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Cloud and the Future of Business: From Costs to Innovation

By Professor Leslie Willcocks, Dr. Will Venters, Dr. Edgar Whitley
The Outsourcing Unit, Department of Management
London School of Economics and Political Science

Part Five: Management

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Introduction

This Series has pointed to the considerable promise of Cloud,¹ and the even bigger opportunity waiting to be grasped. As one of our respondents put it:

"We are virtualising the enterprise at a business and operating model level. Companies are using technologies converging in cloud, coupling that with greater reliance and utilization of outsourcing, and really releasing themselves from a lot of the constraints on what they can do as a business....these technologies are enabling companies to do things they have never imagined before."²

However, this prospect is all before us in a future still undetermined, despite confident predictions of very large revenues and business benefits from cloud technologies within two to three years. If, as one observer has posited, "the mark of a successful technology is that it vanishes,"³ then cloud computing has a long way to go. Not only has it been the most visible technology by far in the last three years, but it looks likely to continue to be for the next three.

On the cusp of potential major deployment of these technologies, leaders in industry and governments worldwide find themselves at a decision point. In the face of business demands, technological developments and the maturing of external services, CIOs in particular are thinking about and revisiting what their technology organisations need to look like three to five years out. Managing cloud deployment on a project-to-project or six-month-to-six-month basis is not going to achieve technological integration, optimise cloud deployment, or deliver on the agenda businesses are setting for cloud. CIOs will be looking at their strategy, capabilities, operating model and ability

to execute, as well as assessing how cloud fits with their existing technologies and organisation, and the implications for each industry, and each business—because there is no single cloud, and it is going to be different for every organisation.

Ultimately it is management that will make the difference. And for management, there is a (very large) sting in the tail. The next ten years are going to see a massive scaling of data needing to be managed. According to Chuck Hollis of EMC, "the twin benefits of cloud are saving on IT and agility, but the result at the end of the journey is big data."⁴ In the face of the forthcoming data explosion, the problems organisations have always had with optimising their use of information are just about to get much, much more challenging. This brings to the fore the need for organisations, and their technology functions, to resist the old compulsion to merely straightjacket the data explosion with superior technology, and instead rethink themselves as digital businesses, and address the importance of business analytics for guiding strategic action and operations.⁵

Cloud: From Expectations to the Art of the Possible

But the present is challenging enough. Business executives' expectations on in-house IT staff to deliver on cloud are high. Our recent survey found 80 percent of executives looking to rely on in-house staff. But business executives also expect much more use of external services for supporting the move to cloud with 40–50 percent surveyed recognising benefits for governance support, business process transformation, change management and communications and IT maintenance and support.

IT executives also look for external assistance with mainly technical issues—IT configuration and integration, data security, data management and governance.⁶ The overall message is: the IT function cannot do it by itself. However, there is widespread recognition that it needs to retain key capabilities. Our recent outsourcing survey provides adviser insights into in-house requirements, though their perceptions underrate the role of cloud skills because many customers were not yet making significant moves into cloud (see Figure 1). At the same time, our research shows many CIOs and IT functions lack adequate knowledge to move decisively into cloud computing.⁷ In practice we found this to be one major reason for organisational delays in moving to cloud. One strategist summarised this point:⁸

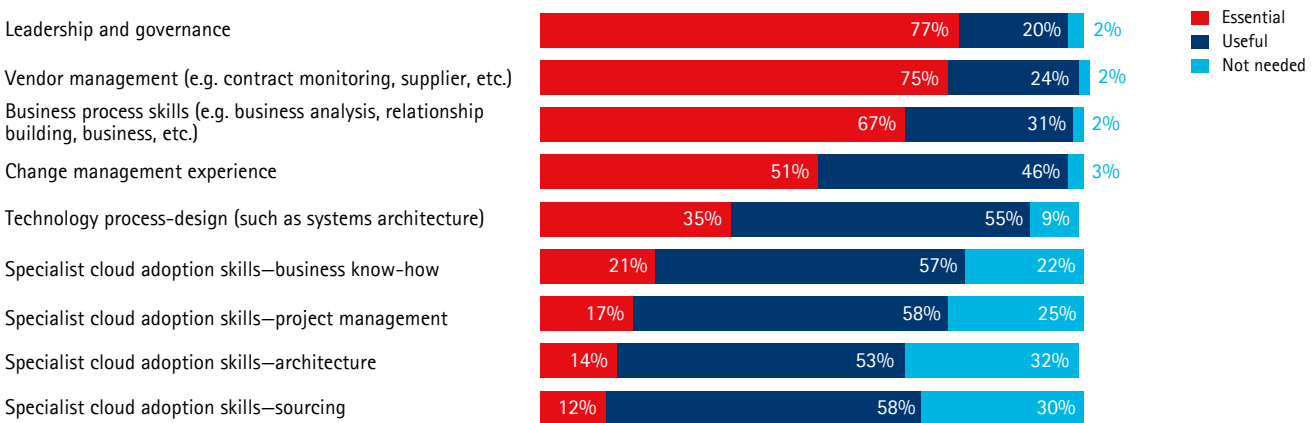
"I think it's very early days actually companies are only starting to realize that your organisation needs to change and evolve and update. Many people in IT organisations are still seeing this as quite a threat. They're seeing it as outsourcing... Actually this is an opportunity for career development, for individuals to grow and really change what they do—from doing things to actually managing the provision of some of these new cloud services. We are going through an interesting time ourselves from a strategy perspective in terms of our capabilities and we are looking at the IT operating model, and figuring out how internally your IT function needs to change."

In fact, for internal IT, cloud signals significant changes in functions and roles. For two decades, the IT function has been on a journey from being a back-office technical function to a service-oriented provider that delivers business value operationally, managed by business and technology leaders as a strategic business resource. A much-touted purpose of outsourcing, and now of cloud, has been to accelerate this process, freeing up internal capability to become more business focused and strategic in its contribution.⁹ But can this world be managed into existence? What retained capabilities will be needed to run the technology function? What specific management capability challenges and worry-points are coming to the fore with cloud deployment? And how can these be dealt with? These are the questions this paper sets out to answer.



Figure 1. Management of outsourcing relationships

In your view, how important is it for your clients to have the following in-house skills/capabilities for managing outsourcing relationships? (outsourcing advisers)



Source: HfS Research and the London School of Economics Outsourcing Unit, July 2011.
 Sample: 318 outsourcing advisers and 544 outsourcing suppliers

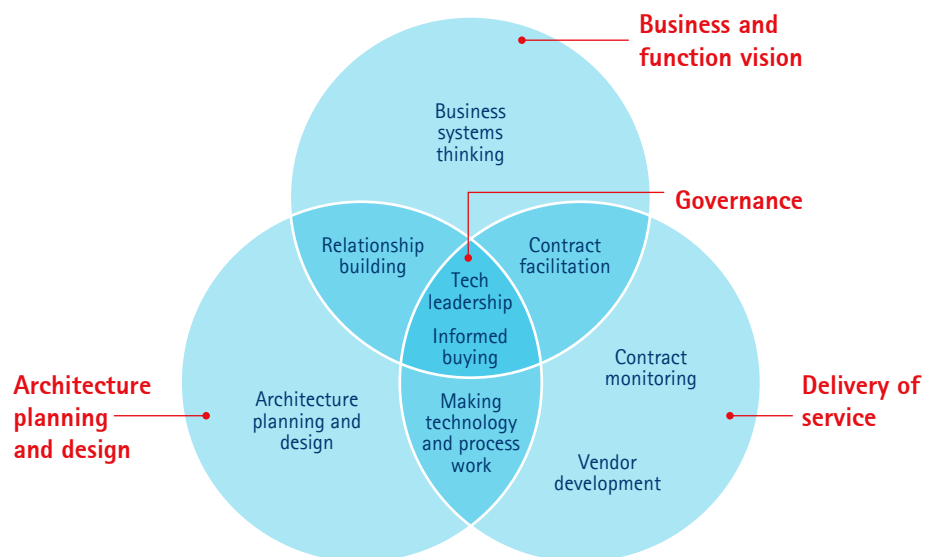
Cloud Management and Core Capabilities: The Foundations

In the face of turbulent technologies, we consistently find that an emphasis on technology and technology-related skills guarantees adoption but rarely exploitation. There is a danger of a lot of cloud offerings being, so far, technology solutions in search of business problems.

To get cloud on to a more strategic agenda and identify the relatively few applications that produce disproportionate business value, the Technology function needs to shift from its traditional skills, roles and values.¹⁰ With each technology cycle, cloud being but the latest, and with ever increasing usage of the external services market,¹¹ we have found that high performing Technology functions are managed by a relatively small internal team of highly capable, demand-led and primarily strategy- and business-focused people (see "Core IS Capabilities for Exploiting Information Technology," *Sloan Management Review*, Spring 1998). In the present paper we focus on the Technology function, whose role is central to cloud deployment, but the same logic applies to human resources, finance and accounting, procurement, and other administrative functions.¹²

The basic model, shown in Figure 2, provides a strong foundation for managing existing technologies, and remains robust in the light of our present findings on cloud services; throughout this report we elaborate where it needs new emphases and more granularity (see Figure 2). The internal group responsible for the technology platform and applications, including cloud, needs to deliver on four core tasks:

Figure 2. Core capabilities for high performing technology and back-office functions



- **Governance**, including leadership, organisation and coordination. This involves aligning dynamically the Technology function's activities both internally, and with those of the organisation as a whole.
- **Eliciting and delivering on business requirements**. A demand-driven task concerned with defining the systems, information and processes to be provided, and how they can be leveraged for *business purposes*.
- **Ensuring technical capability**. A supply-focused task about defining the blueprint or *architecture* of the technical platform used over time to support the target systems and processes, and dealing with risks inherent in non-routine technical issues.
- **Managing external supply**. This concerns arriving at and managing sourcing strategy. It requires understanding of the external services market, and the ability to select, engage and manage internal and external technology/cloud resources and services over time.

These four tasks can be mapped as a set of related but distinct core capabilities and delivered via discrete but complementary staff roles as shown in Figure 2. Let us review them in turn, in the context of the opportunities and challenges presented by cloud.

Governance

This task is delivered through functional Technology Leadership and, for supply governance, Informed Buying capabilities. The central Leadership task is to devise and engage in organisational arrangements—governance, structures, processes and staffing—that successfully manage internal and business inter-dependencies in ways that ensure the Technology function delivers business value for money. The key role of the leader is also to look for value shifts in the business and the business environment, “listen” to the technology, and see where business value in the (cloud) technology is migrating to.¹³ The CIO, as leader, will also be responsible for setting up the organisation for cloud:



“There is a demand management component which includes the business requirement definition. There is the business case component. Does it fit the architecture? Is it strategically where we want to go? Does it fit our financial model? Then there is delivery—generic program management, methodologies that give you more agility. There is the integration management component—faster, more dynamic procurement and service management. And finally the skilled people to deliver all this.”

Matthew Coates, Accenture¹⁴

The CIO role also oversees the evolution of the Technology function, and, with cloud, is likely split into two roles—a more business focused, “Business Innovator” role, and a more technical “Chief Technology Officer” role. Parallel research into innovation has found that a Business Innovator role in the in-house function is key to moving any external sourcing agenda in the direction of the collaborative innovation with business—and eventually with suppliers—that is needed to leverage the full business potential of cloud.¹⁵ One CIO suggested how his role may develop with cloud:

"For the CIO, information itself is going to be more important, as will become more intimately familiar with business processes...running some of the back office stuff. The business visionary [innovator role] is a potential evolution...it will vary by industry and company."¹⁶

Business and Function Vision

In leading practice organisations we have been studying, **Business Systems Thinking** in the Technology function makes important contributions to teams charged with business problem solving, process re-engineering, strategic development and delivering e-business. Such organisations recognise that business processes should be redesigned in the light of technology, including cloud, potential. Business Systems Thinkers focus obsessively on aligning strategy, structure, people, process and technology. In earlier research we have found many examples of failing projects and disappointing outsourcing arrangements where this alignment was not executed. The danger with cloud is that organisations fail to learn from such experiences imbedded in the technology history of almost all large organisations.¹⁷ In cloud research we are finding that business systems thinkers need to be deployed on cloud projects, where they can act as conduits between business demands and the technical architects.

Relationship Building is an integrating, operational capability, whose practitioners facilitate the wider dialogue, and establish understanding, trust and cooperation amongst business users and technology/cloud specialists. Relationship Builders develop users' understanding of technology and cloud and its potential for their lines of business. They help users and specialists to work together, help to identify business requirements, ensure user ownership and build user satisfaction with technology and cloud services. With cloud comes a further emphasis in this role on business analysis and requirement identification:

"The one role that has got the most to gain out of cloud inside the customer organisation is the business analyst, with a technical appreciation."

Tim Barker, salesforce.com¹⁸

All our respondents stressed that cloud requires more business facing skills, what we call **Business Savvy**, than ever before in the IT function, and this is delivered significantly, but not exclusively, by the Relationship Building and Business Systems Thinking capabilities. In practice, with cloud nearly all roles will need more business-facing skills than are found in more traditional back-office functions. Usefully, cloud also releases retained people from more mundane technical work, allowing them to perform vital business-facing activities.

Architecture Planning and Design

The principal challenge to those staffing the **Architect Planning/Design capability** is, through insight into technology, suppliers and business directions, to anticipate technology trends so that the organisation is consistently able to operate from an effective and efficient technology platform—without large investments in major migration efforts. Planners continuously shape the technology architecture and infrastructure through developing the vision of an appropriate technical platform, and through formulating associated policies that ensure necessary integration and flexibility in technology and cloud services. Any outsourcing arrangement provides a strong test of the value of retaining this capability.¹⁹ When it comes to cloud, our respondents suggest that the "architect" capability is key. The cloud architect has to be an enterprise architect, SOA architect (most clouds use services architecture) and cloud technologist, with the new role emphasis being increasing collaboration with business initiatives. Various respondents emphasised this point, among them David Linthicum of Microsoft, who described it well:

"The cloud architect needs to be an expert in the existing cloud computing technology: public, private and hybrid, including IaaS, PaaS and SaaS. You can't build something unless you understand the tools and materials that are available, and the same goes for bringing cloud computing technology into the enterprise to form [business] solutions."²⁰

And in a different interview, Linthicum expanded the point:

"I have worked on cloud-based systems for years now and the common thread to cloud architecture is that there are no common threads to cloud architecture. The complexities around multi-tenancy resource sharing and management, security and even version control, lead cloud computing start-ups and enterprises that build private and public clouds down some rough roads before they start to learn from their mistakes. In the world of cloud computing that means those who are smart, creative and resourceful seem to win out over those who are just smart."²¹

For Frank Modruson, CIO of Accenture:

"The client person who can think about the enterprise data model, how all the technology and data fits together, can conceptualise, plan and implement—these are the skills going forward—more conceptual, knowledgeable and architectural. And data modelling, a sort of lost art, with cloud, is back in a major way."²²

Hong Chiong of Microsoft pointed to in-house capability needed in architecture planning and design on security and compliance:

"When it comes to compliance and security, technology managed by the cloud supplier is only one fourth of the solution. You have to have a standard operating procedure that is well-documented and that people are trained to operate. That has got to come from the customer."²³

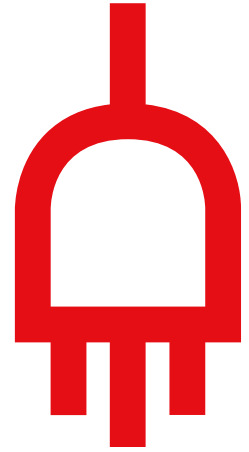
By "listening" to the technology, understanding the business and its technical configuration, the Technical Architect ties together cloud strategy, defines its links with existing technology, and develops the coherent blueprint for the migration path.

Operating in the overlap between the challenges of IT architecture design and delivery of IT services is the core capability of **Making IT and Process Work**. Technology Fixers are needed to troubleshoot problems and identify how to address business needs which cannot be satisfied properly by standard technical approaches. They understand the idiosyncrasies of the inherited infrastructure and business applications, enabling them to make rapid technical progress—by one means or another. In outsourced environments they also assess and challenge third party suppliers' claims about technical problems and proposed solutions. Technical staff will need not only a deeper understanding of their traditional core competencies but also a wider skill set to transcend the traditional IT silos and address the fact that cloud encompasses more than one technology. Senior executives suggested to us, for example, that instead of employing three people who oversee storage, networking and virtualisation environments, companies might hire one person whose skills span all three cloud competencies. For CIO Frank Modruson, with cloud:

"The traditional operational roles will shrink in number, move increasingly to the supplier and cover more scale. [But] there will always be a need for a bit of what you call technical fixing, for example dealing with the joins between different provider services and technologies, having know-how of in-house systems."²⁴

While IaaS, and SaaS require some new skills, moving to PaaS products requires much tighter integration with software development and application lifecycle management to realise maximum benefits. IT departments have to redesign applications with PaaS in mind and the deployment model is largely driven by how the service provider offers its service. PaaS will almost certainly require a greater level of retraining and application integration skills. Technical Fixing also has to take on a more business-focused mindset than before. As one PaaS supplier commented:

"Clients need to be willing to configure the network and design applications in a different way, perhaps use different size servers, and not just see cloud from a technical point of view, but get the balance right on how much it costs me to re-engineer versus the benefits and costs savings from a cloud solution... and often it's the business benefit in terms of elasticity and time to market, not cost savings, that are the driving factors."²⁵



Stephanie Lester of Glasshouse told us:

"The cloud model of rent and virtualisation, means that you will still need technical expertise, especially about your own systems and cloud 'fit' but, so far as technical 'doing' work migrates to the supplier, or becomes automated, you will need less headcount in this area."²⁶

Delivery of Services

The fourth competency comprises the capabilities required to manage and ensure external supply. In an organisation that has decided to outsource most of its technology services, the **Informed Buying** capability is the most prominent after that of leadership. Informed buyers analyse and benchmark regularly the external market for IT and cloud services; select the 5–10 year sourcing strategy to meet business needs and technology issues; and lead the tendering, contracting, and service management processes. Informed Buying also requires an intimate knowledge of suppliers, their strategies, financial strength, and their capabilities and incapacities in different sectors, services and regions. Cloud requires many changes to traditional procurement.

Matthew Coates of Accenture pointed to one reason:

"The whole way of procuring needs to change, because the whole idea of cloud is that things are going to be agile."²⁷



Cloud also requires the ability to source different technologies and services from a multi-supplier base, on a more dynamic, frequently pay-for-use and pay-as-you-go basis, as well as on more traditional outsourcing contracts, to shape multiple service integration for the business unit customer. In a world that gets increasingly outsourced and cloud-sourced, we are finding that client organisations still under-resource their Informed Buying capability, when in practice, to fulfill this **Sourcing Specialist** role, what they need is Informed Buying on steroids, together with three other capabilities: Contract Facilitation, Contract Monitoring and Vendor Development.

Contract Facilitation is crucial for lubricating the relationship between supplier(s) and the business users, not least by ensuring that problems and conflicts are seen to be resolved fairly and promptly within what are usually long-term relationships. It is an action-orientated capability. Interestingly, the need for this role is rarely spotted straight away when outsourcing. Instead, the capability tends to grow in response to on-going issues for which it emerges as an adequate response, such as:

- Users may demand too much and incur excessive charges
- The business user asks for "one-stop" shopping
- The supplier demands it
- Multiple supplier services need coordinating
- Easier monitoring of usage and services is required



In the cloud context, internal product management is often achieved by contract facilitators actually constructing services from third party offerings. They also front differences in ways of operating brought in by cloud. Neil Thomas of Cable and Wireless offered one example:

"We have debates with customers where they insist on a mutually agreed time for planned outages. Normally that's what you do on a dedicated platform, but in a shared platform, if no customers mutually agree you never end up being allowed an outage, or there is a high overhead...that's an example of where we and the customer have had to learn together about how to approach multi-tenant platforms. Those people you describe as contract facilitators also worry

about security and faults, more so on security because it's a shared platform. The same people are also concerned with the commercial model of cloud, and how that can fit that with their procurement policies and processes. There can be a tension between the advantages of a pay-as-you-go system, with the need to accurately forecast cost."²⁸

Contract Monitoring involves making inputs into the development and maintenance of a robust contract as the basis for a sound governance framework. The role then leads to holding suppliers accountable for both existing service contracts and the developing performance standards of the services market. Not all potential issues and expectations can be identified at the onset of a relationship, and the contract will be subject to differing interpretations as issues arise. Moreover there is no standard contract, only standard headings, as each outsourcing and cloud arrangement has its own set of issues and dynamics. While all organisations we have studied recognised the importance of contract monitoring, and staffed it at the beginning of their deals, historically, they all too frequently put the wrong people in place, especially in large deals, underestimating the dynamic nature and extent of the task. Cloud, we are finding, brings a new dynamism to the role: more—and more diverse—contracts, more instant and transparent information (including from suppliers), faster response times demanded, new standards of service, and the need to deal with the immaturity of contracting in the cloud ecosystem.

Vendor Development is concerned with leveraging the long term potential for suppliers to add value, creating the "win-win" situations in which the supplier increases its revenues by providing services that increase business benefits. Given the prohibitive size of switching costs historically, it has been in the client company's interest to maximise the

contribution from existing suppliers. It still remains so for cloud deals, especially where, as we anticipate, these deals get larger and more complex. In the context of multiple suppliers, Poston et al. (2009) also identify the importance of the vendor developer role. Not properly managing the vendor set can lead to sub-optimal outcomes, such as loss of technology and process knowledge, lack of innovation, over-spending, and poor quality.²⁹ It is also important to guard against what we call "mid-contract sag," in cloud and other arrangements, where the supplier delivers to the contract, but only to the letter. As one aerospace IT service director described it:³⁰

"Yes the supplier can achieve all the things that were proposed—but where is the famous 'value-added service?' We are not getting anything over and above what any old outsourcer could provide."

While such a concern might not be present in the initial smaller cloud deals, as these grow in complexity, there is every reason for a client to have this vendor developer capability in-house, not least to service its existing non-cloud outsourcing contracts.

Client Retained Capabilities: New Skills, New Challenges

In Table 1, we bring together these nine capabilities, expressing them as roles and skills. The nine roles all demand high individual performers who can develop into a team that achieves high performance.

In contrast to the more traditional skills found in IT functions, there needs to be a much greater emphasis on business skills and business orientation in nearly all roles. While the exceptions used to be the Technical Fixer, and to some extent the Technical Architect roles, we have found these two roles needing an increasing amount of business understanding and relationship building. There is a significantly increased requirement for "soft" skills (relationship management and interpersonal skills) across all roles, and this is accelerated by cloud, the exception being the Contract Monitor role. The major shift is toward fewer personnel, but of very high quality. We are seeing cloud accelerating these developments. On technical skills the shift in-house, again accelerated by cloud, has been towards less "doing," with more conceptual technical activity.

The mix of business, technical and interpersonal skills will vary by role. Looking at the Technology function, an Informed Buyer needs strong communication and negotiation skills, strong knowledge of the outsourcing market, and high business skills but only medium knowledge of technologies. A Technical Fixer, on the other hand, will have very high technical skills and good knowledge of business systems but, unlike every other role, needs only medium interpersonal skills. A Relationship Builder, on the other hand will need high interpersonal skills,

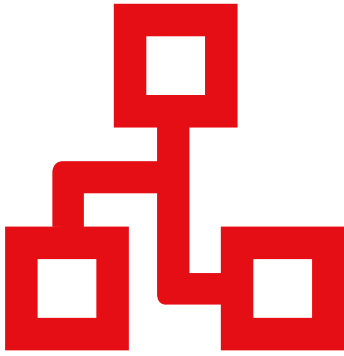
medium knowledge of the business and high technical skills. Each capability needs to be fulfilled by a distinctive mix of technical, business and interpersonal skills, and needs high performers who can work as a coordinated team across the capabilities. Cloud brings new challenges to each of these roles. Table 1 points to further skills and problem-solving capabilities needing to be developed for each, where cloud deployment begins to figure significantly.

Our research points to two major challenges building these capabilities for cloud. In practice, recruitment and retention of the small high quality group we have described has always been a major human resource challenge. Cloud has just made it that much harder—cloud skills were running at a 20–40 percent premium throughout 2011—and the skills shortage may well slow client organisations in their ability to adopt cloud technologies, especially where they also have to compete with suppliers. Two solutions are up-skilling and hiring. As one multi-national oil company executive commented:

"You've got to be able to up-skill your organization and to have a human resource policy which provides such training to people in your organisation."³¹

Table 1. Nine core back-office capabilities as roles

Manager role	New cloud challenge	Description	Skills profile
Leader	Cloud staffing Cloud business strategy Technology function redesign Cloud project oversight	Integrates the technology-cloud effort with business purpose and activity	Business-high Interpersonal-high Technical-medium
Business Systems Thinker	Cloud fit and timing Business-cloud projects Relationships with business executives	Ensures that technology-cloud capabilities are envisioned in every business process	Business-high Interpersonal-medium Technical-medium
Relationship Builder	Cloud operational business leverage Business education	Gets the business constructively engaged in operational technology-cloud issues	Business-medium Interpersonal-high Technical-high
Architecture Planner and Designer	Cloud strategy Technology-business alignment Systems integration Cloud project planning New security/data issues	Creates the coherent blueprint for a technical platform that responds to present and future needs	Business-low/medium Interpersonal-medium Technical-high
Technical Fixer	Apposite IaaS, SaaS, PaaS skills Broader technical skills base "Fixing" role in cloud projects	Rapidly trouble-shoots problems which are being disowned by others across the technical supply chain	Business-low Interpersonal-low/medium Technical-high
Informed Buyer	Cloud market knowledge Matching business demand with cloud supply Cloud supplier management	Manages the technology-cloud sourcing strategy to meet the needs of the business	Business-high Interpersonal-high Technical-medium
Contract Facilitator	Cloud service development and integration Cloud product manager Service delivery	Ensures the success of existing contracts for external technology-cloud services	Business-medium Interpersonal-high Technical-medium
Contract Monitor	Cloud SLAs Regulatory implications Cloud security issues	Protects the business's contractual position present and future	Business-medium Interpersonal-medium Technical-medium
Vendor Developer	Developing cloud suppliers Maturing cloud relationships Securing future innovation and value added from cloud deployment	Identifies the potential added value from technology-cloud service suppliers	Business-high Interpersonal-medium/high Technical-medium



The logistics manager at a major retailer said: "To be honest, we had to recruit a few people." Once hired, CIOs will need to:

- Pay them at a level within striking distance of that provided by alternative employers
- Provide them consistently with the level of challenge they look for in the job
- Develop for them a career path

We have already been seeing hybrid staff being developed in-house. For example, Xerox, Dupont, WW Grainger, and Johnson & Johnson offer job rotation paths and flexible career paths to retain their core people. Cloud adds further stimulus for this.

A second challenge is evolving these capabilities to support increasing cloud deployment and external sourcing over time. Initially the technical service-focused capabilities need to be in place, namely technical fixing, technical architecting, contract facilitation, and a technical leadership capability. This is where the centre of excellence concept fits, as Matthew Coates notes:

"The centres of excellence idea is that you pull in from across your IT organisation the skilled individuals and give them some slack and scale to deliver whatever you need in cloud...then that will grow and then you will start to think strategically about how your IT organisation is going to change, and how governance needs to change in your business and IT organisation."³²

Once technical reliability is established, the retained function needs to become more business-focused and more able to source externally. This makes the Relationship Building and Business Systems Thinking capabilities key, while scaling up on external cloud sourcing will need growing investment in requisite Informed Buying, Contract Monitoring and Vendor Development capabilities. EMC CIO Sanjay Mirchandani indicated the speed and shape of this likely evolution:

"The business pressure on a CIO today is not whether this *can* be accomplished, but *how fast* we can we accomplish it. Most companies of our size will go through an experience similar to EMC— tackling the low-hanging fruit— the applications IT owns, R&D, QA systems, and test systems—and then move onto mission critical business applications and critical business supporting systems. At EMC, we tackled this and then ambitiously began exploring how we could provide most IT capabilities in a self-service model, recognising that the bulk of the users in a high-tech company like EMC are technical. This is the journey most companies will take."³³

Conclusion

Against the building momentum on cloud we heard many practitioner voices sounding cautionary notes.

For example:

"Large organisations are not going to speedily move their IT estate to software-as-a-service solutions, because they have so much legacy background. And in supply chain and customer facing organisations their IT systems have become very complicated, highly automated and closely knit together...you cannot just grab a bit of it and put it out to the cloud."³⁴

Neil Thomas, Cable and Wireless

"Very few things are going to be 100 percent cloud. Like any wave of computing, it doesn't replace the others, it goes on top."³⁵

Fraser Kyne, Citrix

Accenture's CIO, Frank Modruson, suggested consumers will move faster to the newer technologies, followed by small and medium size enterprises (SMEs): "For large organisations we'll talk about it for a while longer, then it will show up faster than we realise...not completely, not exactly the way we might anticipate, and with some inertia."³⁶

But whatever the emerging pattern of take-up and speed, cloud represents a potential crossing point. Technology has been, and continues to be a large challenge for most organisations, as well as a source of competitive advantage. Our research across these five papers found time and again that it just takes a huge amount of effort to make the thing work. Part of that paradox is that the challenges of technology have, to a considerable extent, blinded people to what the real purpose of the Technology function was and is. Cloud offers a path forward. The more technology gets moved out of the way—into the cloud, and/or the supplier, the more the Technology function can focus upon the real job, which is how to exploit for business purposes the capabilities that the technologies happen to make available. Primarily, this will lie in service, information management, business analytics, IT-enabled business innovation and digital business. In this paper we have provided a road map of management guidelines and skills for this journey. A journey which, our research suggests, is feasible, and would be enormously costly to miss.

A Note on Methodology

The five papers in this series have drawn on three main sources—an interview base, industry and academic reports, the LSE Outsourcing Unit 1,600 organization database, and a large-scale survey. We undertook thirty-five initial interviews with leading industry players across the cloud supply chain. These were added to during 2011, following the same procedures outlined below. By late 2011 we had interviewed 56 providers of cloud infrastructures and services, system integrators, analysts, and users of cloud services. In terms of roles, we spoke to CEOs, CIOs, marketing and operational managers, strategists, consultants, analysts and service directors. Interviews were normally undertaken by one person and were held over the phone. They typically lasted at least one hour, with some running to over two hours.

Each interview was then transcribed and the transcripts shared amongst the research team. Each interview was then coded by one member of the team. Initially codes were used to simply classify each element ("quotations") of the interview. For example, some parts of the interviews related to "hybrid clouds" others to "lock-in" or "pay-as-you-drink models". As the interviews were being coded, a parallel process of consolidation took place.

The first step towards consolidating codes into analytically distinct segments that can be examined together both within and between interviews involved tidying up the initial codes, for example by combining codes that covered the same concept but were labeled slightly differently. For example, codes initially labeled as "pay-as-you drink" and "pay-per-drink" models were merged. This process of analysis was also based on, and contrasted with, themes from the cloud and outsourcing literatures³⁷. The process involved an iterative reading, coding and cycling through the codes. The validity of the coding and analysis was constantly checked by searching for counter examples and nuances in the text and codes.

The resulting codes and associated quotations were then shared with the remainder of the project team. This resulted in further insights and themes to explore.

Finally, a selection of the coded quotations was selected for presentation in the current report³⁸. The selection process was guided by the need for a coherent narrative flow in the paper.

In addition to reviewing the academic literature and associated industry reports, a distinctive feature of the work reported is the inclusion of results from a large-scale survey of IT industry practitioners. The survey was undertaken by HfS Research³⁹ in conjunction with the LSE Outsourcing Unit. HfS Research is the foremost research analyst firm and social-networking community that is focused on helping enterprises make complex decisions with their global sourcing strategies. It has 120,000 monthly visitors and 37,000 subscribers and leverages this community of sourcing professionals to deliver rapid insights on the global sourcing industry.

The survey ran between October and November 2010. Many of the key results from the survey are presented in this Cloud and The Future of Business report. Other views on the data and, an updated survey for October 2011, are available on the HfS site⁴⁰. The survey was conducted online and disseminated across a broad number of networks and media to collect a random sample of 1. business (non-IT), 2. IT executives' and 3. technology vendors, advisors/consultants and service providers of cloud-based services. The survey was sent in a number of outgoing emails and was also available live on a number of popular websites and blogs. Three separate question sets were developed that were tailored to these three groupings. Each question set was completed via a 12-minute web-based questionnaire. IP addresses were collected to ensure duplicate responses were deleted. Networks were spread across multiple technology blogs and media, largely ZDNet blogs, Global

Services Media, Shared Services & Outsourcing Network and the HfS Research subscriber-base (accounting for 75 percent of respondents). 1,035 responses were collected, 214 from IT executives, 414 from business executives 407 from Technology vendors, advisors/consultants and service providers of cloud-based services.

Contributing organisations

The Cabinet Office, UK

Glasshouse

RAPP

SpiritMedia

VMWare

GridPP

SAP

Microsoft

Accenture

EMC

salesforce.com

Cable & Wireless

CERN

PA Consulting

Logica

Royal Sun Alliance

RightNow

Fujitsu

Qantas

Avon

BHP Billiton

LSE

PostcodeAnywhere

Broolz

HW Communications

About the authors

Leslie Willcocks is Professor of Technology Work and Globalisation in the Department of Management at the London School of Economics and Political Science. He is head of the Outsourcing Unit at LSE, and is internationally recognized for his work on strategic sourcing, the management of information technology and innovation.

www.outsourcingunit.org

Will Venters is a member of faculty within the Information Systems and Innovation Group, part of the Department of Management at the London School of Economics. His main research interests include Utility, Cloud and Grid Computing; Distributed Work Practices; and Knowledge Management and Communities of Practice.

<http://utilitycomputing.wordpress.com>

Edgar Whitley is Reader in Information Systems and member of the Information Systems and Innovation Group in the Department of Management at LSE. He has a particular interest in identity assurance and public sector IT as well as in outsourcing.

<http://personal.lse.ac.uk/whitley>

Endnotes

- 1 See Willcocks, L. Venters, W. And Whitley, E. (2011) *Cloud and The Future of Business 1—Promise*. Accenture/LSE Outsourcing Unit, London. Cloud benefits we point to are: speed, payment based on consumption, lower costs, clearly defined services managed to appropriate services levels, on demand availability and scalability, simplicity (complexity hidden from view), allowing a focus on business requirements and strategy and innovation with the business, away from day to day maintenance and technology issues.
- 2 Interview with Jimmy Harris of Accenture, October 2010.
- 3 Simon May of Microsoft, quoted in Sherriff, L. What the future holds. *Cloud Business*, 19 July 2011.
- 4 Chuck Hollis, EMC Chief Technology Officer speaking at the *EMC Inform* conference, summer 2011. Accessed online August 20th 2011. According to the study 1.8 zettabytes of data will be created and replicated in 2011 and that figure will have risen to 35 zettabytes in 2020, equating to a 1,000 percent increase of server images in that period. Figures from IDC's Digital Universe study 'Extracting Value From Chaos', IDC 2011. The study also suggests that about a third of all data by 2020 will either live in, or pass through, the cloud.
- 5 For further insight into constructive management responses to this massive data explosion—through data platforms and business analytics—see Nanterme, N. And Campbell, K. (2011) *Accenture Technology Vision 2011*. Accenture, London.
- 6 Horses for Sources and LSE Outsourcing Unit survey of cloud computing, November 2010.
- 7 See Overby, S. 'CIOs lack adequate cloud computing knowledge. *CIO Magazine*, 1 August 2011. She reports on a survey of providers and advisers by KPMG Sourcing Advisory.
- 8 Interview with Matthew Coates of Accenture, 16 September 2011.
- 9 See Willcocks, L. Cullen, S. And Craig, A. (2011) *The Outsourcing Enterprise: From Cost Management to Collaborative Innovation* (Palgrave, London) for the most recent detailed account of this history, and a description of the retained core capabilities needed by clients to run IT and back-office functions.
- 10 We use the terminology of 'technology function' rather than the more normal 'IT function' to capture the convergence of technologies taking place, the development of cloud computing, and the role of technologists in the increasing digitisation of business. The function's role is shifting, reflected in the changing status of the CIO. This, we are finding, does not stand for 'career is over' (perhaps 'concept is over?') but the work is changing, with possible a division going to occur into those who keep the current technology base optimal—the chief technology officer, and those who focus on strategy, business, information and innovation. Already in our model the informed buying capability has been developing to relieve the CIO of responsibilities on managing the external supply side.
- 11 In our latest survey of 347 buyers across industry sectors, between 64–80 percent of buyers said they were going to increase their outsourcing moderately or significantly in the next year. Survey by LSE Outsourcing Unit and Horses For Sources, July 2011, see www.horsesforsources.com/research-services and www.outsourcingunit.org
- 12 In this paper we focus on management of the technology function which is central to cloud deployment. However, the retained capabilities model we detail model also applies, with minor adjustments, to IT and cloud-enabled business back-office and other functions such as human resources, procurement, accounting and finance, and sales. The supporting case research appears in Willcocks, L. and Lacity, M. (2006) *Global Sourcing of Business and IT Services* (Palgrave, London) chapters 3, 6, 7, 8. See also Lacity, M. Willcocks, L. (2011) Business Process Outsourcing Studies: A Critical Review and Future Research Directions. *Journal of Information Technology*, 26, 4, 1–38. The original core capabilities model was formulated by Feeny, D. and Willcocks, L. (1998) Core IS Capabilities for Exploiting IT. *Sloan Management Review*, 39, 3, 9–21.
- 13 See Willcocks, L. Cullen, S. and Craig, A. (2011) *The Outsourcing Enterprise*. op. cit chapter 1.
- 14 Interview with Matthew Coates, 16 September 2011.
- 15 See Willcocks, L., Cullen, S. and Craig, A. (2010) op. cit. chapter 5 for a detailed analysis with case examples.
- 16 Interview with Frank Modruson, CIO, Accenture, July 2011.
- 17 This research is from Willcocks, L. and Lacity, M. (2012) *The New IT Outsourcing Landscape: From Innovation To Cloud Services*. Palgrave, London.
- 18 Interview with Tim Barker of salesforce.com, November 2010.
- 19 We saw a bank and a manufacturer give away their architects, assuming that the task of architecture planning was technical and therefore one for the suppliers. Three years into outsourcing found each of them rebuilding this capability, because they could not understand, let alone talk with and influence the suppliers about, how to address existing and fresh demand through a new technology platform with better economics. See Willcocks, L. and Lacity, M. (2012) *The New IT Outsourcing Landscape: From Innovation to Cloud Services*. Palgrave, London, chapter 7.
- 20 Quoted in Hall, S. Cloud Architect: Triple Play of Skills. *CIO.com* and *Infoworld*, 28 April 2011, accessed 4 May 2011.

- 21 David Linthicum of Microsoft in 'Why the shortage of cloud architects will lead to bad clouds', *Computerworld*, 28 July 2011.
- 22 Interview with Frank Modruson, CIO, Accenture, July 2011.
- 23 Interview with Hong Chiong of Microsoft, October 2010.
- 24 Interview with Frank Modruson, CIO of Accenture, July 2011. Pointing to the need to retain core capability he gave the example of Accenture's own recruitment process. Accenture is highly reliant on talent. The secret sauce lay in who to attract, select and hire not in the technology or software. Therefore, for the latter Accenture has contracted with a SaaS Provider for the last six years.
- 25 Interview with Neil Thomas, Cable and Wireless, 16 September 2011.
- 26 Interview with Stephanie Lester, Glasshouse, July 2010.
- 27 Interview, 16 September 2011, op. cit.
- 28 Interview with Neil Thomas, Cable and Wireless, 16 September 2011.
- 29 See Poston, R., Kettinger, W. and Simon, J. (2009). Managing The Vendor Set: Achieving Best Price and Quality Service in IT Outsourcing, *MISQ Executive*, 8, 2, 45-58. These authors draw lessons from how one multinational organization managed its Vendor Set in the outsourcing of software development and testing activities. They conclude that client managers who outsource to vendors need to establish the appropriate balance between building strong collaborative relationships and encouraging market competition among a set of three or more vendors to ensure best price and service quality.
- 30 Taken from case research in Willcocks, L. and Lacity, M. (2012) *The New IT Outsourcing Landscape: From Innovation to Cloud Services*. Palgrave, London, chapter 7.
- 31 BP and Marks and Spencer interviewees (below) quoted in Willcocks, L. and Lacity, M. (2012) *The New IT Outsourcing Landscape: From Innovation to Cloud Services*. Palgrave, London, forthcoming.
- 32 Interview with Matthew Coates of Accenture, September, 2011.
- 33 Interview with Sanjay Mirchandani, CIO of EMC, December 2010.
- 34 Interview with Neil Thomas, Cable and Wireless, September 2011.
- 35 Fraser Kyne, technology specialist, Citrix: 'Cloud signifies skills change for IT Pros, Citrix says'. downloaded from Forbes, 30 June 2011.
- 36 Interview with Frank Modruson, CIO of Accenture, July 2011. In very large organisations, he saw email, infrastructure and stand alone or isolated systems moving to the cloud quite quickly, the more deeply integrated systems such as ERP moving on a much longer time-frame because of complex requirements and difficulties in finding Cloud providers operating at the right scale.
- 37 Eisenhardt KM (1989) Building theories from case study research. *Academy of Management Review* 14(4), 532-550.
- 38 Golden-Biddle K and Locke K (1993) Appealing work: An investigation of how ethnographic texts convince. *Organization Science* 4(4), 595-616.
- 39 www.horsesforsources.com/research-services
- 40 Link to HfS blog is www.horsesforsources.com

About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with more than 244,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US\$25.5 billion for the fiscal year ended Aug. 31, 2011. Its home page is www.accenture.com.

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