



White Paper

Cloudy Application Management and the Commoditization Escalator

Application Management is an IT domain that supports organizations by keeping their applications up and running, up to date and under control. This domain consumes about a third of IT budgets.

Application Management has always managed to deal with a hybrid landscape comprising various generations of technologies. This paper addresses how Application Management is going to be affected by the seemingly unrelenting advance of Cloud Computing.

Cloud Computing as a Medicine

Relieves pain associated with speed of business change,
changeable demand and limited capital.
Can cause serious headaches and stomach trouble
if not prepared to conform to the standard.

Mark Smalley, 12 April 2010



A familiar sight. A boy running up an escalator that's going down. Just keeping pace. You can look at IT in the same way. Technology has a tendency to standardize and commoditize and be offshored or automated and IT Service Providers are constantly looking for a way to create more value for the business. Running up the commoditization escalator. Cloud Computing fits snugly into this category, shifting ownership and location of assets and staffing to a specialized third party who provides benefits that are closely associated with the economies of scale and standardization.



Source: <http://www.thebookofbiff.com/>



Summary

Adoption of Cloud Computing – in particular Software as a Service – will confront the 'business-facing' Application Management function with changes that add extra complexity to the execution of approximately half of the processes that Application Management entails. 'Business-facing' refers not to the one-to-many cloud service providers but to the department or provider that has a more intimate relationship with the end-user client. These changes reinforce previously observed trends that:

- people have to collaborate with more external parties than they used to
- information systems are becoming more abstract, being built from components that are no longer under the direct control of a single department

The major recommendations are that Application Management departments should consider investing in:

- people with an external orientation and the ability to create value from existing (external) partial solutions
- people with the ability to collaborate effectively with a diversity of third parties over which they have limited formal authority
- evaluating and fine-tuning their processes.

An important assumption is that application landscapes will continue to be of a hybrid nature, encompassing various generations of technologies requiring differing technical and approaches. Depending on the capabilities of the professionals currently employed, it may be wise to invest in a new team with different 'DNA'.

Finally – because management of applications based on Cloud Computing is currently immature and therefore still difficult to formalize – it is prudent to management such systems in an 'adhocratic' way (multidisciplinary team with high skilled specialists, intensive communication and informal procedures). Once best practices have been created, the processes can be formalized and it can be 'promoted' to standard operational practice in the regular IT department.



Scope

There's currently lots of interest in Cloud Computing but as yet it's not clear how adoption of Cloud Computing will affect the 'business-facing' Application Management function. This is typically an internal department, often assisted by external Application Management service providers.

This white paper offers guidance to managers and consultants in this Application Management domain and comprises:

- an overview of both Cloud Computing and Application Management
- the expected changes to processes (using the ASL framework)
- the expected changes the in capabilities and culture of the Application Management professionals.

Cloud Computing

We'll need a definition of Cloud Computing to start off with and you won't get a better one than that at the NIST Information Technology Laboratory:

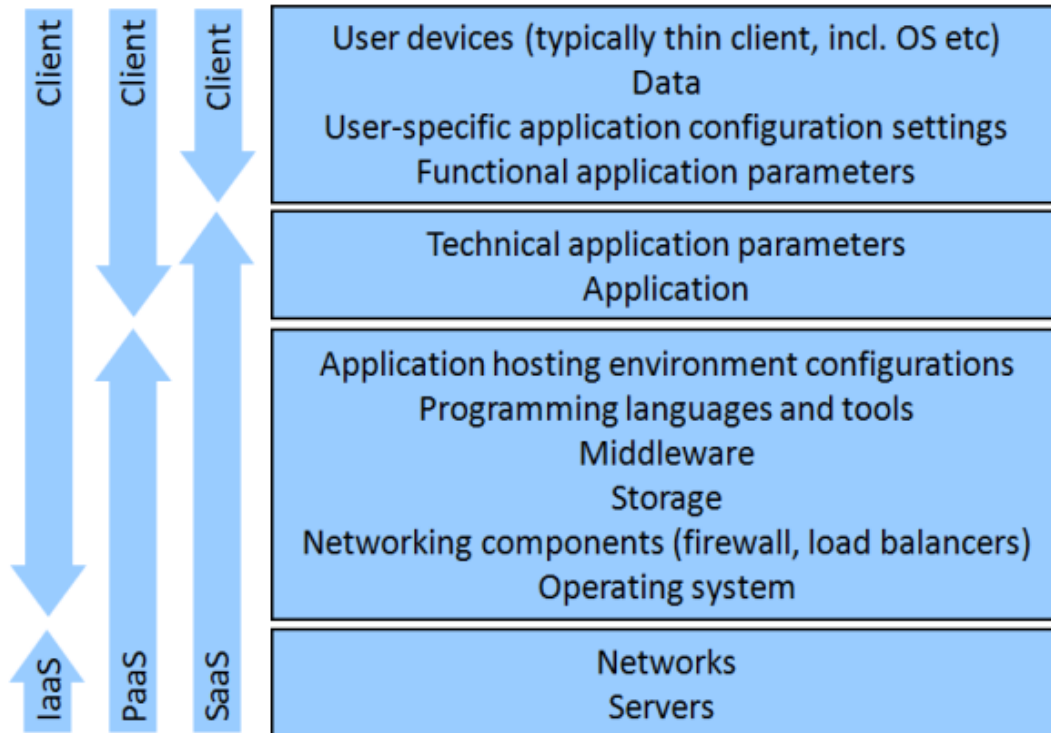
"Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of:

- five essential characteristics
 - On-demand self-service
 - Broad network access
 - Resource pooling
 - Location independence
 - Rapid elasticity
 - Measured service
- three service models
 - Cloud Software as a Service (SaaS) - use provider's applications over a network
 - Cloud Platform as a Service (PaaS) - deploy customer-created applications to a cloud
 - Cloud Infrastructure as a Service (IaaS) - rent processing, storage, network capacity, and other fundamental computing resources
- four deployment models
 - Private cloud - enterprise owned or leased
 - Community cloud - shared infrastructure for specific community
 - Public cloud - sold to the public, mega-scale infrastructure
 - Hybrid cloud - composition of two or more clouds."

Source: <http://csrc.nist.gov/groups/SNS/cloud-computing/cloud-computing-v26.ppt>



The terms IaaS, PaaS and SaaS are frequently used but require some additional demarcation because of inconsistency in interpretation, typically between IaaS and PaaS. The stack below is based on the NIST publication previously referenced.



Software plus Data as a Service

Although this point isn't explicitly addressed in the definitions, it is good to consider who owns the data. In the case of a Salesforce.com CRM application in a SaaS offering, it's the clients data. But when using a service like Google Maps, the data is provided by a mix of commercial third parties and other users who have contributed their data. Who owns the data, in a legal sense, is another matter, but the point is that it's only Software as a Service but also Software and Data as a Service.

Your place or mine?

The ITIL V3 definition of a service is widely used: "A means of delivering value to Customers by facilitating Outcomes Customers want to achieve without the ownership of specific Costs and Risks".

Some questions that help to clarify the "as a Service" degree of a solution are:

- Your components (hardware, software) or mine?
- Your location or mine?
- Your people or mine?
- Your data or mine?



Benefits

What are the benefits? As you use somebody else's system and just pay for using it there's no up-front capital expenditure. Due to the practically unlimited resources, clouds scale up and down easily so you don't have to spend money on over-configuring in order to deal with peaks in demand. You can get up and running (and shut down) very quickly.

Another advantage and common characteristic of clouds is pay per use.

The advantages are very relevant and appealing to new business initiatives, offering "Scale cheap, fail cheap".

Transition

As often as not it is expected that a cloud service will replace an existing non-cloud solution. So there's a transition phase to be considered. And re-transition when it's decided that the particular cloud service or provider is no longer the best solution. So it's wise to think ahead and choose the best construction. Open source options should be considered.

Legal

Regulations tend to play catch-up the new technology so early adopters of Cloud Computing are likely to run into complications regarding intellectual property etc.

Application Management

A widely accepted way of looking at IT Management is shown in the next illustration, which shows a demarcations between:

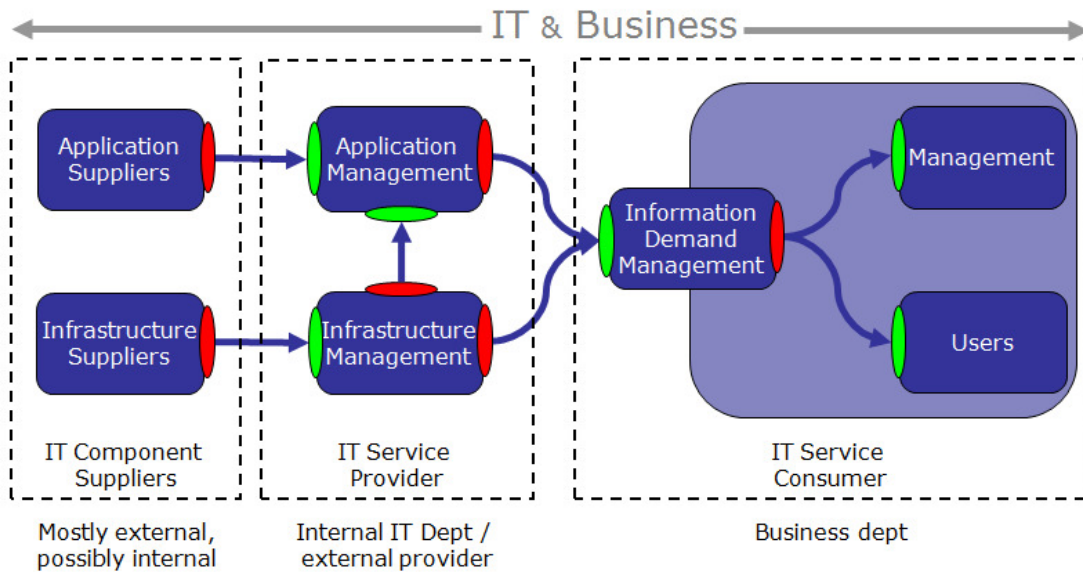
- Business and IT – demand and supply
- Suppliers of IT components (such as facilities, hardware, software, data) and Service Providers who implement these components into an operational system and maintenance and enhance the system in order to provide the business with services that give the appropriate functionality and therefore value
- Applications and infrastructure

Application Management (AM) is positioned as the domain that addresses the strategic, tactical and operational activities that are needed to keep applications up and running, up to date (new releases) and under control. This is done in close cooperation with:

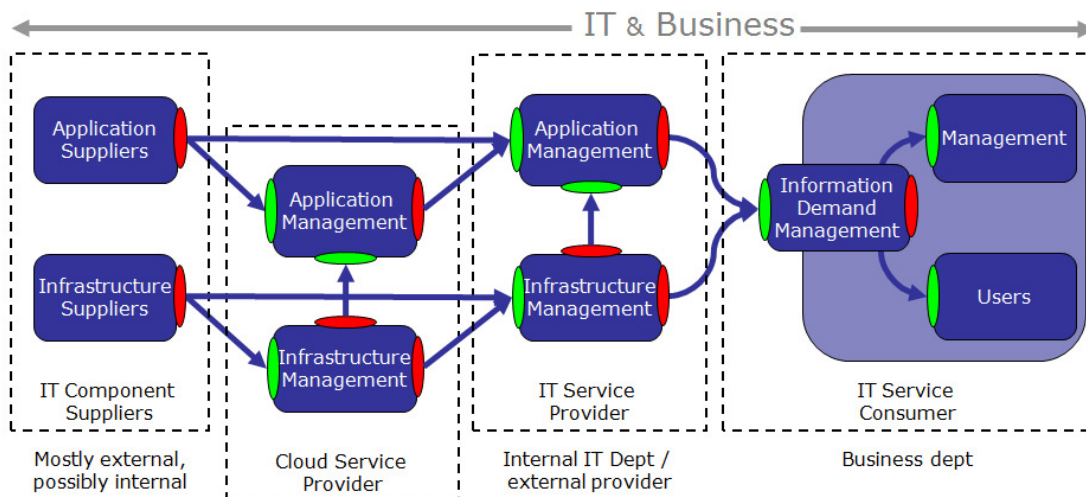
- Information Demand Management, that represents the business and can be regarded as Application Management's client



- Infrastructure Management, that provides Application Management with environments for developing new releases and with whom Application Management closely cooperates in achieving the appropriate availability, performance and continuity
- Application Suppliers, that provide Application Management with initial releases of applications (often referred to as Application Development).



While Cloud Computing fits into this model, utilizing components to build services (IaaS, PaaS, SaaS), there will typically be a construction in which the Cloud Service Provider delivers the service to an internal IT department of the client organization, as illustrated below.





Agnostic Artists and Intelligent Integrators

The scope of this paper is to explore the consequences for the AM organization that typically has a 1:1 relationship with the business, whereas the Cloud Service Provider has a 1:N relationship with its clients. In most cases the Cloud Service Provider can be classified as an 'Agnostic Artist', providing high quality standardized services (the 'artist' part) but not knowing ('agnostic') how each individual client implements and uses their services. They need to know what the market thinks of their services, but not individual clients. The business-facing AM organization can be regarded as an 'Intelligent Integrator' that integrates internal and external systems and standard services into services that provide the business with the required functionality.

Cloud Computing Consequences

Whereas the SaaS Provider also executes Application Management, this paper does not address this domain (with for instance the challenge of dealing with multi-tenancy systems) but focuses on how Cloud Computing affects business-facing Application Management departments and providers (described above as Intelligent Integrators). Another topic that could be addressed in a future paper is how these business-facing organizations can make use of PaaS as an alternative to traditional Infrastructure Services.

The way an Application Management function is organized depends on several factors, including the characteristics of the information systems that have to be managed and the parties with which the Application Management function interacts:

- Cloud Computing information systems are characterized by a high degree of standardization, shifting the inherent complexity of the system that the Cloud System is part of to the interfaces between components
- The other supply-side parties are often 'Agnostic Artists' that provide high quality but 'anonymous' services
- The client business organization has the opportunity of leapfrogging over a sub-standard IT department and engaging directly with a Cloud Service Provider.

Configuration versus Programming

An interesting side topic to consider is the question who controls the parameters that determine the functionality of the application. Because it's often user-friendly to change these parameters, users can be seduced into taking on this role themselves. However it's often a task that requires a fair degree of 'programming' competences and most users are blessed with other qualities. Maybe a new role will emerge: the Functional Configurator. Note that similar business roles can be already be seen in the BPM area.

Business IT Leapfrog

While the internal IT department is positioned as an intermediary, it is well conceivable that, particularly when the IT department isn't highly rated by the business, the business will try to leapfrog IT and engage directly with Cloud Service Providers.

Cloud Consolidators

It is feasible that, just like the electricity that you use will originate from power plants in various countries, depending on spot prices, cloud services will be consolidated. One day your data will be stored in Germany, and the next day (or hour) in China.



Changes to Application Management Processes

ASL, the Application Services Library, provides a widely accepted framework describing Application Management processes at operational, tactical and strategic levels. As such it is useful for identifying the areas which adoption of cloud computing impacts. In the illustration below, the processes that are effected by cloud computing have been accentuated.

At a strategic level, the directors of internal Application Management departments or external Service Providers will have to consider:

- Which cloud technologies to adopt (Technology Definition)
- Who their strategic partners are and will be (Supplier Definition)
- What kind of capabilities they need to deal with clouds and cloud providers
- How their positioning, service offerings and business plan will change

Also at a strategic level but now with respect to the applications that support future needs of their client's business, they have to consider:

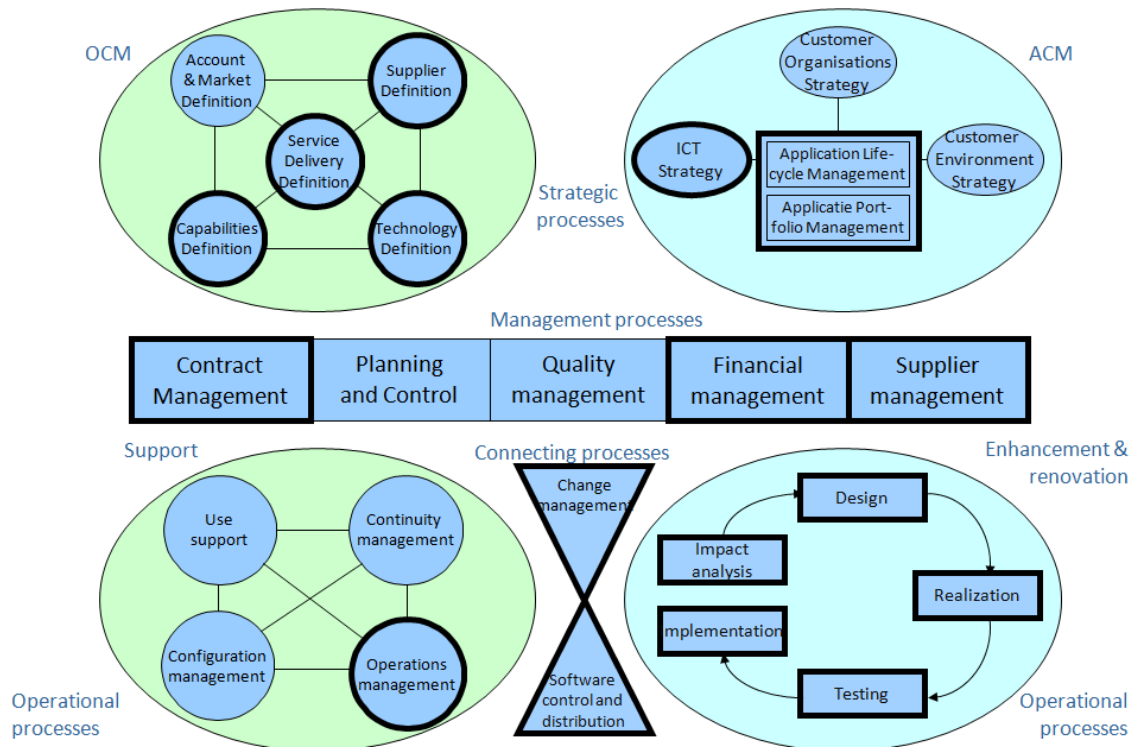
- The value that clouds can provide (ICT Strategy)
- How to integrate clouds into existing application portfolio's (Application Portfolio and Lifecycle Management)

Looking at the management processes, the major impact is expected in:

- Contracting Cloud Service Providers (Supplier Management)
- Changing financial constructions (Contract Management and Financial management)

At an operational level, Application Management professionals will undergo change in:

- Operational contact with Cloud Service Providers (Operational Management)
- Coordinating changes across different provider organizations (Change Management)
- Evaluating impact of changes and defining the contours of a solution (Impact Analysis)
- Designing solutions for new and changed functionality, utilizing the (im)possibilities of clouds (Design)
- Realization in a cloud environment will shift towards changing parameters and interfaces with other applications (Realization)
- Testing in mixed and interconnected environments (Testing)
- Supporting the functional and technical roll-out of new releases (Implementation)
- Keeping track of versions and transferring releases from environment to environment (Software Control & Distribution)



Note that many of these tasks will be in addition to the tasks that are executed for non-cloud applications. An assumption is that AM will always be managing a hybrid landscape.

Genetic manipulation for Application Management

The final step in clarify the consequences of clouds addresses the change in activities and competences of the Application Management professionals.

Whereas the Application Management professional was traditionally internally focused on systems that were to a large degree within his own control, now (and not only related to cloud computing) there's a shift to dealing with third parties and integrating external systems and services into the existing application landscape.

Examples of these activities:

- Maintain an overview of the cloud computing offerings in the marketplace
- Determine which combination of external and internal systems and services will provide the best solution for the required business functionality
- Acquire cloud services
- Configure and integrate the cloud services within the existing landscape of that organization
- Monitor services and service levels
- Monitor (un)announced changes in procured cloud services
- Evaluate cloud services, contract and provider



A general observation is that application management have to deal with increasingly complex and hybrid application landscapes. In addition to this architectural complexity, they also have to collaborate with a variety of other parties with which they have different relationships and contracts. These partners range from a local supplier or provider who is very familiar with how the Application Management organization uses their products and services to organizations like Google that provide excellent products and services but that are "agnostic" with respect to how their products and services are actually used by individual clients. This has some major implications for the DNA and capabilities of application management organizations:

- High-level (architectural) comprehension of applications and in particular the interaction between applications in the organization's application landscape - Application Management is shifting towards Application *Interaction* Management
- Ability to interact with a diversity of third parties in which the 'command & control' management paradigm seems less appropriate and therefore effective than 'communicate & collaborate'
- Wisdom to balance conflicting short term and long term interests
- Willingness and ability to live in a hybrid world
- Ability to adapt to using standard components and refrain from non-differentiating customization (guidance for demand)
- External orientation and a conviction that 'not invented here' gives you an advantage
- Out-of-the-box ability* to see creative combinations of services that generate business benefits

* Most of these capabilities will enable an Application Management department to survive Cloud Computing but out-of-the-box thinking is the means to generate value for the business.

Whereas some of these implications can be solved by training and additional staffing, others touch on the culture, the DNA, in the Application Management department. This probably means that we're in for a long haul.

When the clouds have blown away

But to end on a positive note, just as previous technology generations have come and gone, in five years time cloud computing will either have been rejected or adopted and in both cases we'll be fussing about the next technology generation, let's call it Blue Ocean Computing for the time-being. And Application Management will deal with that as well.



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Mark also works for the not-for-profit ASL BiSL Foundation. He publishes and speaks about Application Management and related topics (ASL, BiSL, IT Governance, Business IT Alignment) on a regular basis and has reached out to several thousand people in more than ten countries. He also lectures in Brussels, Hangzhou and Rotterdam and contributes to EXIN certification material.

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