

Monthly Research Commentary

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From Consumerization to the Cloud – the accelerating rate of IT change

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Back in 2003, when we began our research into what we soon labeled *The Consumerization of Information Technology*, most of our Enterprise IT client base was understandably skeptical. After all, large companies had always been the leaders in the use of advanced IT, and many emerging consumer technologies still had a wide range of what were easily seen as prohibitive shortcomings.

Nevertheless, we found the logic of consumerization to be irrefutable, and ever since our initial Position Paper in 2004, we have argued that it would be the most powerful disruptive force in Enterprise IT. In an environment where employees are expected to work from home and on the road, their IT equipment will inevitably be used for both organizational and personal needs. The result has been both profound and ironic. The very same devices that are the basis of our work and productivity – PCs and handhelds – are also powerful sources of distraction and entertainment. They are in addition items of fashion and desire on which many individuals will happily spend their own money. Business and consumerization will have to learn to co-exist.

Reconciling these two very different realms will increasingly require Enterprise IT to accept that consumerization is the senior partner. Large-volume consumer markets with their rising multi-media requirements are now the driving force for IT hardware innovation, design and production. Thus, the corporate PC and smart phone businesses should be seen as essentially niche markets (albeit substantial ones) with their own (sometimes retro) needs. This is the mindset that large firms will need to adopt if they are to fully leverage future industry advances.

By 2005, it was clear that our clients would eventually need to find a way to manage this transition. The main questions were *when* and *how*. Towards this end, the founder of our consumerization research, Doug Neal, has long led a working group of like-minded firms who want to get out ahead of this issue. Looking back, the progress has been remarkable. Firms increasingly recognize that one-size-fits-all IT device provisioning no longer makes sense, and they have begun to experiment with a wide range of consumerized possibilities. These have included a shift from fat client software to browser-based and thin client alternatives, various programmes of employee choice, and rising corporate interest in self-funding and self-support models. While there is still a very long way to go, it is no longer controversial to forecast that central IT will eventually play a much smaller role in employee device provisioning and support. This would represent real industry progress.

Consumerized IT services

But while the blurring between work and personal IT devices has been an essential starting point, the biggest impact of consumerization is now in services. Broadly speaking, the Internet is a far more powerful platform than the personal computer, and thus it only makes sense that its impact on Enterprise IT will be much greater than any changes at the hardware device level. Similarly, the Internet is also the most powerful platform for services delivery and innovation yet developed, and thus it will inevitably have a wide range of effects on the traditional IT professional services industry.

Software-as-a-Service offerings such as Google, Facebook, Twitter and many others provide a glimpse of what is to come. Large organizations have spent enormous amounts of money on all sorts of messaging, collaboration and knowledge management systems only to see that services that are often free can surpass them in features, appeal and usage. This, at least arguably, has been the dominant IT innovation story of the last few years. The growing interest in using Google and other public services for enterprise email has been particularly noticeable over the course of 2009.

The Apple iPhone is instructive on both the device and services front. It wasn't long ago that Research in Motion (RIM) seemed to have an all-but-unassailable position in the enterprise smart phone market. Its Blackberry product/service was designed with the enterprise in mind, and still has many significant business advantages. Yet the iPhone clearly has great appeal to enterprise employees, who naturally want to also use this device for work-related purposes. Many would happily use their own money to buy one if sufficient organizational support were available.

From a services perspective, the iPhone's impact is equally impressive. It wasn't that long ago that the US wireless industry was lagging far behind pretty much all of the developed world in terms of mobile service innovation, standards and overall quality. Today, things have changed dramatically. The explosion of iPhone applications has reversed the innovation story, while creating a much more sustainable source of demand for higher-speed 3G/Wi-Fi-like mobile platform services. Apple's rapid evolution from its iPod music player through today's iPhone to eventual robust enterprise acceptance is another powerful example of the consumerization process in action.

The cloud as the next phase of consumerization

If we assume a little license and say that 'Consumerization 1.0' was defined by devices, and 'Consumerization 2.0' by services, then 'Consumerization 3.0' is clearly cloud computing. Way back in 2004, even we wouldn't have predicted that the movement toward virtual and variable cost computing, software and storage models would be led by Amazon, at that time mostly seen as a marginally profitable online bookseller. But we did say that what we then referred to as *public infrastructure* would be based on the consumerized business model of high volumes, low prices and self-service. In other words, *public infrastructure* promised the same benefits that *cloud computing* does today – on demand, 'by the drink', at scale, available to all. Cloud computing is certainly a catchier phrase than public infrastructure, but the two terms are essentially synonymous. They describe a computing approach that is rapidly becoming the driving force of IT industry change, one already adopted by an impressive list of global business leaders across a surprisingly wide range of industries.

In early November, we hosted a 1½-day cloud computing forum, featuring presentations from both cloud customers and suppliers. The presentations strongly confirmed the key messages contained in our recent report, *Doing Business in the Cloud*. Companies are finding that the virtual, self-service aspects of the cloud can enable them to set up servers with a great variety of hardware and software configurations much more quickly and flexibly, at a much lower initial cost. These systems are being used for a wide range of applications, but the most prominent areas are: development and testing, peak load capacity support, web site content delivery, and a variety of simulation and large-scale data analysis tasks.

Yet, as with devices and services, there are limits to how extensively these purely consumerized cloud services can be used. Vendors such as Amazon have no real interest in addressing the full range of complex enterprise IT requirements, and probably couldn't meet these needs even if they wanted to. Amazon is happy to let others deal with the many challenges involved in integrating private and public clouds, and their various hybrids. Nevertheless, we all know who the real market leaders are. Amazon and Google are setting the pace and dominating mind share, as a variety of suppliers, new and old, struggle to catch up.

The consequences of these developments will be profound. Cloud computing will accelerate the shift to a more virtual computing environment. And as computing moves beyond its underlying physical systems, it will inevitably become a more dynamic and faster-changing entity, whose long-term direction is difficult to predict. One thing seems certain: consumerization and virtualization will become increasingly intertwined.

Looking ahead – consumerized innovation

While we are clearly impressed by the changes we have seen thus far, in many ways the real work of both consumerization and the cloud lies ahead. Major new eras in computing are generally defined by broad new categories of usage. Think of the way that personal computers were led by word processing, spreadsheets and presentation graphics, or the way the Internet was driven by email, search and focused web sites.

From this perspective, neither consumerization nor cloud computing has fully made its mark. Whether we are looking at devices, services or virtual resources, most of the emphasis is still on doing existing things differently, and presumably better, as opposed to opening up major new application areas. Examples of today's alternative delivery focus include browser-based applications, hosted email, and virtual testing and development. All are important, but are hardly green fields of new opportunity.

As we look at the innovation landscape ahead, two broad classes of opportunity seem the most promising: *unstructured information* and *collaboration*. The great majority of IT activity to date has been based on structured data – records, transactions, databases, etc. But clearly, the cloud and consumerization will help us better leverage unstructured information. Consider the way Google pulls together so much of the world's information, or the way social networking services expose previously invisible links between people. Likewise, a new generation of organizational diagnostics will help us see the informal office networks and patterns that are often at least as important as our formal hierarchies and processes.

As these new services emerge, the links between virtualization and unstructured information will prove to be inseparable. As physical systems and software recede into the background, formerly all-but-invisible links and patterns become much easier to discern. Salesforce.com's efforts to embed social media into its range of offerings is a good example of the types of innovation to come.

Collaboration will be the second major source of innovation. It has often been predicted that the next great wave of IT industry innovation will be the integration of IT with much of the physical world – smart buildings, smart products, biometrics, genetics, nano-technology, etc. Bridging these very different realms will require unprecedented levels of cooperation between specialized companies all around the globe. However, the optimal level of collaboration almost certainly will not be realized if every firm continues to work behind its own firewall. Cloud computing has the ability to provide the necessary virtual, on-demand, neutral meeting ground for much of this work.

While we can't be sure how long these developments will take, there is reason to believe that the trends are accelerating. In his keynote address at our cloud conference, the author and economist Brian Arthur helped us better understand the incredible journey we are on. Drawing on his important new book, *The Nature of Technology*, Brian discussed the ways in which technology evolves. A key part of his analysis is that technology advances are less about dramatic breakthroughs than the ability to combine existing technologies in novel ways. The inherent flexibility of digital technologies makes them particularly well-suited to new combinations, and this goes a long way toward explaining why the pace of innovation should accelerate and why collaboration will prove so important. We will continue to incorporate Brian's thinking into our ongoing business/IT co-evolution research, and we highly recommend his book.

Coping with the cloud's darker side

We would describe all of these trends as essentially inevitable were it not for one thing: the future stability and security of the Internet cannot be guaranteed. Many experts think we are losing the battle for cyber-security. As one speaker at our conference put it, the only reason the Internet hasn't been brought down already is that the people who know how to do this currently gain more by keeping it running. That's a sobering reality that cannot be avoided, and we always encourage clients to think hard about how they would respond if the Internet were unavailable – not for an hour or two, but for weeks or even months. Nevertheless, the strong consensus among our clients and our conference attendees was that the certain risks of not taking advantage of

these consumerization and cloud trends is greater than the unknowable risks of what might some day happen to the web. Thus, they are enthusiastically but warily pushing ahead, and society's dependency on the web continues to rise.

From an LEF research perspective, we see our work as having largely completed what in retrospect can be seen as its evangelical phase. The shift from our 2004 Position Paper to our upcoming *Cloud Computing Workbook* (and our *Consumerization/Web 2.0 Workbook of 2008*) is emblematic of the changing levels of IT market acceptance and thus the changing focus of our supporting research. Looking to 2010 and beyond, we will continue to explore the nexus between consumerization and the cloud as these trends shift to a more innovative and transformative era. The many challenges in creating a secure, virtual, collaborative and mobile world that better leverages vast new sources of unstructured information would seem to assure that our research still has a long way to go, and that the most exciting times still lie ahead.

Leading Edge Forum

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