⚡ ENERGY MANAGEMENT
--- Chief Architect, Denison Consulting Group

The Industrial Revolution of the 19th century brought in never before seen levels of efficiencies in production, value of output, capital invested and increase in employment. Today, industries are seeing unprecedented levels of automation and supply chain efficiencies as industrial control systems connect to the Internet. The Internet of Things (IoT) will bring even greater acceleration of networking connectivity in the production process and supply chain, and throughout all business processes. The advent of smart, connected products, and its rapid adoption is likely to revamp the entire product value chain – from design, to manufacturing, delivery and sales with continuous feedback at each stage.

Businesses that respond to these innovations and move toward improved inter-connectivity can become more globally competitive and ultimately lead in their markets. CIOs need to revisit their technology options as operational changes are continuously shaping the landscape in a world driven by more and more data and data-driven insights. Hence, it is imperative that every business today deploy strategies and expertise around data and data analytics leveraging the power of Internet of Things [IoT]. It is also crucial that they partner with external providers and other partners to deploy IoT to improve product and services and deploy monitoring services to continuously provide updated insights of their operating environment.

DenisonConsultingGroup.com
Energy Management & Engineering Consulting

6221 S. Claiborne Avenue, Suite 450
New Orleans, LA 70125

504.919.4037
info@denisonconsultinggroup.com

The Connected Enterprise: IoT and Energy Management

Today's enterprises need to relook at how data that is being generated is utilized in improving operational efficiencies and productivity. A Connected Enterprise with Operations and IT working in tandem enables collaboration, linking and improving processes from the shop floor to the CIO's desk. Insights gained can drive real-time activities and agile processes adding significantly to the bottom line.

In the world of power utility and energy usage, IoT provides greater flexibility to accommodate new energy sources, better management of existing and integrating newer assets, operations, greater reliability, enhanced security and new business models and services. With intelligent sensors, software and the cloud, these assets become part of a Connected Enterprise, enabling the enterprise with rich flow of data. A right mix of hardware and real-time software solutions can enable enterprises to measure, monitor and make intelligent decisions about their use of energy across the plant floor, datacenter, campus or company.

For an enterprise, a solution based approach around IoT can provide many advantages:
- It drives an overall consolidated energy management system giving a structure that is grounded in existing environment but adaptable to new changes and can make power and supply grids a much smarter through modern meter-based systems
- Energy usage can be thoroughly analyzed, managed and monitored. Leakages can be detected and corrective actions undertaken
- It provides greater insights into consumption patterns with real time reporting, notifications and enhances support mechanisms via alerts and predictive analysis of faults

DenisonConsultingGroup.com
Energy Management & Engineering Consulting

6221 S. Claiborne Avenue, Suite 450
New Orleans, LA 70125

504.919.4037
info@denisonconsultinggroup.com
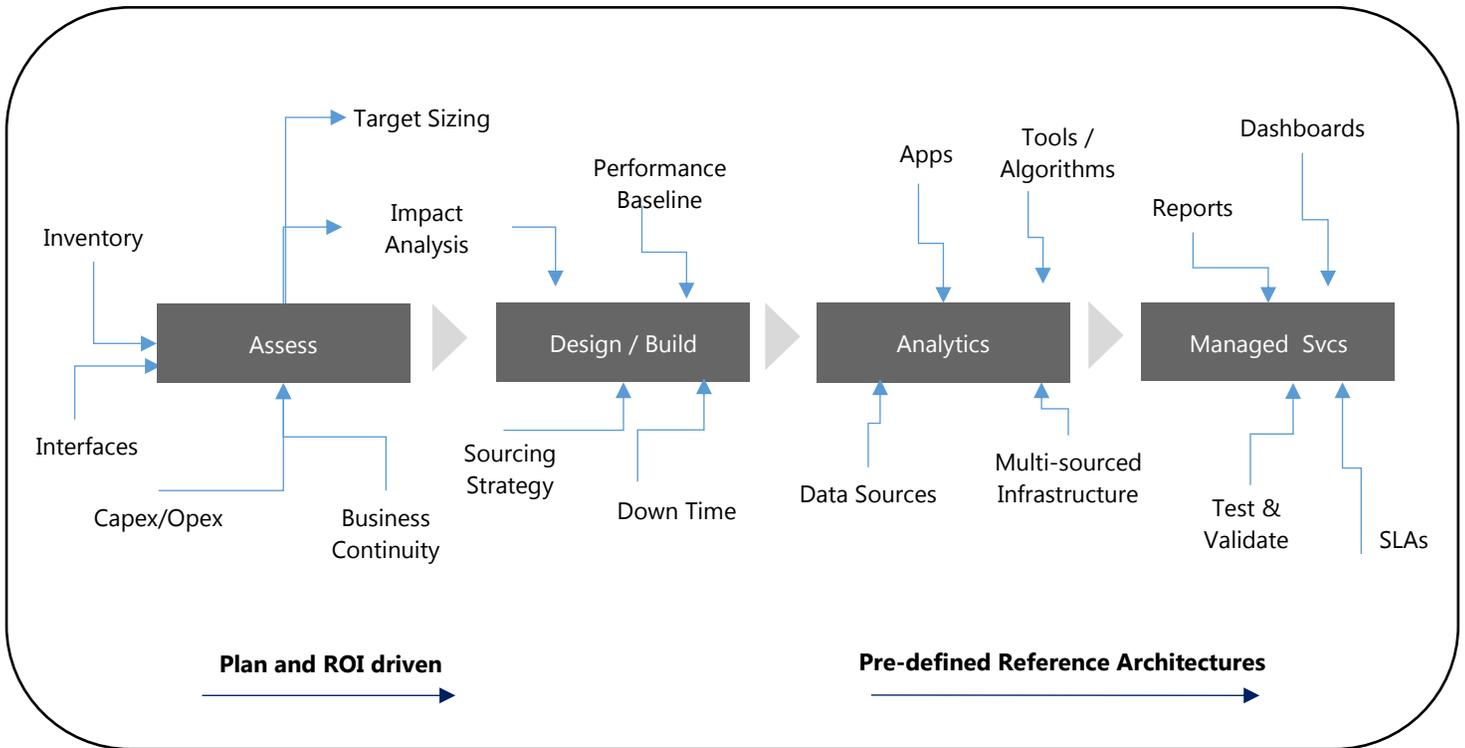
Getting to a Connected Enterprise

Fig: A Four Step Process - Assessment to Managed Care

Regardless of the industry, getting any enterprise to utilize IoT and transform the power utility and energy landscape is technically straightforward and follows the standard lifecycle of an implementation project. This starts with an understanding of the current environment and the capability it offers or the lack thereof. To assist our customers to make the right choices to achieve measurable outcomes, we have developed a well-structured four-phase life cycle to an intelligent connected enterprise:

1. Energy Assessment and Roadmap Definition
2. Design and Implementation
3. Data Driven Analytics
4. Managed Services and Continuous Improvement

DenisonConsultingGroup.com
Energy Management & Engineering Consulting

6221 S. Claiborne Avenue, Suite 450
New Orleans, LA 70125

504.919.4037
info@denisonconsultinggroup.com

Phase 1: Energy Assessment and Roadmap Definition

The initial step in this journey typically starts with the organization readiness assessment. As implementing energy management solutions could impact many functions, especially business operations and infrastructure, it is important to align the organization towards adoption of changes in their way of functioning, governance and technology implementation. Current energy issues and performance baselines, plus infrastructure security mechanisms with associated risks will be studied. A suitability analysis will help in understanding current technology constraints to define and architect the target state. Granular details of current capital expenditure and operational costs will aid in building an ROI business model.

Phase 2: Design and Implementation

The design phase will address the target state development by incorporating all components in infrastructure, enterprise security stack, elements for backbone to support smart connected power system elements [e.g. power meters, monitoring devices] and applications. Design criteria will also consider usage of any and applicable existing hardware, to optimize cost.

A key characteristic of today's connected enterprise is that the network connectivity is based on a standard Internet Protocol, aka IP Protocol. Most enterprises use this standard and, hence, securely integrating new equipment, applications and associated solutions is straight forward.

Phase 3: Data Driven Analytics

While most enterprises generate and have access to large data sets, not much is being done to derive the necessary insights from this data. In addition to not having access to skilled talent to understand and drive meaningful insights, the cost of storing and processing all the data to derive the necessary meaning and correlations was prohibitive. This is now rapidly changing with the availability of scalable commodity hardware, and automated and self-healing software. All these are based on open standards and are supported by most external vendors and third parties. Companies that don't make the necessary investments in platform, talent and the necessary data-driven culture are likely to be at a disadvantage over time.

DenisonConsultingGroup.com
Energy Management & Engineering Consulting

6221 S. Claiborne Avenue, Suite 450
New Orleans, LA 70125

504.919.4037
info@denisonconsultinggroup.com

Phase 3: Data Driven Analytics (continued)

Meaningful data-driven insights can allow dramatic improvements from the shop floor to the CIO's office in understanding production, staffing, operations and other functional optimizations leading to economic benefits from lower energy costs and better utilization of resources. [See: Industry Case Studies]

Phase 4: Managed Services and Continuous Improvement

A well designed enterprise has a robust managed care setup that has a 360 degree view into its operations provided by an internal team or by an external service provider. Activities across the organization are continuously monitored across all the infrastructure components and applications proactively to detect any issues and take corrective measures. Continuous feedback from connected devices can be analyzed, and corrective actions suggested for implementation. Reporting being critical, various reports to different stakeholders can be automatically generated.

DenisonConsultingGroup.com
Energy Management & Engineering Consulting

6221 S. Claiborne Avenue, Suite 450
New Orleans, LA 70125

504.919.4037
info@denisonconsultinggroup.com

Industry Case Studies

Benefits from Energy Management solution implementation vary based on the maturity levels in which the organizations are currently; however, they are significant at each stage of the adoption. In our experience we have seen major improvements in cycle time and quality across various stages.

Some of the few in the industry listed below have seen significant outcomes. The primary business driver in each case was to improve energy optimization, thereby reducing operational costs, and to achieve benefits in implementing next generation technologies.

Industry	Outcome
One of the world's largest processors and marketers meat as well as prepared foods and snacks	One of the world's largest processors and marketers meat as well as prepared foods and snacks
Reduces annual utility costs by more than 10%.	Reduces annual utility costs by more than 10%.
One of the leading global integrated oil and gas company	One of the leading global integrated oil and gas company
Achieves energy savings payback in just over 1 year.	Achieves energy savings payback in just over 1 year.

DenisonConsultingGroup.com
Energy Management & Engineering Consulting
6221 S. Claiborne Avenue, Suite 450
New Orleans, LA 70125
504.919.4037
info@denisonconsultinggroup.com