The reality of smarter computing transformations and the business gains achieved

A strategy for evolution and growth

A Creative Intellect Consulting Thought Leadership Paper Sponsored by IBM

This paper looks at the reality for smarter IT transformations in the face of key computing and social trends. It highlights the business and total cost of ownership benefits already being achieved by those organizations who have invested in a smarter computing and modernization roadmap. Crucially, this can offer those looking to invest in a smarter IT strategy important guidance and real world proof points.

Bola Rotibi, Research Director, Creative Intellect Consulting
Ian Murphy, Principal Analyst, Creative Intellect Consulting

October 2012

Creative Intellect Consulting is an analyst research, advisory and consulting firm focused on software development, delivery and lifecycle management across the Software and IT spectrum along with their impact on, and alignment with, business. Read more about our services and reports at www.creativeintellectuk.com
Executive Summary

Employing advances in software and digital technology, social computing, server appliances, Cloud technology and delivery models, all without compromising your business operations is smart IT. Deploying the right smarter IT implementation model is crucial to maximize opportunities for future growth. When allied with smarter analytics it maximizes the value from the vast amount of data created from mobile, internet and social interactions with insight that can power the business forward.

The foundation for smarter IT starts with a solid appreciation for the value that an integrated and connected strategy for software tooling and processes, professional services support and infrastructure selection brings.

The world is changing fast and doing nothing is not an option

The dynamic created by Cloud technology, mobile devices, widespread Internet and network connectivity, social computing applications and interactions is enabling organizations to reach new market audiences. Together, they have helped foster a diverse and active supplier market offering targeted choice, greater accessibility and cost effective pricing. Small and large businesses in developing countries now compete with those in the developed world through greater choice of services, flexibility and speed of delivery.

The technology trends have allowed many more to take advantage of services and opportunities that would previously have not been available to them without significant upfront investment. With greater attention to quality and engagement the market is more aggressive, dynamic and competitive. If you can’t transform and modernize front office applications to deliver solutions that meet the demands and expectations of a more savvy audience base your business will at best stagnate, at worst it will not survive. Amazon versus booksellers and record shops, and Netflix versus video retail are key examples of meeting expectations or failing.

Business enablement is more than a cost savings exercise

In times of economic uncertainty, hardship and a changing threat landscape, IT transformation is crucial. Those who recognize this and leverage technology and process trends to transform their computing infrastructure, IT and business processes, have been shown to be at the vanguard of successful businesses. For them, strategic and timely consumption of IT technology advances and trends is a business enabler. General Electric, a company that puts technology investments at the heart of its global growth strategy, is widely regarded as a leading business in the market. In published research the company has made public, investing in technology has helped strengthen the company’s competitive position, expand its market and deliver higher margin rates.1

Server technologies, appliances, software processes and tools have evolved to address many of the demands from business units and their customer audience. To meet the challenges of today and tomorrow IT has to be more conciliatory towards its user base. A willingness to adopt new technologies and be flexible enough to deliver solutions when they are wanted, not when IT is ready, is essential. IT has to enable not inhibit growth.

Evolutionary change requires revolutionary thinking

Survival in conditions of economical constraint requires IT organizations to cut costs and also shift from maintenance to new product development and delivery. It requires evolutionary change to architectures, acceptance that no system is sacred and adoption of a faster, leaner and more agile approach to operational infrastructure, development processes and tools and business operations. It must be matched with a more collaborative and forward thinking professional services support, particularly ones that can draw from solid domain experiences and knowledge, and offer flexible engagement options.

1 http://www.ge.com/pdf/investors/events/06142011/ge_mark_little_presentation_061411.pdf
Security must be ingrained

There is a flipside to computing technology advances and the pervasiveness of mobile networks and devices. A combination of widespread connectivity, increasing technology complexity, weak secure software practices, and implementation and detection strategies, have made the ground more fertile for software and system breaches and attacks. The threat landscape has changed as opportunities for financial gain, competitive advancement, and social and business disruption becomes more apparent and easily achievable. The motivation for software hacks has not only increased, but so has the sophistication and organization of the perpetrators.

Security and secure software transactions have moved up the priority stack for senior business managers owing to the considerable and long-term damage that can be inflicted as a result of a software security breach or a process failure. Secure by design, delivery (hardware/software) and practice (process) needs to be a driving principle for IT assets either built or acquired.

There is growing and diverse support for smarter IT investments and quick returns are being achieved

Vendors like IBM have begun to deliver a portfolio of systems, software and services that have been developed and constructed to be Cloud aware, secure and analytically focused. Its customers are already delivering proof points of performance improvements and revenue growth.

An online travel company deployed the company’s business intelligence solution built on IBM Power system, which enabled system wide customer data to be integrated and analyzed using the software’s predictive modeling capability. The result was significant performance gain leading to 100% improvement in customer response time and supporting 30% business growth.

Other vendors have in place integrated performance monitoring solutions that can track key performance indices and important business and operational metrics to allow for smarter decisions. Some organizations also employ Agile principles and processing practices to help develop their business and architectural plans so as to quickly understand the business impact of an investment in IT services and business systems. Many other suppliers are racing to leverage the technology and social trends within their own product offerings to deliver technology benefits and savings to a broader customer audience.

Few sole vendors will be able to deliver a comprehensive and integrated portfolio that provides the necessary set of end-to-end services, infrastructure and tooling support. Although many recognize the value and benefits from having in place a diverse partner network and ecosystem, few have put in place sufficient structures for support. A crucial element for the likes of IBM, and the market in general, is how it makes a portfolio that addresses smarter IT investments and strategy support, accessible beyond the enterprise and into mid-sized businesses.
Main Report: Pressure points for smarter IT assets and services

IT organizations under considerable pressure for change are in the throes of determining their architectural and infrastructure strategy for the coming years. Technology architectural boards and senior IT management want to leverage wider collaborative networks to underpin core business functions, such as R&D, with input from both internally and externally available resources. This input highlights the desire for multi domain analytics with support for cross regional perspectives.

Delivering applications to extend the capabilities of enterprise systems through a kaleidoscope of technologies, is set to improve user experience, engagement and productivity (mobile, social, Cloud, analytics etc.). This is driving IT modernization and application transformation. Other business imperatives also make a strong case for modernizing and updating IT infrastructure, software tooling portfolios, process implementation strategies and professional services support. Taken from a study conducted by Creative Intellect Consulting in 2011 and 2012, Figure 1, below, depicts the business imperatives impacting IT organizations.

Figure 1: Drivers impacting the IT organization

Ultimately, the IT organization is under pressure from two competing directions. The first is its control of core enterprise systems, which it must continue to manage. The second is from end users who are using technologies in their own lives that they want to use for business, which IT must look to address to engage with its audience and market. This latter point has not been one of IT’s traditional core competencies, but it is underpinning its modernization and application transformation drive.

Pace of change and evolution for IT and the Business

The pace of change in IT is constantly accelerating due to new technology and improvements in existing technology. What was cutting edge five years ago is often seen as mundane, or even outdated, today. The
Recent past has seen a significant shift in enterprise technology adoption and the financial leverage of new delivery models.

- **Cloud deliverance**: Greater service orientation, delivery and consumption set against the backdrop of SOA implementation strategies raise the prospects for Cloud computing technology and delivery models. The flexibility and elasticity of the Cloud and the rich user experiences and pervasiveness of mobile devices are both driving and been driven by the social collaborations that can now happen. This in turn generates immense data from which insight, correlations and relevance must be achieved in order to make value generating connections and decisions.

- **Sweating assets**: Shrinking budgets mean doing more with less. No IT asset has protected status just because it was acquired for a specific task. Assets must be sweated to extract the maximum possible benefit to the organization. An asset is not just hardware or software, but also the data held within the organization or generated externally.

- **Data growth**: The explosive growth of data is phenomenal. Data is now recognized as a great untapped resource inside and outside organizations. Organizations are using external data from government databases, geospatial systems, informatics, telemetry systems, mobile devices and social applications to enrich current holdings. Data analytics have underpinned the Information Worker role for over a decade. Now the arrival of big data is driving analytics further into the business. The goal is to extract every piece of value from data held by the enterprise and then combine that with data from outside agencies, such as public bodies, in order to create new insights and business opportunities.

- **‘Time is of the essence’ analytics**: It is not just about the use of analytics. To take advantage of all that data, the Business Units (BU) want new applications, innovative solutions and technologies that will give them a competitive edge over business rivals. Old development cycles that used to take months must now take just weeks, or the opportunity is lost. The time frame for delivering actionable insight is getting shorter. This is about business agility, time to market and competitive edge.

- **Power to the user**: Demands by Business Units (BU) and end-users presages a major shift in who decides on the key technologies inside organizations. Technologies such as smartphones, tablets, mobile computing and social media have gained significant traction among consumers. They already own and access these technologies, refusing to accept that they have no validity within their daily work environment. The rise of such devices along with approaches such as Bring Your Own Device (BYOD) means that users, not the enterprise, dictate the platform for future application support.

- **Business through social collaboration**: Connect, collaborate, share and influence instantly is driving the social computing revolution and ushering in more socially connected businesses. Data generated through social applications underpins the rise of social analytics and the means of correlating actions from social interactions. That same data can be used to monitor and measure the impact of social application investments both inside and beyond organizations.

Cost saving, competitiveness, efficiency, time-to-market, manageability, mobile, social, cloud, services, security, virtualization, big data, modernization, compliance, application lifecycle management; it reads like the subject matter for a one week IT conference. Yet every one of these is a pressure point on IT departments today.

**Pressure from role and software division**

Keeping development teams and operations separate wastes money. Operating in their separate worlds leaves test and QA teams caught in the middle. Building and deploying new applications that access core IT systems becomes difficult, while resolving software issues takes longer than necessary. This is highlighted by the slow rate of change in core IT systems and the extended life that many software solutions have. Tighter Developer and Operations (DevOps) relationships, supported by tools and processes to enable continuous delivery and alignment will help release the value locked up in corporate data and the competitive edge that ensues.
Fear of poorly connected clouds

Consumerization of business IT systems through the use of mobile devices, social applications, Cloud computing and a more savvy workforce, offers opportunities and greater interactions for many business units (sales, marketing, finance, operations etc.). Technologies like Cloud computing take their toll, presenting headaches and opportunities in equal measure. Security, data storage, integration, federated control, location and the impact on previous investments, such as implementing a services oriented architecture and practice, expose significant issues over data control, system management and corporate governance.

The prospect of Cloud offerings (some real, others repurposed or re-marketed hosted solutions) from many quarters, the ease of accessibility and the weakness of Cloud knowledge, raises the potential for a bloated, unwieldy and hard to govern Cloud estate. Many fear such a “FrankenCloud” of Cloud solutions will fail to deliver the cost benefits and promise of the Cloud computing technology in the long run. Mid-sized businesses are already buying in multiple cloud-based solutions that are disconnected from each other and that do not share common management and security features. For organizations that lack a large central IT function, this is creating a significant problem with corporate compliance.

Establishing root cause

Many of the pressures identified above are self-imposed to meet budgetary requirements. Others are driven by the needs of the business and the evolution of IT. Whatever they are and wherever they come from, if IT doesn’t have a plan to deal with them, then IT runs the risk of finding itself side-lined as the business moves its IT service needs elsewhere. These are not new pressures. They are technologies and requirements that have been around in one form or another for years and even decades. So why are many IT organizations struggling to deal with them now?

The answer is the power shift that four key technologies – mobile, cloud, social and big data analytics – have brought to the organization. All act as catalysts and have illuminated the challenges that IT departments are struggling with. Of concern is that they offer the BU a route away from the corporate IT department and crucial governance controls to platforms such as Salesforce.com and Amazon S3. To prevent this wholesale move away, there is a window of opportunity for organizations to identify, accept and deal with key pressures.

Real World Opportunities: Understanding what is now achievable

Unequivocally, all major analysts and IT vendors accept that between 70 and 80% of current IT budgets are spent on maintaining the existing IT estate. This makes it incredibly difficult to innovate and address future needs. Reducing the cost of operations by removing silo activities is critical. Too many teams are focused on a different part of the IT estate. Even the overlap in functionality of their tools has failed to create a common approach. But vendors are making it possible to bring information together to create a single view on an issue. Server technologies and appliances along with processes and tooling have evolved to help address many of the demands and pressures emanating from businesses and the market in general.

Greater utilization of hardware has resulted in savings inside the datacenters. The size of those savings can be significant. In 2011 IBM started a program to refurbish datacenters, increase utilization and lower power and cooling costs. The result was a $43 million saving in energy consumption. Large multinational companies and other IT vendors are carrying out similar programs. The savings can be reinvested into IT and other parts of the business.

---

Zucchetti Group is an Italian IT solutions provider with more than 1,900 employees, a distribution network of 1,000 partners and more than 85,000 customers. The company develops innovative solutions to support the needs of banks, insurance companies, government offices, professionals and more.

The company found it increasingly difficult to meet its customers growing demands within its existing infrastructure footprint. Its infrastructure of more than 700 servers had filled the company’s data centers nearly to the limits of the physical space. The servers used too much energy and were becoming too costly and complex to manage. Adding more physical servers and storage devices was unsustainable. Using IBM BladeCenter® HX5 (X systems, eX5 chip) and two 43 TB capacity IBM XIV Storage System devices, Zucchetti Group implemented a SmartCloud private cloud solution that successfully reduced energy costs by 97%, supported twenty times the workload of the previous center, and improved the organization’s resilience and recovery capabilities.

Another challenge and opportunity has been operations and cloud. It has taken time, but while the early public cloud solutions had to be separately managed, federated solutions for management and security are now being deployed. This has the advantage of allowing the operations teams to manage their environment from anywhere, providing greater control, faster response times and lower costs. With self-service allowing users and BU to deploy what they want, when they want it, pressure has also been reduced on the operations team. Service Oriented Architecture (SOA), as a step in the middleware evolution, introduced the use of services into IT and provided an architecture that enabled developers to leverage those services. Those companies that have invested in SOA have built middleware that has made it easier for developers to address back office systems and deliver new software to users.

Delivering an IT estate for sustainable business growth and evolution will require the support of innovation at the software, infrastructure and services layer as presented by Figure 2 below. For all this to work, however, it needs to integrate with existing tools and not require extensive retraining of staff. The federation of management and security tools is making this possible.

**Figure 2: Innovation drivers for business enabled IT**

Source: Creative Intellect Consulting
Reducing the Total Cost of Ownership (TCO)

The task of designing and implementing application architectures, business systems and infrastructure services that can support and grow with the business, can seem daunting. It is made more so when one considers the myriad system and application concerns that must be addressed to support and deliver important business operations: Analytical Reporting, management of hybrid workloads, labor and resource costs.

Many in the supply community recognize the challenge of adopting the major technology trends. Significant investments in delivering solutions, appliances and services support that remove some of the barriers have taken place. Key players in the market have leveraged their strengths in technology and their experiences of market dynamics and application workloads to modernize and advance their own portfolio offerings. Systems have been optimized for operational analytics, while mixed workloads and professional services offer targeted support for core technology trends. Improved cost comparisons and labor costs for workloads in both public and private Cloud operations support capabilities now available to many in the market.

IBM’s zEnterprize EC12 takes advantage of the latest 32nm technology with one of the fastest microprocessors in the industry running at 5.5 GHz, making it suitable for Java and Linux workloads. This has resulted in a 25% performance improvement and up to 55% reduction in TCO. The Unit Costs over a three year total cost of acquisition can be as little as $71 per analytics report per hour. The company’s Power Systems are architected for analytics, allowing up to 40% faster workloads and 99.997% uptime. These benchmark results demonstrate how customers can make savings in comparison to the same performance output on an x86 platform.

IBM is not alone in its endeavors to advance and improve its portfolio of servers, software solutions and professional services support. Its competitors and partners (such as HP, Microsoft, SAP, Cisco, VMware, and Bull Systems) are all investing in advanced solutions and platforms that take advantage of the technology trends. But IBM is a vendor that has put considerable investments into R&D ($6 billion per year). The company has for the last 19 years held the top spot for the number of patents awarded and submits nearly 600 analytics patents a year. IBM’s investments and diversely skilled workforce (research fellows, domain consultants etc.), has enabled the company to deliver strong facilities for addressing Cloud, data and security concerns. As such, the company is in the vanguard of suppliers capable of providing the necessary business and technology support and partner network for enterprise organizations.

TCO calculations are not always exact. It is often difficult to compare conditions and workloads across multiple systems and ensure that a like-for-like calculation is valid. Even where the systems look very similar, costs can vary. Ultimately, what will be important for many organizations will be: the strength and capability of a solution/product, its price competitiveness, partner support network, customer footprint and the number of proven return of investment (ROI) testimonials.

Reality in the face of opportunity and choice

IBM’s 2012 survey of CEOs and CIOs showed that those that recognized the important role that properly implemented technology plays, making it core to their strategic roadmap, increasingly delivered successful businesses. Technology implemented badly, without careful planning and risk assessment against the needs and goals of the business is a millstone around the metaphorical neck of progression and growth.

Opportunity and choice must always be tempered with risk analysis. While users want more adoption of social media, cloud and cloud storage solutions such as Dropbox, there is a constant security threat to the business. This is especially the case when data is on external, unsecured, unmanaged platforms.

Change also brings risk to the business through the potential loss of service through system failure and an inability to rapidly adapt to an increased demand for IT resources. This means that any solution chosen by the IT management must reflect the risks to the business in order to meet corporate governance standards. These standards are no longer self-imposed or best practice, but are increasingly enshrined in legislation.
There is a significant challenge for IT management in choosing the right technology mix with ever shrinking IT budgets. Historic wrong decisions have saddled the organization with ongoing commitments that have eaten into future IT spend and limited the ability of the business to adapt to opportunities. Those who can bring all of these together and create a secure and dynamic IT environment that fosters innovative solutions, while meeting strict budgetary conditions, will be the winners moving forward.

**Laying a foundation**

As with any solution, the key is a solid foundation that can be built upon. Access to flexible resources and the ability to manage those resources, is essential to support core IT processes. In the past, this has been achieved at the cost of surplus hardware that is only utilized at peak times. That the resources are required is not in question. The challenge is in understanding just when those peaks arise. Getting that level of understanding requires two more parts of the foundation - analytics and workload profiling.

Workload profiling allows an organization to understand how an application has behaved historically and, from that data, predict how it will behave in the future. It is a complex task as changes in hardware, software and even the way the business functions, will affect the workload profile. Its importance to IT lies in how it can help predict resource demand, allowing IT to balance workloads and ensure that sufficient flexible resources are available on demand. Those dynamic resources could be part of an existing datacenter or they could be provided as part of a hybrid cloud model. This model provides for sensitive and high performing applications to stay inside the datacenter while other applications are moved to the cloud in order to free up local resources.

Making storage smarter is critical. Data growth continues to outstrip all projections. What is needed is automated use of analytics that can balance workload and optimize application performance, by determining where to store data across multiple layers. The use of encryption, compression and thin provisioning as standard will improve security and improve storage density. Where media use, analytics and big data are key corporate goals, smarter storage solutions have to support large Solid State Drive (SSD) arrays that cache commonly used data to improve the delivery to users. In multi-site environments, synchronous and asynchronous replication allied with in-flight data compression technologies, underpin greater resilience for the enterprise, especially in the field of disaster recovery and business continuity.

IBM, for example, has built on the principles of smarter computing to identify a new approach to the design and deployment of storage. This is allowing the company to give clients the advanced storage capabilities needed to mine their data.

**Conclusion**

A smarter IT estate requires many considerations but above all a plan for adoption. In a global market underpinned by Cloud, mobile and social technologies and exponential data growth, putting in place systems, software, tooling and processes for efficient and effective handling of core operational workloads and services will be crucial. This will require systems that robustly handle data volume, deliver optimized performance, support hybrid management facilities and implement comprehensive security. Out of the box support for the Cloud computing model to facilitate reach and flexibility will be another critical factor.

Vendors such as IBM have made considerable investment in infrastructure, hardware, software, tooling, security and services. Such investments are enabling customers to enhance existing facilities and integrate new deployment platforms such as cloud. The best vendors have also invested in professional services and best practice guidance to help customers integrate and migrate within shrinking budgets and the ever shorter timescales imposed by the business. Vendors like IBM, who have an established professional services division, are repeatedly helping clients choose the right mix of delivery models based on workload characteristics and business objectives. With their methodologies and delivery capabilities (covering IT Consulting, Project Based Services, Cloud & Managed Services, Strategic Outsourcing) they offer a viable choice for the enterprise market.
Ultimately a smart IT estate and organization with a mission to drive and support business growth and opportunity, requires: a strong combination of flexible infrastructure and software assets, multifaceted security services, analytical processing capability and a customer and market focused professional services support. Daunting as this may seem, organizations are already beginning to benefit from investments made by vendors in the industry.