The Need for IT Blueprinting

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Business and IT are deeply related in ways that are not obvious to most enterprises. The alignment of IT services to the business applications and processes that consume them increasingly correlates with the overall health of an organization. Unfortunately, most organizations don't appreciate the importance of this alignment, or lack the people, process, and technology necessary to cultivate it. While there are multiple dimensions to the ways IT systems are designed, built, deployed, and operated that limit IT's ability to satisfy business demands, there is a single root problem of which all others are symptomatic: a lack of effective communication between Business and IT across the entire IT lifecycle.

1   Problematic IT Practices

The current business climate is inhospitable for most IT organizations. With the ostensibly conflicting mandates to keep systems operational, cut costs, and innovate, Business is asking IT to do more and more with less and less. Considered against the common background of complex and irregular IT environments that seem to defy rationalization, these difficult demands often seem like impossible ones.

Enterprise IT has responded to this set of virtually irreconcilable pressures by focusing on a subset of them: operational reliability and cost containment. Traditionally, generic platform commodity solutions have been a means to both of these ends. However, they can also encourage unhealthy IT practices. For example, datacenter professionals often respond to increases in peak demand requirements by augmenting their operating environments with more of the same generic commodity solutions. Though the piecemeal acquisition of commodity infrastructure will keep the datacenter running, it does so at the expense of efficiency and utilization and increases datacenter sprawl. Ultimately, these short-term costs fixes become long-term operational cost nightmares.

Line-of-Business application development teams are primarily concerned with the development of innovative new applications and services, or the renovation of existing ones to meet the changing demands of the business. Time-to-market is a key driver. In the face of a business clamoring for added functionality, application teams often rush solutions through to deployment. Though time-to-market is a major determinant of business success, post-haste deployment often will lead to poorly designed systems that flounder at runtime, undermining IT's primary objective to meet business demand. Again, this short-term fix has the capacity to turn into a long-term legacy problem.

These issues force datacenter professionals into a set of behaviors that keep the enterprise running at the expense of its long-term health. Returns diminish; business opportunities continually go missed; complexity, waste, poor performance, and cost inefficiencies abound. Meanwhile, the business is left searching for the value in IT investment, while the various organizations that comprise Enterprise IT engage in unproductive efforts to assign blame.

These organizational subdivisions should not be so quick to point fingers at each other. Rather, they should recognize the disconnect that exists between them and take measures to remediate it.

2   Lessons Learned from Other Industries

In order to shed light on the nature and implications of this disconnect, it's instructive to contrast the process of designing, building, deploying, and operating IT systems against the process of designing, constructing, and operating buildings.

A high level of coordination and collaboration is required of all groups involved in the various processes that comprise a building's lifecycle. The creation of a building begins with the future owner's specification of wants and needs. The architect then codifies this information in the form of a blueprint. After owner approval, the blueprint functions as the vehicle by which all architects and subcontractors communicate. Everything is clearly documented in the blueprint so all parties have the information they need to effectively do their jobs. Architects, builders, electricians, plumbers, and HVAC technicians don't approach the design, construction, renovation, or demolition of a building haphazardly. Instead, they approach these processes with the discipline that thorough blueprinting affords them.

The enterprise doesn't have a comparable communication vehicle, so when the Business demands solutions from IT, parts of the message often get lost in translation. Consider the building analogy: if an architect says 'rivet' and steel workers hear 'weld', the resulting structure runs the risk of being too rigid to fulfill its intended purpose. Fortunately, the language of blueprints for physical structures is well-codified and universal, so these kinds of interpretative mistakes don't happen. Business executives and IT professionals aren't as fortunate as steel workers in this regard. But they can begin the process of creating a language that will enable a meaningful discourse between them.

3   The IT Blueprinting Solution

Business Value Chain (BVC) modeling, a concept pioneered by Harvard Business School Professor Michael Porter, forms the basis of a foundational management science upon which a common language can be constructed. BVC modeling involves the codification of the high-level business activities that constitute organization-wide value. BVC modeling, in-and-of-itself, does not improve Enterprise IT health. However, as its more granular elements typically map onto specific applications and services that consume IT resources, it effectively frames the needs of the business in terms that Enterprise IT can understand.

By situating itself within the intersection of IT systems and business processes, Enterprise IT can start to correlate business demand, generated by application workloads, to IT supply, delivered by infrastructure components. In the event that supply and demand are misaligned, Enterprise IT can model application workloads to identify the specific demands they place on infrastructure and tailor dynamic operating platforms to meet those demands in a maximally efficient way. Hence, this common language can be leveraged to cultivate an IT design discipline.

Adaptivity believes that Business Demand and IT Supply should be modeled on a continuous basis and fed into a widely accessible document – a "Living Blueprint" – that will keep business, architecture, engineering, and operations teams abreast of business need. Adaptivity's Blueprint[4IT] Lifecycle Suite provides the functionality needed to create this document. Additionally, the Blueprint[4IT] Lifecycle Suite enables IT organizations to harvest and institutionalize their best practices, enterprise architecture standards, and technology portfolio into the Living Blueprint, effectively broadening the document's scope and power.

Figure 1 Blueprint Construction
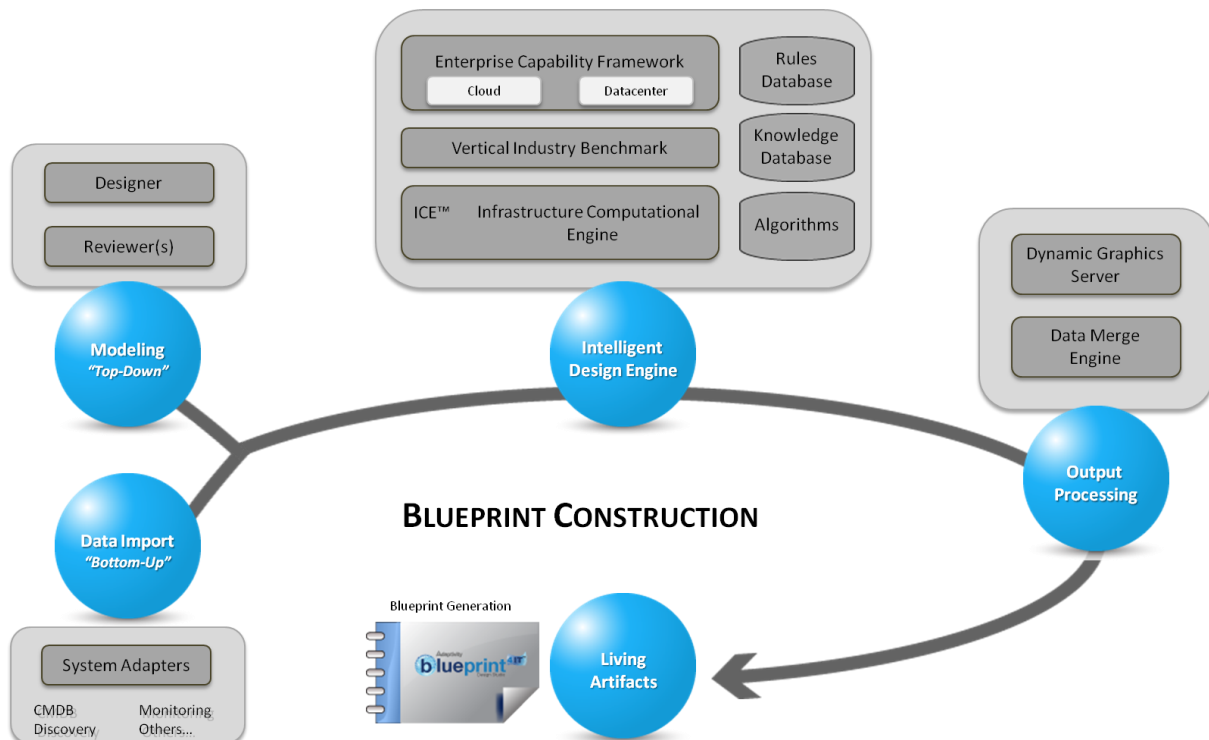
With this approach, there is transparency from business requirements all the way down to the server on the datacenter floor, enabling direct visibility of business impact from infrastructure or operating model changes. Both parties benefit from this clarity: Business will better understand the impact of short-sighted cost cutting mandates, while IT can discern truly critical systems from lower priority ones and align the IT supply chain accordingly. This creates the possibility that IT can become a strategic enabler of the business rather than a costly order taker.

4   The Benefits of an IT Blueprinting Discipline

4.1   Fix Design & Change Runtime

Good design requires open, transparent, and frequent collaboration between executives on both the Business and IT sides of the Enterprise. Unfortunately, in the absence of a thorough understanding of the Business, IT's capacity to deliver optimal solutions is limited.

Imagine if an enormous multi-national organization ordered the construction of an office building *somewhere* in the United States with *around* fifty stories to accommodate *approximately* thousands of people. The architect could go ahead and design a building to these specifications, but he/she may design a forty-story building that can accommodate 10,000 people to be built in Maui when the multinational's actual needs demand a sixty-story building that can comfortably house 15,000 people in Manhattan. The proposed building won't fulfill its intended purpose: wrong size, wrong island. Poor design of this magnitude doesn't happen because architects design buildings in a rigorous and disciplined manner: design would only take place after a more thorough investigation of the firm's exact requirements.

Most Enterprise IT landscapes are characterized by poorly sized applications running in suboptimal locations. Data often traverses multiple network hops only to arrive at an overburdened processing location. To appreciate the design flaws here, imagine 15,000 people commuting from Manhattan to Maui to work in a 10,000-person office building.

The Living Blueprint automatically documents the relationships and dependencies between business drivers, workload requirements, infrastructure capabilities, and IT deployment models that enable the quality design of IT infrastructure solutions that balance the needs of the Business with IT efficiency and agility in a continuous, and iterative manner. Moreover, when quality designs manifest in the runtime environment, they are less costly to maintain.

4.2   Enable IT Audit & Traceability

Without a Living Blueprint, it's difficult to trace how designs manifest in the runtime environment. Architects and subcontractors design and construct buildings to be in accordance with codes, zoning requirements, and standards for everything from board widths to stress ratings for bolts. When auditors show up to assess compliance, they can find it within the blueprint.

IT needs a similar document. In a world of economic crises and accounting scandals, IT systems are subjected to increasingly stringent regulations. In many organizations, the footsteps of incoming auditors signal the beginning of an incredibly time consuming IT systems documentation effort conducted by a team of experts. The Living Blueprint brings discipline to this process by consistently and accurately documenting an enterprise's evolving portfolio of applications and supporting infrastructure. When auditors show up to assess adherence with government and industry regulations, they'll find proof-of-compliance within the Living Blueprint.

Figure 2 The Living Blueprint Documents Audit Artifacts

[4]
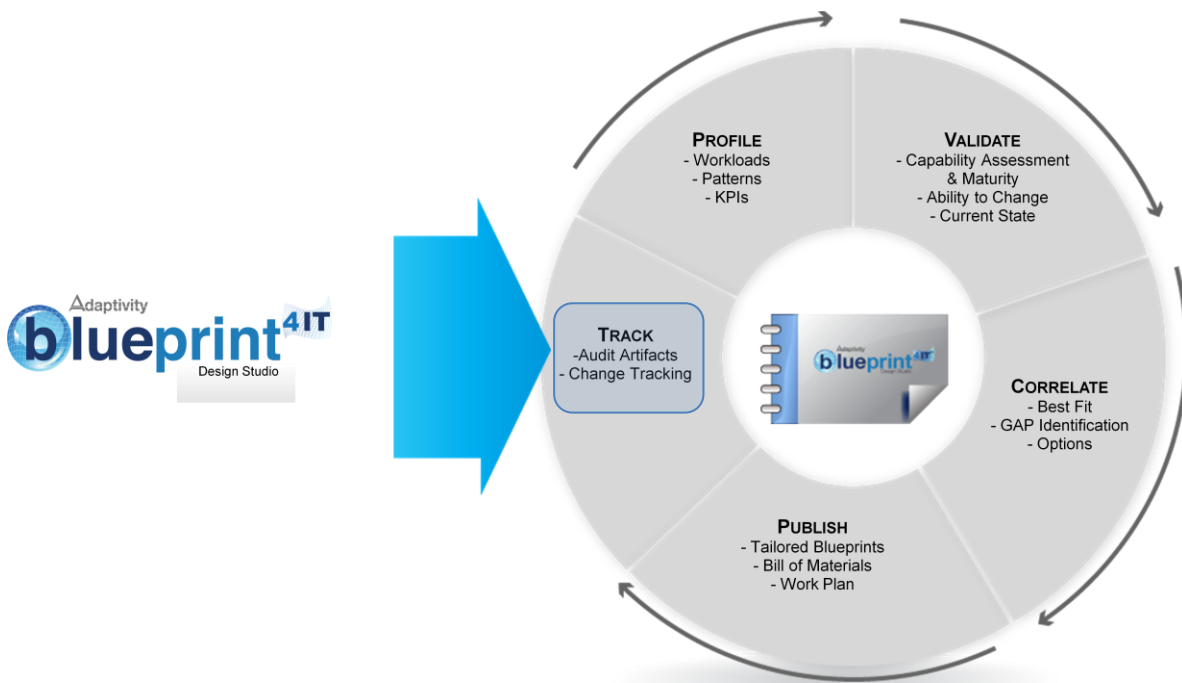
4.3 Optimize Application and Infrastructure Agility and Performance

The fundamental challenge with conventional optimization approaches is that they focus on optimizing homogenous supply rather than holistically tailoring the infrastructure to different workload demands. While this approach may help an organization realize IT cost savings, it rarely promotes the increases in business performance that most enterprises seek. In most IT environments, varied application workloads are deployed across common commodity, one-size-fits-all hardware platforms. A comprehensive assessment of workload types and expected loads rarely happens, leading most project teams to over-provision for peak load. Given that these peak loads are generally transient, this tendency is incredibly wasteful.

As an organization builds out an IT blueprinting discipline, it will begin to recognize that the myriad of seemingly unique business applications can be represented by a finite number of workload patterns. Enterprise IT, then, can develop a correspondingly small set of standardized infrastructure patterns to support these workload patterns. Modeling application workloads and supporting infrastructure in an abstract, rather than a physical, relationship enables Enterprise IT to better leverage automation, virtualization, and other innovative technologies to enhance agility and performance. Hardened links that confine workloads to specific resource limits can be severed through this approach, enabling IT resources to become more fluid.

As best practices and standards are incorporated into the Living Blueprint over time, Enterprise IT will have a library of proven optimization techniques for enhancing agility and performance. Adaptivity's Blueprint[4IT] Lifecycle Suite incorporates a rich and robust repository of known problems and known remediations into the Living Blueprints it produces. This, in turn, enables IT professionals to discern not only what the most likely issues affecting certain resources or service level targets are, but also which solutions are best suited to resolve them.

## 4.4 Enhanced Quality & Throughput of IT Change Management

The complexities of IT systems make quality, high throughput change management difficult to execute for the simple fact that Enterprise IT can't change what it doesn't understand. If service and infrastructure configurations and interdependencies aren't documented on a continuous basis, any change has the potential to damage the operating environment.

Consider the scenario in which the hypothetical multinational commissions the addition of a swimming pool to its office building. There would be many considerations factoring into the decision of where and how the pool would be put in. Perhaps critical wiring and ducting would need to be rerouted in order to make room for the pool, or perhaps the weight of the pool would compromise the structural integrity of the entire building. Architects leverage blueprints to consider these possibilities. Without them, change is incredibly difficult, and possibly dangerous.

The enterprise is constantly making changes to its IT systems without the knowledge IT blueprinting provides. Expert IT personnel can attempt to manually understand their portfolio of applications and supporting infrastructure, but this process is error-prone, time-consuming, and potentially requires the participation of out-of-pocket members of the organization. This inexact process increases the likelihood of change-related casualties and limits IT's ability to handle high volumes of change.

Enterprise IT can leverage the Living Blueprint to avoid the bottleneck of a brittle documentation process. By harvesting and codifying business execution requirements, architectural designs, engineering manifests, and operational rules, the Living Blueprint provides the necessary foundation to drive high quality, high throughput change.

Figure 3 The Living Blueprint Coordinate High Quality, High Throughput Change
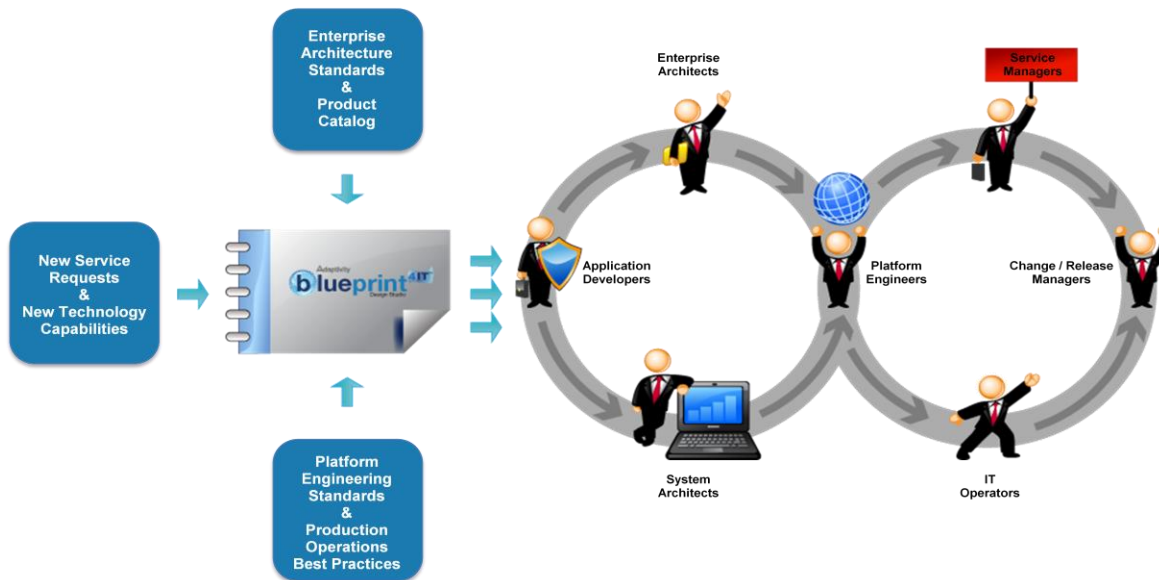
4.5   Implementation of Cloud Delivery Models

The drivers to move to cloud delivery models are compelling, but problems surrounding the way IT systems are designed, built, deployed, and operated today will limit Enterprise IT's ability to leverage the cloud tomorrow. The transformation of in-house IT systems is a prerequisite for sourcing them to external, shared environments. Otherwise, the benefits of this revolutionary delivery model will be marginal: infrastructure resources will still be misaligned to the needs of the business, audit and compliance will remain vexing, and change management will continue to be inexact and error-prone.

The ways in which the Living Blueprint facilitates implementation of cloud delivery models are multifold. First, the thorough documentation of business, infrastructure, and operating models provided by the Living Blueprint cultivate intelligent and scientific IT design practices that will be incredibly useful as Enterprise IT implements cloud solutions. Second, this documentation enables Enterprise IT to compare cloud solutions against existing ones to determine the business impact of sourcing IT in the cloud. This sort of information is incredibly useful when making a go/no-go cloud implementation decision.

5   Leverage the 'Living Blueprint' to Develop End-to-End Infrastructure Engineering Lifecycle Management

The Living Blueprint fundamentally improves the way IT systems are designed, built, deployed, and operated by:

- Enabling intelligent, business-aligned design
- Facilitating audit and traceability
- Promoting increased application and infrastructure agility and performance
- Enhancing the quality and throughput of IT change management
- Readying the enterprise for the adoption of cloud delivery models

Adaptivity's Blueprint[4IT] and the blueprints it generates can help an organization integrate all phases of its IT lifecycle into a pipeline of contiguous and transparent processes.

Figure 4 The Living Blueprint Unifies and Optimizes IT Lifecycle Management
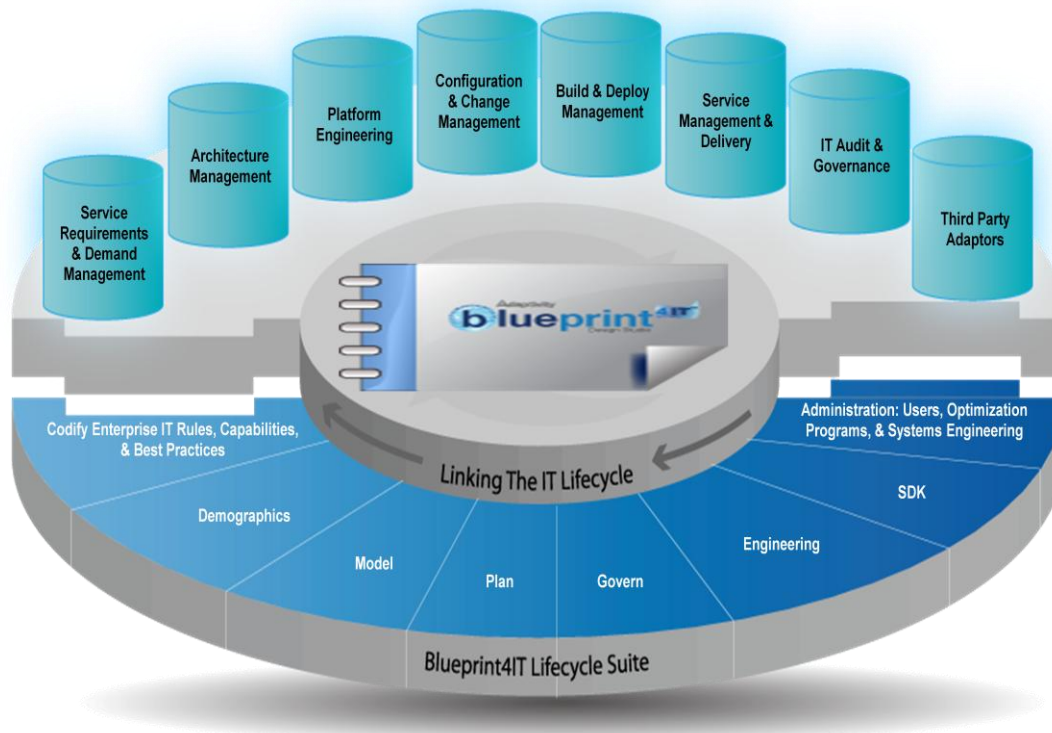
When application development teams, enterprise architects, system architects, platform engineers, service managers, IT operations teams, and change/release managers leverage the Living Blueprint as a communication vehicle that documents new service requests, new technology capabilities, enterprise architecture standards, product catalogs, platform engineering standards, product operations best practices, and existing technology portfolios, there is consistent adoption of standards and best practices across the entire Infrastructure Engineering Lifecycle. Alignment of IT supply to business demand improves on a consistent and reliable basis. Thus, business performance and IT efficiency remain in optimal balance.

About Adaptivity: The IT Design Company[TM]

Adaptivity was founded in 2007 by veteran IT practitioners who have dedicated their careers to changing the way IT is delivered. Our efforts have resulted in numerous industry awards for leveraging real time infrastructure, virtual datacenters, and cloud utility models to deliver business impact. Adaptivity was created to address the design challenge facing Enterprise IT. We leverage our proven experience, industry partnerships, and lessons learned to create a science-based intelligent design platform. This platform enables Enterprise IT to optimize, redesign, and create new systems in a dynamic, virtual, and agile manner.