-based data acquisition, transport and storage architecture assets.
- An extensive smart grid analytics catalog that goes far beyond typical business intelligence. INDE contains more than 200 grid analytics definitions that provide the means to transform low-level grid data into higher-level information that utility systems and processes can consume. Many of the analytics are intended to be integrated into real time processes via machine-to-machine integration, so that the smart grid can become more automated and adaptive.
- A visualization platform that integrates visual depictions from multiple sources and a geospatial context to create graphic representations of analytical results that are instantly understood.
- A broad inventory of smart grid use-case scenarios with a detailed checklist of potential functionalities to consider for a smart grid solution and to support business case development.
- Real-time smart grid event management.
- A smart grid security framework based on the latest industry standards.



A solid path on the journey to high performance

The Accenture Intelligent Network Data Enterprise platform makes it possible to achieve “incremental capability enablement” benefits from smart grid data, while providing a solid migration path for smart grid specification, design and deployment, regardless of each utility's starting point. Whether beginning with an AMI deployment or a plan for a fully integrated, end-to-end smart grid solution, INDE is designed to meet each utility's current business drivers and investment goals, while providing a clear blueprint and implementation roadmap for the

future. As newer technologies such as distributed generation, demand response and hybrid electric vehicles make their way into the market, INDE's configurable and future-proof data management architecture is capable of scaling to support the data types and volumes generated by these technologies and business and operations processes that are only imagined today.

A smarter approach to data management

There is no question that smart grid data management is a daunting challenge for today's utility. The Accenture Intelligent Network Data Enterprise offers the solution utilities need to process this data and integrate it into systems that can quickly react to and interact with the millions of new points of input from intelligent devices on the smart grid network, including meters, intelligent network devices and in-home devices.

At a transformative point in the industry, Accenture is uniquely positioned to help companies plan and implement their smart grid visions. Our unparalleled utility industry insight and proven global delivery capability—supported by innovative, relevant assets such as INDE—help companies quickly realize benefits, while positioning themselves to achieve high performance. On the journey to a smarter grid, INDE represents an intelligent approach to smart grid data management.

Contact

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About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with more than 176,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US\$21.58 billion for the fiscal year ended Aug. 31, 2009. Its home page is www.accenture.com.

About the Accenture

Utilities industry group

Accenture's more than 7,500 utility industry professionals include many of the industry's leading smart grid, advanced metering, sustainability, cyber-security, customer care, network communications and system operations specialists, who have worked with more than 360 clients in 43 countries for more than 30 years to tackle the unprecedented challenges facing today's utility companies.

From generation to in-home energy management, from strategic blueprints to operational data analytics, and from the boardroom to the operations center, Accenture offers the world-leading skills that utilities and their customers need to frame their vision of a smarter grid and then achieve its many benefits.

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