



Rational software

Using enterprise architecture to develop a blueprint for improving your energy efficiency and reducing your carbon footprint.

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Introduction

Organizations today face rising energy costs and an increased scrutiny of their environmental impact on our world's resources. They are under pressure to find ways to reduce their short-term energy costs and their overall environmental impact in the long term. Regulatory agencies, environmental groups and even investors are closely examining business operations and investments to ensure that organizations are acting responsibly.

Many organizations, especially those in fast-growing industries, recognize the economic imperatives associated with operating more efficiently and reducing their carbon footprint. However, to make smart decisions about being green, an organization needs to develop a shared understanding of its current state of operations and where it wants to be in the future, whether that means in the next month, the next year or in the next five years.

Understanding this evolution opens up a myriad of options for decisions about energy efficiency. Questions that address the long-term consequences of decisions about their energy usage emerge, such as: How does improving the energy efficiency of our data center impact the rest of the organization? What processes need to be changed as a result? What is the long-term impact on our customer service? Are the results consistent with our business goals overall? How do we embrace being green as a long-term initiative versus a short-term fad?

That's where enterprise architecture (EA) comes in.

Enterprise architecture is a formal mechanism for analyzing the energy efficiencies throughout an organization in the context of business strategies, goals and processes. EA offers a central, high-level knowledge source for the analysis of business process, data, applications and systems in the context of organizational goals. EA is both an ongoing process of data gathering and dissemination and a blueprint (or roadmap) that delivers information for analysis, visualization and decision making. A natural result of any comprehensive and ongoing EA initiative can be increased efficiency and productivity, leading to a smaller carbon footprint.

The EA repository serves as a shared information source across the organization for determining an optimized state of operations and providing maximum resource conservation. The result is smarter decision making about energy efficiency, environmental impact and the subsequent effect on the bottom line. EA analytics and reporting tools, such as Telelogic® System Architect® software, help organizations develop a comprehensive EA program that delivers, among other things, a blueprint for energy impact analysis, which is a vital step in undertaking any organizational change.

EA programs can provide a thorough analysis and visualization of power consumption by location, application, processes, strategies and job. For example, IT staff can identify servers and other hardware with the most power consumption and identify targets for replacement or modification. Management can identify “bloat” in the IT infrastructure by highlighting underused or redundant hardware and unwieldy processes. Executives can strategically plan energy reduction initiatives by reviewing reports that highlight trouble areas and their relevance to the organization’s key goals, strategies and objectives. An EA program can also provide a communication platform for sharing this information across geographic boundaries and organizational structures. The result is a plan for short-term energy efficiency gains and long-term energy impact planning.

The goal of any program focused on reducing energy costs and increasing efficiency will bear striking similarity to any EA program—more efficient and effective business operations that help achieve the short- and long-term goals of the organization. A natural result of any comprehensive and ongoing EA initiative is increased efficiency and productivity.

The enterprise architect’s role in reducing energy costs

EA can be defined as a platform for understanding relationships between high-level business strategies, business architectures, data, processes and their underlying IT architectures. EA plays a fundamental role in indentifying an organization’s IT roadmap from an environmental perspective. By linking systems to processes and strategies, EA provides a blueprint for the way a company operates today and its future vision, with the difference between the two providing the roadmap for transformation. Part of this effort is clearly identifying ways for the business to optimize its processes and systems, which would, in this case, equate to a reduction of energy and associated hardware costs.

For example, EA can have a rapid impact by helping IT teams to analyze their application portfolio and identify redundant, underused and obsolete systems and devise a plan for consolidation and retirement. This results in lower energy use for the enterprise. Further analysis can help the team understand system use as it relates to the organization’s business processes and, by consequence, how those processes relate to the overall goals and objectives of the organization. With an eye to the future, the team can analyze how to streamline their processes while they study system codependence and future goals and establish a path for migration. The result should be greater efficiency in business operations and a more optimal use of resources.

Importance of enterprise architecture in energy efficiency

EA helps improve the alignment of IT and business by detailing the relationships between the two. In essence, energy efficiency becomes another stakeholder in the EA process—a view to consider along with business process analysts, customers, financial analysts, programmers and others.

A solid EA program offers a common knowledge base for all the affected stakeholders. Extended team capabilities enable access to this information across the enterprise, as well as improved collaboration and communication. EA facilitates the sharing of information with operational staff who recommend the plans; technical staff who implement the plans; and executive staff who review these recommendations, make decisions based on a strategic perspective and authorize the resources to execute the change.

In addition, EA programs can help organizations embrace the factors that make them unique. This includes addressing the distinct challenges presented by energy consumption, such as analyzing energy consumption against environmental policies by country or analyzing energy use by hardware vendor. Enterprise architects must be prepared to customize their plans to address unique challenges. Because of its global focus, EA can help organizations generate a multi-pronged energy strategy that can be executed over time in multiple locations and communicate the impact of changes before they occur.

Using enterprise architecture to analyze and understand energy efficiency

EA integrates an organization's strategy, goals, objectives, staff, business architecture, processes, data, applications, services and systems in a single relational database. From this, information can be analyzed, synthesized and integrated into reports. Analytics features found in the Telelogic System Architect EA solution allow a user to ask questions specific to their needs to understand what IT co-dependencies exist. Visualization features present the information in an easy-to-understand graphical format, tailored to the needs of the audience.

A good EA program can answer questions in three major areas:

1. Energy consumption

- *Which business processes consume the most power and how can those be transformed to greater efficiency?*
- *Which functional organizations use the most power in their daily jobs?*
- *Can you compare the impact of infrastructure power consumption on business processes now and in 2010?*
- *How will our organization's goals, strategies and objectives impact our energy consumption?*
- *Which locations are the most energy efficient, and which are the most inefficient?*

2. IT hardware usage/process efficiency

- *Which servers consume the most power, and how do those relate to the key processes and strategies of the organization?*
- *Which servers are underused and can be eliminated and consolidated?*
- *Which servers have the greatest disposal costs?*
- *What is the carbon footprint of different divisions?*
- *Which hardware vendors are providing the most efficient energy usage?*

- Which processes consume the most power to execute?
- Which processes are affected by a change in our IT infrastructure?

3. Strategic planning

- What is the carbon footprint of the entire enterprise?
- What happens if we change one of our business goals? How does this change affect energy use within the organization?
- Which locations are most affected by power consumption issues?
- How do local regulations affect the enterprise as a whole?

The Telelogic System Architect environment's extensive diagramming, reporting and analysis features can specifically address the issues around energy efficiency and help organizations review their operations from an environmental perspective. Free plug-in software for System Architect is available to help organizations analyze their operations with a focus on energy efficiency.

First, System Architect offers the ability to capture information about hardware power consumption. IT teams can import data from a spreadsheet, presentation or diagramming software (such as Microsoft® Visio®) into the EA. The network concept diagram visualizes how the IT architecture fits together and displays power consumption by each piece of hardware, such as a server. Users can start with basic queries to identify redundancies in the IT infrastructure. Users can see which servers host which applications and the power being used to drive a process.

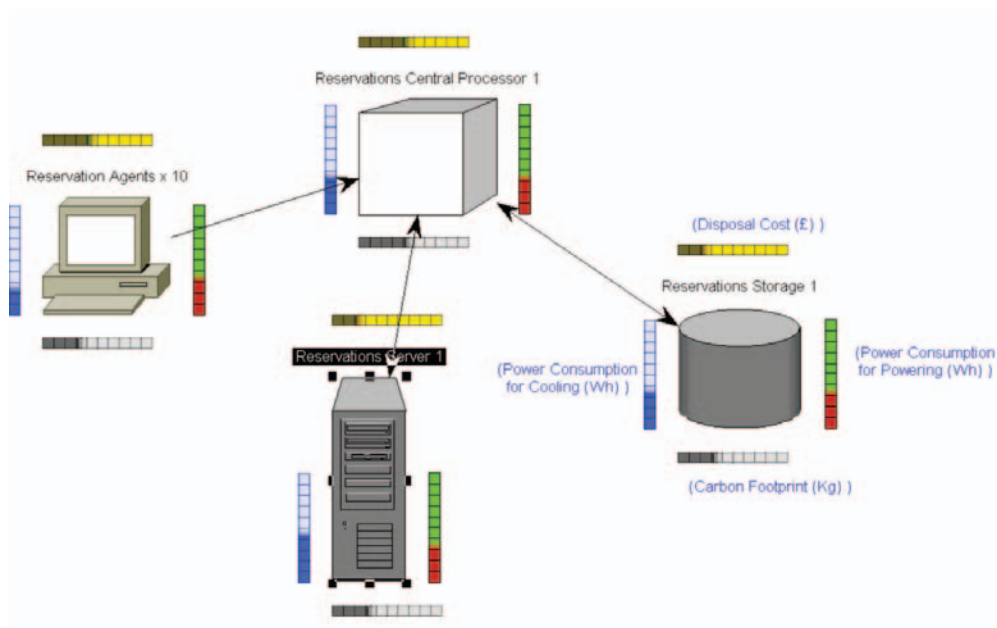


Figure 1: The Telelogic System Architect solution's network concept diagram.

From this, internal teams can also ask questions about their application portfolio and its relationship to its business processes and goals. What is the impact if we retire certain applications? How do we transition to a new system without adversely affecting the users, whether internal or external? From a business processes perspective, what processes can be streamlined, and what is the impact on the underlying application?

Evaluating business value

EA allows organizations to correlate energy consumption to business value. Organizations can use their EA to look at the business value associated with systems, applications and processes. The power of EA lies in its ability to visualize relationships and highlight the impact of a change. By providing this information to its executives, the team can help them make smarter decisions about future investments.

A key to providing this business context is an executive dashboard. This software generates graphical presentations of key technical information. Queries can be made by person, role, application, process, location, etc. For example, a user can ask, “Which applications consume the most power? Which processes consume the most power? Which location uses the most power? Where is the most short-term impact in reducing energy costs?”

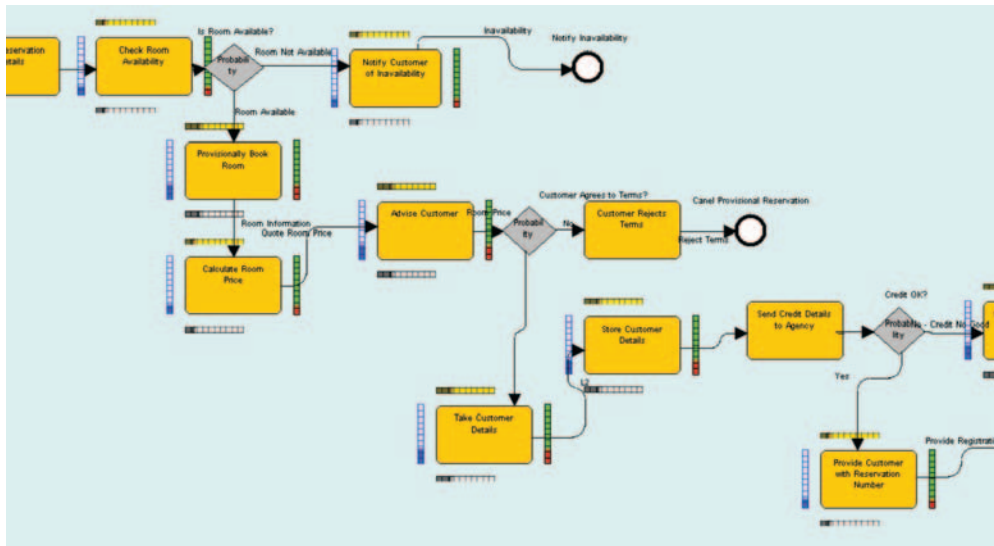


Figure 2: Diagram of how Telelogic System Architect software users can generate process analyses diagrams featuring energy efficiency.

Tools such as Telelogic System Architect use heat bars (which look like thermometers) to show levels of power consumption. Users can easily see which systems, processes and locations use the most power. Brightly colored meters show power consumption usage among different locations. Heat maps also provide a high-level view of the organization’s key processes, locations and strategies. These can also be color coded to indicate how well they adhere to the organization’s business and energy goals.



Figure 3: Screenshot of how Telelogic System Architect software can help organizations compare power usage between locations, divisions or departments. This screenshot shows server power consumption among systems in three different locations using colors: green (low), amber (medium) and red (high).

Once an organization understands its current operations, it can use the information to decide a future state of operations and create a roadmap of how to get to that future state. One of the key benefits of EA is helping organizations understand new areas, such as energy efficiency, as both a snapshot in time and as part of a path to the future.

Smaller carbon footprint

EA programs can be especially helpful in a wide variety of scenarios where the end result is the same: staying agile while evolving to greater efficiency and productivity. For example, EA can prove useful to for organizations facing the following challenges:

- *Expansion through acquisitions and the efficient integration of IT operations using environmental impact principles*
- *Modernization of legacy systems by reviewing system use and system redundancies to reduce costs*
- *Sharpening a competitive edge by continually increasing productivity while evolving an IT infrastructure*
- *Development of a carbon footprint baseline by planning a strategy for how to transform business operations over time*
- *Business process improvement initiative by generating a holistic review of all processes for risks, inefficiencies, bottlenecks and quality*

Several organizations have seen the benefits of using EA to optimize their assets, applications and processes. For example, a telecommunications provider experienced a 53 percent savings in IT costs over five years by following a roadmap established with System Architect for consolidating and retiring overlapping and obsolete systems. A major financial institution saved \$4.2 million in annual costs by decommissioning servers that were identified using with System Architect.

EA is a highly sophisticated process that provides a detailed strategic view of a company's current and, in many cases, future operations. It helps organizations take into account the myriad of factors that drive the success and agility of an organization.

Using EA as a knowledge source, organizations can establish a blueprint for energy impact analysis and then determine the path to more energy-efficient and cost-effective business operations. They can help analyze legacy applications to reduce costs and enable reuse. They can examine how to improve workloads and operational efficiencies with reliable, scalable and secure business applications.

Understanding of the current state of operations and creation of a future state opens up many options in the decision process. Because EA helps organizations plan for change, it can optimize the benefits and impact of a change, whether in energy usage, organizational structure, application inventory, location change, IT infrastructure or business processes.



Figure 4: An executive dashboard that shows energy usage now and in the future. System Architect can be used to generate an “as is” analysis of energy consumption of the servers that host applications and then overlay a “to be” configuration to see the impact of the new applications on energy consumption.

Delivery of technical, operational and executive views allow all levels of the organization to make decisions based on information presented in models and visualizations that communicate rich context. Organizations that want to be environmentally aware can use their EA roadmap to implement rapid changes that reduce their carbon footprint and, at the same time, support the organization's goals for the future. Achieving more efficient and effective business operations is the inherent goal of any EA.

For more information

To learn more, please visit:

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