CHAPTER VII

INSIDE THE CLOUD OF THE COMPETITORS

The Controllability of Computer Applications

Computer applications have most frequently escaped the notion of *control-lability*. Understanding what this means is a prerequisite to appreciating what is offered by cloud vendors, particularly in terms of adding value to onDemand com-puting routines by way of an ingenious use of platforms.

Controllability is a technical term frequently employed in control engineering/ It stands for the ability to put a system into a desired state by working on its input variables, processing gear, and the deliverables it provides.

Simply because a product is offered by a reputable vendor does not ensure that the user organization is always able to control it. Often plenty of effort is made in vain: companies fail to be in charge of an uncontrollable product or system—and this is particularly true when technology runs the risk of outpacing human under-standing of the way in which the system works.

Information technology is widely employed, from education and research to daily operations and management deci-sions, its impact is gradually changing the nature of work. Even our capacity to think is being altered as man-machine systems are used for planning, designing, art, and other creative pursuits. This has two implications:

- what is inside the cloud of the different vendors will increasingly affect not only the way people work, but also how they live; and
- the notion of controllability must be extended all the way from company reactions to new technology, which remain exceedingly slow, to the necessary evolution of existing social systems that new technology makes impractical.

For the time being, however, both in the different sectors of industry and in society at large, adaptation to a fast pacing technology is very slow. While it is not clear what causes this delay, the

after effect is lack of appreciation of the deeper impact of new technological advances that widen the gap between individual, busi-ness, and social responses. Added to this is the fact that when people work with a computer as a partner, their behavior also differs. Until they discover what the^) computer is able to do, people refuse to rely on it and act as if they were working done, but as they learn the computer's capabilities and limitations, they put it to better use. This documents the difference controllability makes.

Ihe other side of the coin is that the more a company advances in its mastery of information technology, the more its operations become dependent on the integrity of the system that it uses. This makes it imperative to understand and critically examine what is on offer. Having done so, and after deciding whether it wants to be inside or outside the cloud, management should be committed to an endless process of upgrading, enhancing, and testing its technology, to effectively meet:

- sophisticated client requirements,
- market and regulatory changes, and
- evolving internal needs for information and knowledge management.

The controllability principle suggests that failure to continue doing so will see to it that the company's business is negatively impacted by advancements in technology, exploited by competitors to gain market share. This is the other side of *technology risk*, which also includes human error, fraud, mismanagement, and natural disasters.

Platforms Rising: Google Tries to Be a Frontrunner

Google's App Engine, Microsoft's Azure, Amazon.com's EC2, and Salesforce.com's Force are four examples of what the cloud offers in development platforms. They are reasonably priced and therefore well positioned to take away market share from traditional application development solutions. They are also popular, particularly among small and medium enterprises (SMEs), though larger companies, too, are now looking at platforms as an effective way to handle their program development chores.

According to some estimates, of the four main sectors of cloud computing— OnDemand software, platforms, infrastructure, and enabling—development plat-forms present to the user organization three special advantages distinguishing them from the other pillars of cloud computing:

1. the best means for handholding between cloud providers and user organiza-tions, as a cross-sales interface;
2. logical, indeed necessary, extension of onDemand software beneficiary of the (long-delayed) switch out of onPremises applications; and
3. by 2013 their market will probably be a quarter of the total cloud market, with the latter estimated between $100 and $110 billion.

True enough, today's platforms do not cover all applications, such as per-sonal productivity. But this will most likely change with user requests for greater functionality and as vendors drive to overtake each other in covering a larger part of the market. An example is provided by Google's sprint in prototyping cloud com-puting by creating a network for university research through *Project Google 101.*

In an effort to keep ahead of its competitors, the cloud provider has as well updated the Google Search Appliance (GSA), its dedicated hardware and software offering for corporate intranets and websites. New features in the GSA 6.0 release include:

- query suggestions, and
- user-generated results.

These allow users to promote certain web pages for a particular query. According to analysts, the company already has some of the wider and deeper cloud com-puting offerings, including applications like Google Docs, Google Calendar, and infrastructure such as *Big Table.*

Big Table is a multiserver proprietary database system using the company's File Sub System and the so-called Chubby Lock Service designed for a loosely coupled environment emphasizing availability and reliability Big Table can also be used as a name service:

- replacing the Domain Naming Service (DNS) and
- translating a storable domain name into a corresponding numerical identifier

It is difficult to see that in the short term alternative OSs will make Windows obsolete and turn browsers into dominant computing platforms, but the new entries will give Microsoft a run for its money. Mid-July 2009, Microsoft reacted to Google's encroachment into its core business with the announcement of a free online version of its Office software to be launched in 2010—a move representing one of the most radical steps yet by Microsoft as it tries ness around the Internet and save its income base.

Salesforce.com and Its Force

Salesforce.com was presented as a company whose cloud comput-ing services allow user organizations to share customer information on demand.f The company started in business by providing worldwide customer relationship management (CRM) software and associated services. Its market is business enti-ties of all sizes and industries.

CRM has been Salesforce.com's first commercial product, and over the years it evolved into a cloud computing onDemand platform, permitting the firm to, increase its attraction to its customer base, enrich its online software solutions, make more defensible its pricing, and develop alliances; for instance with Google which might significantly improve its fortunes.

One of Salesforce.corn's competitive advantages is *Force*, its development plat-form, an offshoot of the vendor's underlying infrastructure. It features an operating system, multitenant database, and applications services. Some experts suggest that Force is a first-class player in the developer tools market:

- featuring relative simplicity and good integration with the firm's onDemand CRM and
- being assisted by the platform's metadata facility, which enables application customization without preserving the core code.

In essence, developers configure the attributes associated with an application's object, storing them as metadata blueprints. These can be accessed through the user interface when end users interact

with the application. This metadata-based approach allows user organizations to move to the next version of the platform without disruptions commonly associated with upgrading.

Moreover, Force permits one to integrate applications developed on the plat-form with other existing routines, to access data in the other systems. It also makes it possible to combine data from multiple sources in a workflow associated with a specific process. This is achieved by means of connectors for:

- ERP routines,
- desktop devices,
- middleware, and more

In terms of system design, the concept of a layered platform is very interesting, because there are advantages associated with the ability to start at the lower level with what is called secure infrastructure and move up through five layers, each dedicated to a specific mission: database as a service, integration as a service, logic as a service, user interface as a service, and applications exchange.

The system is upgraded through value-added routines.2008fSalesForce.com announced *Sites,* permitting user organizations to expose their Force custom-made applications on public and private websites. This could become a drive of new applica-tions, strengthening the platform's appeal by allowing third-party contributions and by permitting user organizations to be more interactive with their customers.

The profile-driven access provided by Sites facilitates data control over objects and fields made accessible to visitors. Another feature is provided by the *Sandbox* routine, which permits replicating the entire Salesforce.com deployment.

Still another online tool by Salesforce.com, known as *AdWords*, lets user orga-nizations place ads in their CRM environment and also helps them in tracking the success of their online advertising by tracing leads, opportunities, and revenue. This is an interesting feature unavailable in classical CRM software.

The impact of value-added features described in the above paragraphs can be seen through the response of user organizations to surveys concerning the attrac-tion presented to them, and their IT strategies, by onDemand programming prod-ucts and onDemand platforms.

Microsoft Is Now on the Defensive

Nearly three decades have passed since Microsoft's blitz in Las Vegas. Today, hav-ing attained prominence in the PC, OS, and applications market, but with the classical PC's future in question, the company is on the defensive. What a dif-ference from 1983, when Bill Gates's outfit was one of many software upstarts hardly noticed in the sea of other firms competing in the same market, but it tried hard to come up from under. That year's Comdex has been an inflection point in Microsoft's fortunes.

- The technical trigger was the prelaunch of Windows, a then nearly unknown PC operating system.
- By contrast, the real event was created thanks to two marketing masterminds, Rowland Hanson and Bob Lorsch, who put in motion the public relations blitz.

"There wasn't a taxi on the Strip not promoting Windows. Stickers were all over the backseats of cabs; the drivers wore Windows buttons," said Jennifer Edstrom and Marlin Eller. "... People couldn't go to bed without Windows." That has been a marketing *blitzkrieg* around a technical product in the making, "Microsoft's com-petitors were crazed, but Gates and his marketing crew were ecstatic.

While Windows looked as if it were the focal point, its release was still a couple of years away. Microsoft's strategy had borrowed a leaf out of IBM's book, but for those attending the 1983 Comdex, the marketing blitz was ingenious. In a matter of a few days (and at an affordable cost of $450,000), Microsoft went from being one of many little-known software players to being *the player* in operating systems for personal computers.

On the occasion, Hanson and Lorsch reinvented and refined the concept of consumer product promotion for technological gear, recasting it around a piece of software that became license

to riches. Microsoft would manage to keep a near monopoly to that license for over a quarter of a century, in spite of the swarm of challengers that came along with their "open" architectures.

Only in 2009. Google mounted an assault that might succeed in the realm of cloud computing and got Microsoft worried that if it did not respond in time, it might become another Digital Equipment Corporation (DEC). Microsoft responded with *Azure.* in an effort to protect the current customer base and acquire a new one— takes a hybrid approach: onDemand *plus* onPremises.

This hybrid is a business necessity. Microsoft cannot 100 percent reinvent itself; whether it likes it or not, it has to accommodate its legacy PC products in its cloud computing strategy—hence the deliberate choice that the new services kick in when it comes to new applications launched from the desktop. User organizations are given a choice:

- leveraging the traditional onPremises approach or
- using the new onDemand suite of applications and corresponding platform.

Against this background, Microsoft now:

- manage in parallel four major development cycles: desktop, server, mobile, and cloud computing;
- do so across dozens of products, which evidently compound the planning and control effort;
- balance the Azure functionality in a way that will not hurt the large inventory of classical PC wares; and
- conduct platform wars with Goggle, Salesforce.com, and their likes, which can work through less complex release cycles with rather minor compatibil-ity challenges.

Coordinating Azure's building blocks with old and new releases will be another formidable task. These include three modules of.NET services: a Service Bus (con Meeting customers' internal apps to cloud computing), Access Control (providing .mthorization and coordinating with identity providers), and Workflow (a tool set for interaction among parts of an application).

Other Azure modules are Dynamics Services (targeted at the CRM market) and SharePoint Services (exposing building blocks for applications that focus on content management, business processes, enterprise searches, and collaboration).

I or its part, Live Services concentrates on the underlying building blocks used by Microsoft to build its Windows Live application. This includes:

- data synchronization across disconnected consumer devices,
- instant messaging (IM), and
- assistance to developers to write proprietary and other applications.

Users of the free online Office will be able to create and edit documents, spread sheets, and PowerPoint presentations by using tools they are familiar with, from existing desktop software. While this "free" stuff is only a lightweight version to make it more suitable for use in Internet browsers, the company says that it will provide a fuller service than online rivals such as Google Apps.

True enough, opening the software up to a new audience would significantly expand the Office market in the long term. But, as far as Microsoft's P&L is con-cerned, it will be reducing its profit margin. This is indeed a good example of t he strong and weak points of competition in cloud computing, where newcomers have freedoms that escape the incumbents.

Amazon.com Leverages Its Infrastructure

Well managed and inventive, Amazon.com is one of the few survivors of the dot-com boom and bust of the late 1990s. The company has been a successful online retailer offering a wide range of products, which it carefully expands in content and appeal. These include books, music, videotapes, computers, electronics, home and garden, and numerous other wares.

Amazon offers an impressive product list as well as handling and shipping to customers, for which it built over the years an impressive infrastructure. According to several opinions that converge in their evaluation of its prospects, the company's entry into cloud computing had a dual objective:

- to develop a new profitable product line and

- to get value out of its huge infrastructural developments and expenses.

Because the first bullet connects to its current business, a brief discussion on the company's cultural background will help in better appreciating this duality. Amazoo.com aims to be a customer-centric firm where clients—from consumers to business entities—can find anything they may want to buy online. Hence, it continues to expand the range of products and services, emphasizing:

- global brand recognition,
- a growing customer base,
- significant e-commerce expertise,
- innovative technology, and
- extensive and sophisticated fulfillment capabilities.

Well prior to cloud computing, the aim has been to launch new e-commerce businesses quickly, with good prospects for success. Therefore, the company's entry into the cloud is a logical extension of the prevailing strategy, with a conceptual framework developed to support it. This approach permits it to:

- integrate corporate goals with organizational structure and
- manage without getting a split personality between the interface of strategy and technology.

Critical elements in reaching Amazon's objectives have been not only the recog-nition of technology as a major business factor but also the role of modern finance, flexibility in decision making, and transferability of competitive advantages across product lines. This has involved a fairly clear perspective of managerial problems, and practical ways to address them, including the development of individual prob-lem-solving skills.

Amazon.coms application of the individual problem-solving skills is more responsible than anything else for its launch into cloud computing. This may be true, but the fact remains that the company has correctly capitalized on its investments and the infrastructure it developed for Web Services. The fact that the latter has been in existence meant it could offer to the market at very reasonable prices.

Ihe *Amazon Web Services* (AWS) facilities offer applications developers direct access to the firm's technology platform on an as-needed basis. Amazon claims that over four hundred thousand developers have signed up, attracted by its web-based computing which also serves small enterprises, because of:

- its scalability and
- fast response time

Amazon's relatively simple database structure, with S3 and EC2, can provide a service for running queries on structured data in real time.

With all that, and most particularly the four-hundred-thousand-user base, it looks to me that Amazon has emerged as a leader in cloud computing. The pundits who say that the mother of all cloud battles will be between Google and Microsof t are wrong. Rather, it will be between the two alliances respectively revolving around Amazon.com and Google.