



# Internet innovation: Setting the stage for enterprise evolution

**Technology Viewpoints**

Volume 1. Issue 1.

CGI’s Technology Viewpoints are a quarterly look into the latest trends in the ever-evolving technology industry. This first edition takes a look at how Internet innovation can influence evolution within our enterprise environments—oftentimes producing positive side-effects, and sometimes negative ones. Here we take look at the Internet innovation topic from five key viewpoints: security, emerging networks, application infrastructure, IT infrastructure and virtualization.

## Security

### “A system administrator” lives in your home PC. What about your enterprise desktop?

On Wednesday morning, you are greeted with a freshly rebooted home PC. This is the norm for those with personal computers configured for Windows’ automatic updates. Tuesday is a typical patch day, and on Wednesday we can expect to find our systems waiting for an automatic reboot. Microsoft has been invited into our homes and given a degree of control over our home PCs.

Remote administration is not new to IT; however, the worldwide, wholesale outsourcing of third-party remote administration is relatively new. Millions of home computers have joined a remote management network controlled by Microsoft. The integrity of the Windows update mechanism has been entrusted to Microsoft by our friends, neighbors, families and ourselves. Our expectation is that system patches will be applied in a timely manner, exposures to security vulnerabilities will be limited, and that the update mechanism will not be compromised.

In the home market, the expectation has been set that systems are updated weekly by the operating system provider. The perception is that these updates are free, since the cost is imbedded within our home PC purchase. This leads us to ponder two critical questions of what will happen at the enterprise level: Will there be an expectation that automatic and continuous updates are free? More importantly, are we vulnerable if and when automatic updates from third-party providers take place in the enterprise environment?

### Should we believe what we read?

We have learned not to believe everything that comes to us via email. Should we then believe what we read on the Internet, or in the relevance of Google’s search results?

The integrity of various Web tools have come into question lately, such as the open knowledge source, Wikipedia, and fake blogs, which have a sole purpose of spreading a specific point of view under false pretences. Just as SPAM has become a common irritant in our inboxes, Splogs (SPAM blogs) have become an irritant in search engine results. What’s more, the search engine optimization (SEO) industry has legitimized the practice of displaying specific search results of those businesses that pay. In effect, many organizations contribute to corrupting Internet integrity.



<i>Technology Viewpoints</i>	1/5
© CGI February 2006	

The bottom line of what we do believe is this: There is no guarantee that what we read on the Internet or in our e-mail is valid. What's more, we cannot be sure of the purported identity of an individual, organization or corporate entity.

## Emerging Networks

### VOIP is here. But is it free?

There are three forms of VOIP (voice over IP) on the market today.

1. Infrastructure VOIP allows telecommunications service providers and organizations to establish IP-based voice facilities at a cost reduced from traditional hardline services.
2. Packaged VOIP services, front lined by companies such as Vonage, enable small businesses and individuals to deploy and use VOIP also at a reduced cost.
3. Free VOIP, from such providers as Skype, Yahoo, Microsoft and Google, provision services to individuals under a different model: revenue generation comes from advertising and/or related services, such as voice mail and in/out dialing from the Internet to POTS (plain old telephone service).

But how free is free? Free is a useable, basic service; however, free also has lower quality expectations and is oriented to the computer savvy user. Millions of users of the various services can attest to the reality that free VOIP exists—as long as there is an available high speed Internet connection that has a reasonable level of service. The conclusion is this: VOIP is real. As its quality evolves, will the concept of free for the enterprise level evolve as well?

### Broadband cell phones: The next video conferencing device?

With today's collaborative technologies, many organizations see the promise of virtual and global communication. Yet, in many respects, we still have a long way to go. PC-based video conferencing is here, but network capacity and quality issues need to be resolved. The Internet, for all its potential, still has issues with latency and quality of service.

The only other two networks with the reach of the Internet are the voice telephone network and the evolving 3G plus wireless network. The voice network lacks the end-user capacity for video; however, the opportunity exists for emerging cellular networks to provide the controlled quality that bidirectional voice and video communications demand. We are beginning to see streaming video make its way to cellular handsets. Broadband cellular wireless transmission quality and capacity is increasing.

What provider will build the network and supporting technology to evolve conference calls to the next stage of video conferencing? What value can our organizations derive from the technologies available today, while preparing for the future of true collaboration?

### Does the Internet have the muscle for network application services?

There is rapid movement afoot to move further toward thin clients. Advances in development technologies demonstrate that feature-rich, browser- and network-based applications are viable. The question that needs to be asked, however, is how far can this design concept be taken? Is the Internet reliable enough for network-based applications? Where should the line be drawn between what should be thin and what should be fat?



<i>Technology viewpoint</i>	2/5
February 2006	

To answer these questions, we need to look at application and end-user dependency on network capacity, quality of service and availability. The connected and interconnected user experience is feature and functionality rich. Mapping applications, as an example, benefit from accessing vast amounts of information. Being sidetracked without a network connection renders all the features and functionality mute. A fat client application with local data is preferable in this example.

The application availability expectation that has been set in the personal computing environment will be hard to match with network-based applications operating on existing home broadband services, leaving us with these questions: What is the long-term role for the rich client? Are our enterprise distributed computing infrastructures ready? Will they ever be?

## Application Infrastructure

### Web 2.0: Unlocking unbounded potential

Web 2.0 has been defined as many things by many people. Our definition: Web 2.0 is an environment where applications live on a network in a model rich environment with published APIs, interoperation, cross fertilization, mash-ups and seemingly unbounded potential. Unheard of yesterday and in beta format today, the Web 2.0 application server is the playground of early adopters and innovators.

Already, Web 2.0 has seen a world of rapid change, external beta releases and feature leapfrogging and catch-up. Start-ups vie to be the next Google, flickr or Yahoo, and Microsoft has joined the fold. Competition is alive and kicking. Our job is to keep tabs on the models that are working and what's on the horizon—and, more importantly, how all of this will affect our organizations.

### API governance

What we can learn from the dynamic environment loosely called Web 2.0 is that the “wild wild west” (WWW) needs stability and predictability as innovations move from individual to enterprise use. A new user interface may delight a technical enthusiast, but a new API that breaks a working enterprise application has a different effect on business stakeholders.

Expectations are set high from a functionality and usability perspective. Reliability, availability, security and performance realities need to be taken into account as these are not the currencies that beta releases operate within. Time and awareness will mature APIs and governance will form around them, but for now, let the enterprise beware.

### Changes overnight

It is an exciting time for technology enthusiasts. New features, new services and new companies are popping up on the network seemingly daily. Podcasting, for instance, has matured from non-existence to a VC-funded business in under a year. These are exciting but unpredictable times. While this constant and uncontrolled environment is great for innovators, it's a headache in the making for change management within the enterprise.

## IT Infrastructure

### The \$200 web hosting infrastructure

The standard for low cost, commercial grade web hosting is around \$200 for two years of service. This gets the purchaser a predefined allocation of memory, disk and network bandwidth in a shared services environment. Backups are provided by the hosting provider. Capacities in terms of tens of gigabytes of



<i>Technology viewpoint</i>	3/5
February 2006	

storage and network traffic are the norm. Standard Internet applications, such as web servers, blog software, SQL databases, WIKI software and email services, are installed from a menu-driven interface and are included in the base fee. Typical time for activation, including credit card processing for payment, is 30 minutes to 1 hour. At that point, the service is operational—although DNS changes tend to lag by 24 hours (due to the nature of the Internet and outside the provider’s control).

The implications for the enterprise: Push button activation and installation for a nominal fee will become the expectation for standard services.

### **Planning for SOA capacity**

When planning for the deployment of a new application, the typical dialogue between the business and application teams cover capacity-planning issues, such as batch volumes, storage needs and transaction resource consumption profiles.

Planning for SOA capacity may require additional conversations. SOA applications can come in different forms. Some are EAI in nature and have predictable capacity needs, and enterprise SOA deployments will likely provide aggregate volumes that support capacity planning. However, the wild card SOA application—one where web services are exposed for use by internal and external consumers—will be different: the uptake, usage patterns and effect on capacity is unknown.

The bottom line: IT infrastructure architects need to learn SOA concepts to interact effectively with the future SOA business and application teams, and to manage the capacity of the infrastructure supporting their applications.

## **Virtualization**

### **SOA: Mainstream or a passing fad?**

SOA is here to stay. Why? All major middleware products are now SOA products. We’ve gone too far to go back now, and there is nothing to go back to—SOA alternatives no longer exist. Part of the adoption of SOA is “me too” market and product management. Part of it is the validity of SOA as a natural evolution of IT.

SOA is mainstream and for good reasons. The expectation is that there is ROI. As an industry, we need to ensure that the promised and expected ROI is realized.

### **RSS: The SQL for web content**

RSS (really simple syndication) has come of age over the past year. RSS has fueled the emergence of blogs...blogs connected to blogs...blog searching...blog aggregating...enhanced blog reading—you get the picture. In effect, RSS has become the SQL for web sites. Extensions to RSS, such as the one proposed by Microsoft, provide a standardized technique to use RSS as a light-weight EAI mechanism. RSS feeds count in the millions on the Internet. RSS has become the glue to link content in a model that does not include a browser as the center of the universe. In RSS, the aggregator is king.

CGI’s Technology Focus Connection, a network of our top technology wizards, follows an RSS “everywhere design” concept. Our pioneering work with adopting RSS as an integration and information distribution technology helped us recognize this emerging technology and leverage it within our own Technology Leadership program.



<i>Technology viewpoint</i>	4/5
February 2006	

Expectations on RSS are low as it has not been heavily adopted outside of the blogging community. We predict that 2006 will be the year of wider RSS awareness, precipitated in part by Microsoft's adoption of RSS in Office "12".

**Two interesting grid approaches**

For a few years, server virtualization has been a recognized approach in IT circles. Grid computing has as well. Both approaches have been improved and refined, yet server virtualization has arrived as mainstream while grid has not.

There are a few interesting breakthroughs that may provide the necessary push to bring grid computing into the mainstream. One is partitioning, which involves predictably breaking up data and allocating it to processing nodes. This permits a larger number of systems within a grid to have timely access to data. A second approach involves scheduling processing to occur on nodes that have the data necessary to support the processing. This innovative thinking alters the scheduling approach from where the available cycles are to where the data is.

The Google Grid has set high expectations for what low-cost commodity systems can perform if assembled in the appropriate architecture. Architectures for general-purpose grids are evolving to meet the expectations that purpose-built grids are setting. Time and innovation will turn these expectations into realities.



<i>Technology viewpoint</i>	5/5
February 2006	