

Article: Today's Business Technologies - Demystifying the Hype

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The purpose of this article is to demystify some of the hype surrounding business technologies that are currently attracting a lot of attention. I look at cloud computing, business intelligence and social computing, and explore the implications of each for students studying (Management) Information Systems at this time.

Cloud Computing

A November 2011 supplement on cloud technology in *The Guardian* newspaper opened by saying that it's hard to think of a more significant, more pervasive technology trend than cloud computing. The introductory article went on to say "From powerful consumer tools such as email and photo-sharing, to business solutions for data management, the cloud is reshaping how we work, live and play with data in our increasingly connected world" (Media Guardian, 2011). A few months earlier, a *Decision Support Systems* journal article presented an academic perspective that said the evolution of cloud computing over the past few years is potentially one of the major advances in the history of computing (Marston et al, 2011).

In chapter 5 of their *Management Information Systems* book, Laudon & Laudon (2011) define cloud computing as web-based applications that are stored on remote servers and are accessed using a standard Web browser. Elsewhere they discuss the ubiquity of the Internet and Web, and how it has prompted a huge growth in e-commerce. But this ubiquity has also caused a shift from physical computer assets to applications running everywhere and anywhere. Today, cloud computing promises to provide all the functionality of existing information technology (IT) services and even to enable new functionality, while reducing the upfront costs of computing that often deter organizations from deploying information systems solutions.

Cloud computing is similar in some ways to grid computing – a term coined in the mid 1990s to describe technologies that would allow consumers to obtain computing power on demand. But while grid computing was suited to organizations with large amounts of data being requested by a small number of users, cloud computing is better suited to environments in which there are a large number of users requesting small amounts of data. In fact the term (cloud computing) refers to a number of things. It can be the use of remote, third-party servers as extensions to a company's local IT network, or the backup of data across the Internet without needing to know the physical location of storage. This is called cloud infrastructure as a service. It can also refer to the use of commercial software applications hosted remotely by a vendor (cloud software as service), or the development and remote hosting of custom built applications (cloud platform as a service).

Charles Arthur, writing in *The Guardian* supplement mentioned already, identified five characteristics of cloud computing. These are:

- On demand self-service, which enables organizations to use as much power as they need;
- Broad network access, so it's available across the network (usually the Internet);
- Resource pooling, so organizations don't care where the computers storing the data are;
- Rapid elasticity, meaning computing power can ramp up as demand grows; and

- Measured service, so that organizations are only charged for what they use (this might be storage, bandwidth, processing, user accounts or some combination of those).

This model is an attractive option for many businesses because the service providers are responsible for installing and maintaining core technology. However it means that businesses cannot directly control system stability or reliability, and are highly dependent on the provider. Furthermore since using a cloud computing environment generally means data is being sent over the Internet and stored on third-party systems in an unknown location, there are privacy and security risks which must be weighed against the alternatives.

The key aspect of cloud computing is that IT can be delivered more flexibly as a service. Because solutions delivered by cloud computing can be scaled easily and are available on demand, there are fewer financial barriers to its adoption.

Cloud computing has generated a lot of interest and commentary of late. It's impossible for text books like Laudon and Laudon's *Management Information Systems* to keep up with the jargon surrounding "clouds" but this should not be a major concern to educators or students. It is not necessary, for example, to know what cloudbursts, cloudware or even cloudstorming are in order to understand the concepts involved in cloud computing¹. Furthermore, the arrival of cloud computing does *not* mean that everything unconnected to an on-demand online data centre is obsolete. There are still many issues that need to be resolved before cloud computing can and will be accepted as a viable choice in business computing. Standalone applications like CRM might be easy to deploy to a cloud (with Salesforce.com for example), but it is not so easy for businesses to migrate legacy systems and applications that have been developed internally or use third party software.

The 2011 article in *Decision Support Systems* notes that as of now, cloud computing makes a lot of sense for SMEs but that there are extensive technical, operational and organizational issues which need to be tackled before clouds are used extensively at enterprise level. It is important therefore for IS educators and students to keep this in mind. While the core technologies like virtualization and web services that enable cloud computing are important, understanding the alternative platforms and methods for deploying information systems solutions are still hugely important in today's business environment.

Business Intelligence (BI)

Another area that has been gaining the attention of analysts and vendors for some time now is business intelligence (BI).

A recent review article in the *Communications of the ACM* journal defined business intelligence software as a collection of decision support technologies for the enterprise aimed at enabling executives, managers and analysts to make better and faster decisions (Chaudhuri et al, 2011). They are based on the storage of large amounts of data such as customer transactions in banking and retail, or inventory tracking using radio frequency identification (RFID).

Over the last two decades there has been huge growth in the number of BI products and services offered, and in the adoption of these technologies by industry. However the terminology used can sometimes be confusing. For example, Laudon and Laudon describe the *business intelligence environment* as comprising of six elements:

- data from the business environment;
- business intelligence infrastructure;
- business analytics toolsets;
- managerial users of the toolsets, and methods which are linked to strategic goals;

¹ If you really want to know what these terms mean, see <http://sites.google.com/site/cloudcomputingwiki/Home/>. Click the **Cloud Computing Vocabulary** link.

- delivery platforms such as Decision Support Systems (DSS) and Executive Support Systems (ESS); and
- the user interface (visual representations including dashboards and scorecards).

However one of the main vendors of BI software, IBM, presents *business analytics* solutions that consist of

- business intelligence (query, reporting, analysis, scorecards and dashboards to enable decision makers to easily find, analyze and share the information they need);
- analytic applications (applications that package business analytics capabilities, data models, process workflows and reports to address a particular domain or business problem);
- financial performance and strategy management (budgeting and planning, financial consolidation, scorecarding and strategy management, financial analytics and related reporting capabilities; and
- advanced analytics (data mining, predictive modeling, 'what if' simulation, and analytics to identify meaningful patterns and correlations in data sets to predict future events and assess the attractiveness of various courses of action)².

In either case the goal is to enable business users to see and use large amounts of complex data in a manner that aids decision making. Vendors encourage businesses to implement a complete BI framework or to select products that suit their business requirements, budget or existing information systems.

There are several online glossaries listing the terms commonly used in the business intelligence domain. While these are often helpful, Laudon and Laudon's presentation of the foundations of BI (chapter 6) and decision making (chapter 12) provide a consistent terminology that educators and students are encouraged to adopt.

Not surprisingly, mobile BI and cloud BI were dominant themes in 2011. These emerging fields highlight how technologies and platforms are converging in new and innovative ways. However in the case of mobile BI, most vendors are in agreement that a smart phone screen is just too small to interact with a dashboard or graphics. An iPad is a different story, but the likelihood is that most business people will continue to use notebooks, netbooks or desktops to understand their data and what it is telling them.

Not surprisingly, there are now plenty of cloud solutions available in the area of BI. As with all cloud services, the main advantages of cloud BI are that it is on-demand (immediately available with no infrastructure to deploy), elastic (can scale up or down quickly with changing requirements) and affordable (no large upfront costs). But data volume and security are major concerns – BI consultants **arcplan**³ recommend that marketing data which is relatively manageable can be moved to public clouds but for financial data it may be better to keep the data in the private cloud⁴.

Social Computing

Another buzzword that has been gaining attention of late is social computing. This is defined by Forrester Research as a "social structure in which technology puts power in communities,

² See white paper entitled *IBM Business Analytics for your industry* at http://www-05.ibm.com/innovation/uk/leadership/capabilities_support/pdf/insights/wp_business_analytics_for_your_industry.pdf.

³ See <http://www.arcplan.com/en/news-events/press-releases/2011/bi-trends-2012-from-hype-to-breakthrough/>.

⁴ A public cloud is one that is maintained by an external service provider, is accessed through the Internet, and is available to the general public. A private cloud is a proprietary network or data centre used inside a company (Laudon & Laudon, p.213-214)

not institutions”⁵. It is even seen by some analysts as having the potential to transform business as much as the Internet did in the 1990s. They see this happening in two ways. The first is through internally focused strategies that empower workforces and drive increased collaboration leading to innovation and growth. The second is using external strategies that give customers the power to drive the market and lead to customer-driven business models that influence organizational strategy.

Social computing uses Web 2.0 technologies to empower communities. The term covers, among other things: social networks; blogs, wikis and other user-generated content; peer-to-peer content distribution; podcasting; consumer-to-consumer e-commerce; tagging; and voter-driven content. Starbucks is an example of a company that has started to leverage this emerging social computing trend - their website *My Starbucks Idea* (<http://mystarbucksidea.force.com/>) gives customers an opportunity to share ideas on how the company can make improvements. It is intended to help improve customer relations and foster incremental innovation.

According to Stephen Prentice, writing for Gartner in November⁶, social computing, allied with the increasing availability and affordability of technology and communications services (especially mobile devices and services), is now having an impact on businesses and their digital strategy. He spoke of the broad-ranging and disruptive nature of many social computing developments, and suggested that a window of opportunity (and competitive advantage) now existed for those who embrace the shift in customer expectations and behaviour now. He claimed that this window that may extend as long as two to three years before a socially enabled digital strategy becomes the norm.

Analysts like Prentice are of the view that social computing, with individuals participating socially to build products, services and experiences for companies, should now be the ultimate goal of any web strategy. Others see the notion as excessive hype of social media and of the potential of Web 2.0 applications to enable collaboration.

What the hype does tell us is that the technologies that provide opportunities to collaborate internally within an enterprise or externally with customers and vendors are becoming increasingly important. The key issue is how organizations use these technologies, and how they align their web strategy with organizational strategy and potential.

Concluding Remarks

I'll finish with the words of Kevin Fogarty, writing in *IT World* in August 2011. He said “Cloud computing generated a lot of hype not because it was good at hype, but because it worked. And it worked because it wasn't new technology at all”⁷.

Studying and understanding the underlying information technology infrastructure makes it possible to determine what is new and what is not in relation to business computing. But effective information systems are as much about people and sound investment decisions as they are about exciting new technologies and applications. As businesses, government and society become more dependent on information technologies, it is important to remember that they are in most cases no more than tools used to support an organization's processes and strategies. To reap the benefits of these tools, effective and responsible development, use and management are all important.

⁵ See <http://www.forrester.com/ResearchThemes/SocialComputing>.

⁶ See <http://www.gartner.com/id=1861021>.

⁷ See <http://www.itworld.com/cloud-computing/196687/dont-dismiss-hype-about-cloud-computing-thats-part-makes-it-work>.

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