

The Government Cloud: Time for Delivery

The Question is not “If”, but “How, Where & When”

People matter, results count.



Talk about cloud computing has become ubiquitous, both in and outside government. The question for public administrations is no longer if cloud is a tool for improvement, but how to take action to maximize the advantage of cloud to address contemporary challenges.

The marketing hype around cloud has left many skeptical, confused and cautious about how to use cloud in the public sector, and what using it might mean in practice. With such feelings, it is perhaps not surprising that the response to cloud computing has been slow, and the evidence of results is hard to come by. Like the meteorological clouds above us, cloud computing is hard to pin down: used either to re-brand an old offering or to conceal the lack of any real solution. However, as more public and private enterprises make use of the cloud, both the distinctiveness of the offering and the reality of the benefits are becoming clearer.

Many papers have focused on explaining and advocating the technical features of the cloud. Here we will take a different view – looking at what cloud means for the overall strategy of the organization. To do this we will focus on how cloud can be part of solutions to the challenges government faces, rather than on the different types of cloud on offer, or the underlying technologies involved.

Many public institutions face challenging times with reduced spending, more demanding citizens and sustained, profound demographic change. Governments are now acutely aware that doing the same things slightly better will not be enough to control

budgets and meet citizens' expectations. New approaches are needed that will deliver services that are 'twice as good, in half the time, for half as much' – or at least embrace that same spirit.

Like all enterprises, public agencies also face a series of game-changing technology shifts as a result of new technology infrastructures, devices and behaviors. These are described in more detail in "*Nine Game-Changing Technology Shifts*" (see end note).

Cloud has the potential to help governments meet their challenges by offering increased agility and lower costs. Of course, this potential will only be realized after governments start taking the steps needed to seize the cloud opportunity.

The key questions for public sector decision makers should now be:

- How to start using cloud?
- Where are the best opportunities for doing so?
- When can we realize benefits from cloud?

This paper introduces some of the tools we can use to answer these questions, so that public agencies can start taking advantage of cloud – individually and collectively.

What is cloud, as technology?

Cloud involves a change both in business and in technology. The business shift is enabled by technology that has a number of essential features and service models:

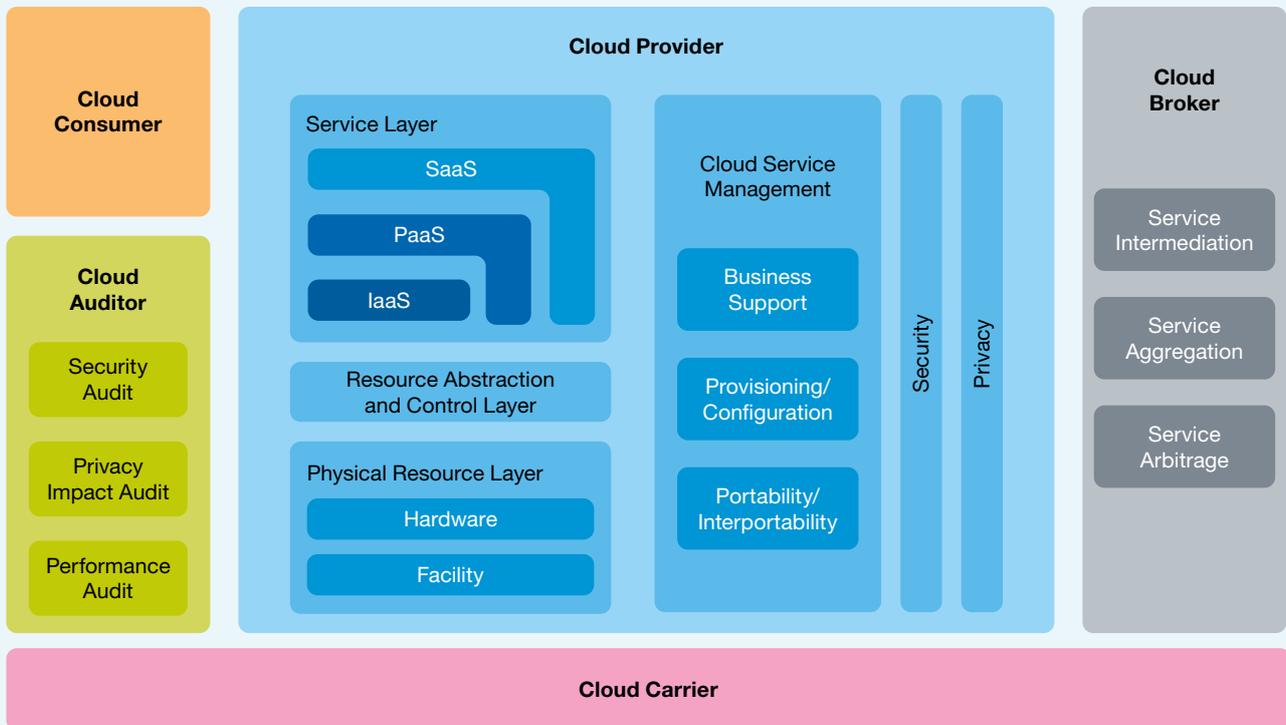
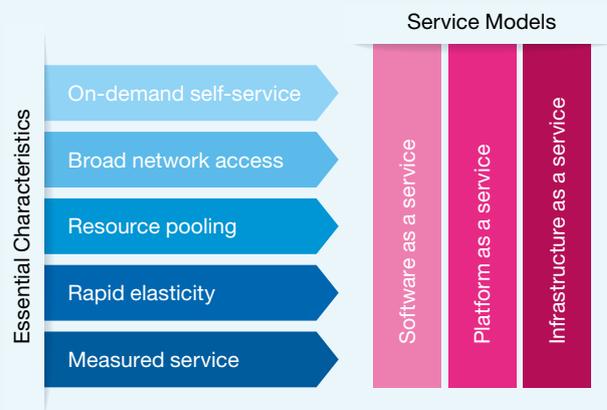
Combined, these features represent a clear shift from **Client-Server Technology**, which is:

- Close Coupled; State-full and Deterministic...to Browser-Cloud Technology, which is:
- Loose Coupled; State-less and Non Deterministic

Unsurprisingly, it is not really feasible to make an architectural drawing illustrating what system is connected to what system, how and for what; **connectivity and functionality can only be attributed to a specific cloud.**

Individual cloud offerings fit into a broader array of technology and services. The US National Institute of Standards and Technology (NIST) has proposed the conceptual architecture

illustrated below. Capgemini believes this is a sound and pragmatic framework that facilitates agreement on the different roles that suppliers might play in relation to an organization's approach.



The “Inside-Out” and “Outside-In” Models for the Government Cloud

Cloud discussions too often rapidly launch into technical features of the clouds on offer – private, public, hybrid, or ‘X-as-a-service’ offerings. Instead, Capgemini adopts a simpler description, with two contrasting yet complementary models for how cloud can help an organization or family of organizations improve their operations.

These two models aim to tackle the two broad classes of challenge that face any organization delivering public services:

- **“Inside-out” – what to do with existing operations?** Public agencies deliver hundreds of services, many of which perform ostensibly similar functions, yet they have been designed and implemented in isolation – all with their own systems, and with significant investment. We need to radically reduce the cost of these business processes and the IT that supports them. The quick answer is: ‘dis-aggregate, consolidate, and share’.
- **“Outside-in” – how to respond to change that is happening at the borders of, and outside the organization?** The public sector also faces pressure from outside; from the changing shape of citizen behavior and demands. Citizens are communicating with businesses and each other in new ways. Public agencies just can’t ignore these changes: they need the customer to collaborate with them so that they can deliver at lower cost. If agencies want to engage with customers, then they need to be able to respond flexibly

to the changes in customer demand. The quick answer is: ‘start *small, be nimble, and remain innovative.*’

“Inside-Out”: Using cloud to help with the **inside-out** is about:

- Streamlining what is in place now
- Smooth migration, maintaining reliability and consistency
- Maintaining service levels within the same underlying process
- Moving through virtualization, consolidation (and potentially outsourcing), to cloud

- Increasing the flexibility of legacy systems and reducing the cost of introducing changes.

An example of this evolutionary approach to existing systems can be seen in Capgemini’s work with the Scottish pan-government procurement function, or the UK’s Royal Mail. Royal Mail is migrating to a pay-as-you-go model for its computing infrastructure over a 6-year period, to achieve better value than it has done from its traditional IT estate.

Royal Mail

“I don’t want to buy cloud services directly from Amazon Web Services, and I don’t want to go to a systems integrator, who will build a custom system and host it in a traditional data centre. I want to go to a ‘services integrator’ who will provide me with a given set of services and with a given service level agreement associated with it. I don’t care, at the end of the day, where the underlying infrastructure is.”

Stuart Curley (Quoted in Information Age)

Royal Mail’s former chief technology architect

UK postal operator Royal Mail faces serious competitive challenges, and a burning need to reduce costs and increase agility.

Having already migrated its desktops to a cloud-based solution Royal Mail is now migrating a broader range of IT to a ‘pay-as-you-go’ cloud model.

This is an evolutionary migration to a solution that will be radically different to what Royal Mail has now. The evolutionary migration path is lower risk than a ‘big-bang’, change everything now approach.

“**Outside-In**”: Using cloud to help with *outside-in* is about:

- Embracing and innovating with new delivery models
- Engaging and enrolling the customer in the service delivery chain
- Responding to user demand, policy change, and customer behavior
- Enabling services that meet the customer’s desire to experience joined up services from government – centered on events that make sense to them rather than on the government’s internal organization
- Enabling the blending of government services with social networks or other private services
- Being agile in creating new solutions using cloud
- Composing services from existing elements

An example of a new service created out of cloud-based components in an agile way is the **InnoEnergy** collaboration platform. InnoEnergy’s goal is to support the generation and commercialization of innovations created by a large internationally-based scientific researcher community on sustainable energy systems across Europe. This cloud hosted platform allows the community to connect and collaborate in pursuit of its goal to achieve climate neutrality by 2050.

These two models – **inside-out** and **outside-in** – operate in tandem, each addressing a different set of challenges.

InnoEnergy

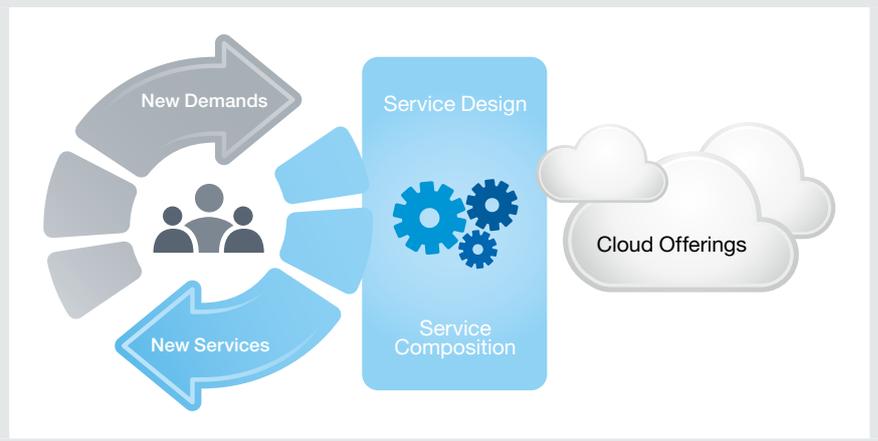
“We want to improve ‘connectedness’: making it easier to find, approach, understand, and connect with others. We are looking for persistent virtual environments, in which participants can create, organize and share information, as well as find, connect and interact with each other.”

Johan Torbjörnsson
CIO KIC Innoenergy

InnoEnergy is a joint-venture between a number of pan-European technology, energy and academic organizations.

The goal of InnoEnergy is to connect more than 1500 energy scientists right across Europe in order to encourage innovation and bring new research and ideas to market to enable a climate-neutral Europe by 2050. In doing so, the aim is to help new SME businesses emerge. This requires levels of pan-EU collaboration that were not currently in place, and were not ICT-enabled. A cloud-based collaboration platform has recently been created to effectively connect this community.

Outside-In



The challenge is to work out how to use both cloud perspectives in the right context

The public sector covers an extraordinarily wide range of services in different and distinct local and situational contexts. Each organization will need to tailor its approach to cloud to get the most out of the opportunities it presents.

To benefit from cloud an organization will need to look at how both of the above approaches apply to their circumstances. Maximizing the benefits requires taking a holistic view across all the functions of the organization, and perhaps those of other public agencies and partners. This may involve providing simpler access to services for customers over a shared platform, embracing social media tools as part of the set-up. It could involve providing one version of common processes (like payments) across agencies. Or consolidating many of the common corporate functions and systems into one cloud-provisioned service platform.

Cloud has the potential to impact the widest possible range of functions and services. It offers a potentially radical approach to transforming the way in which organizations operate.

eProcurement Scotland illustrates how organizations can realize significant benefits by taking a multi-agency approach. This procurement solution is used by a huge range of Scottish public bodies, from council offices to hospitals and school kitchens. While public bodies in Scotland are strongly encouraged to use the system, it is not enforced top down. Instead use of the system spread based on its effectiveness. This evolutionary approach has only been possible because the platform was set up with an awareness of the entire Scottish public sector ecosystem and the appreciation that not all agencies would use it from the start.

“Inside-Out” cloud benefits

- Reduce the capital and operating costs of existing systems
- Improve operational performance of technology and business
- Improve manageability
- Increase flexibility and agility to respond to change
- Reduce the cost of systems change to meet future requirements
- Refine cost allocation
- Create possibilities for sharing services amongst common public agencies

“Outside-In” cloud benefits

- Shift the focus to customer-centric joined-up services
- Actively engage customers
- Reduce time, cost and complexity of providing all forms of services
- Reduce the cost of introducing innovative models
- Reduce cost to serve though new models that better fit with customers
- Pay only for the computational services needed when they are needed with automatic cost allocation
- Improve customer engagement in pursuit of better outcomes

eProcurementScoti@nd

Evolution or Revolution?

Launched in 2002, eProcurement Scotland (ePS) is, in essence, a private cloud.

Over time ePS has evolved into a scalable, ‘as-a-service’, multi-tenant and partially pay-per-consumption system. As a result it displays all of the five NIST cloud characteristics; indeed it was a cloud before the term was widely used.

The ePS platform now processes more than £3.6bn per year, representing about one third of total public procurement spend. According to Audit Scotland, the system generated annual savings of £454m in 2008/9. Over 1.6 million transactions go through the system annually, and it is used by over 65,000 registered users and more than 93,000 suppliers.

This cloud platform has enabled ePS to take an evolutionary approach to replacing existing procurement arrangements. The idea of ePS was revolutionary in the way it reconfigured existing practice, but wisely it did not demand an instant revolution for all of the Scottish public sector.

Cloud is much more than just technology

Cloud has an impact well beyond the narrow confines of technology. Cloud services have the potential to embed themselves in the everyday business and personal lives of users. Services like Google search are such an intrinsic part of everyday life that it is hard to imagine a part of life they don't affect in some way, or what we did before they existed.

To work out how to make best use of cloud we need to take a holistic view. Only by looking across the full spectrum of environmental conditions is it possible to make the right

judgments about an organization's cloud adoption strategy. It changes the user proposition; legal conditions and risk exposure differ; policies may need to be altered or created; working practices will change (for instance aligning financial or HR processes with other organizations in order to use similar cloud-provisioned processes); assets convert from capital to operating legers; the whole economic basis can change from 'own' to 'pay as you consume'.

Planning for the impact of cloud across all these areas does not imply that this impact will come instantaneously or that the adoption of cloud

needs to come all at once. The technical migration will vary by area and, as in the Royal Mail example, may take years in some areas, yet happen overnight in others. In particular, *inside-out* and *outside-in* will have very different value propositions and timescales. However, in planning for all the specific actions it is important to step back and consider the bigger picture.

A cloud strategy is *far more* than a technical strategy.



Government Cloud Strategy

Governments are already working actively to understand how cloud will change their context, at a high level.

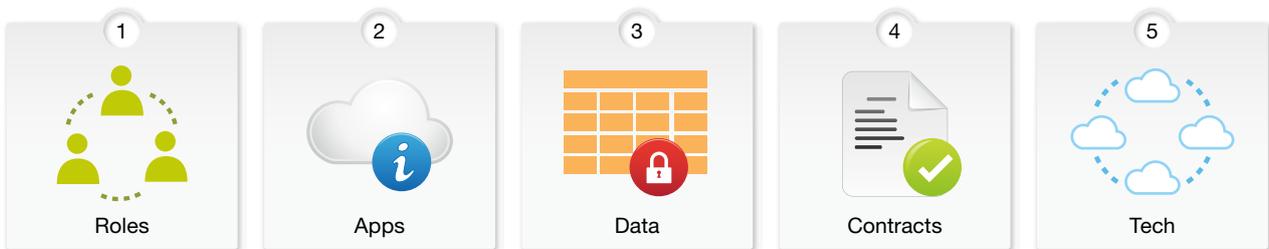
Capgemini is supporting cloud strategy development with a number of governments including the UK, Netherlands and the US, as well as with the European Commission.

Five Things to Think About for Government Cloud

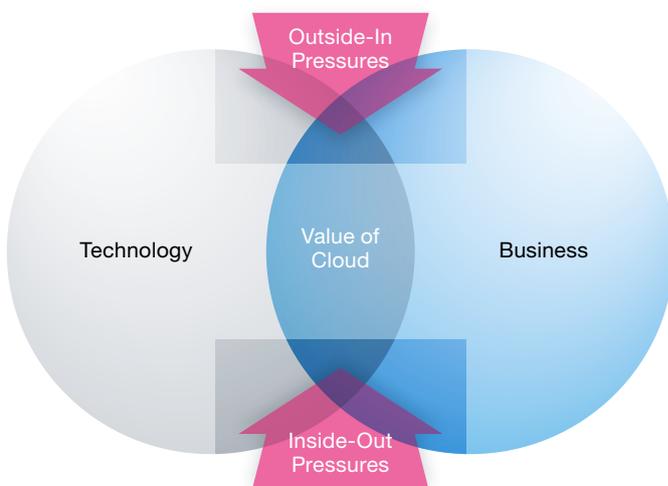
The following five perspectives help put cloud in context. For each, there are tools that enable organizations to understand how to help them in their deliberations:

1. **Business roles:** How do we make business and technology functions connect to maximize value from cloud?
2. **Business applications and services:** What applications and business services exist in the organization, and how suitable are they for cloud provisioning?
3. **Data models:** How do we make sure data remains safe and secure in the cloud?
4. **Contracting for cloud:** What do we need in order to buy cloud services?
5. **Technology fit:** How will the cloud technologies fit together?

Five Things to Think About



The Value of Cloud Spans Business and Technology



1. Business Roles

Cloud value comes about through bringing business and technology together, to address both inside-out and outside-in potential.

It is thus imperative to consider the different types of internal users and stakeholders. We have grouped them into a set of six generic role types, each with their own needs, views and challenges.

Overall we have identified three roles that can be thought of as ‘front office’ and three ‘back office’. These are shown in the illustration here.

The front office is where the organization is exposed to externally-driven change, and is home to the outside-in approach to cloud:



1. **Department Head** – The executive and policy functions seek ways to deliver political objectives and meet increasing user demands at lower costs.
2. **Business Users and Managers** – A new generation of digital-savvy users and their managers are importing their knowledge and expectations in

the use of web-based ‘services’ on a wide variety of devices into their government roles.

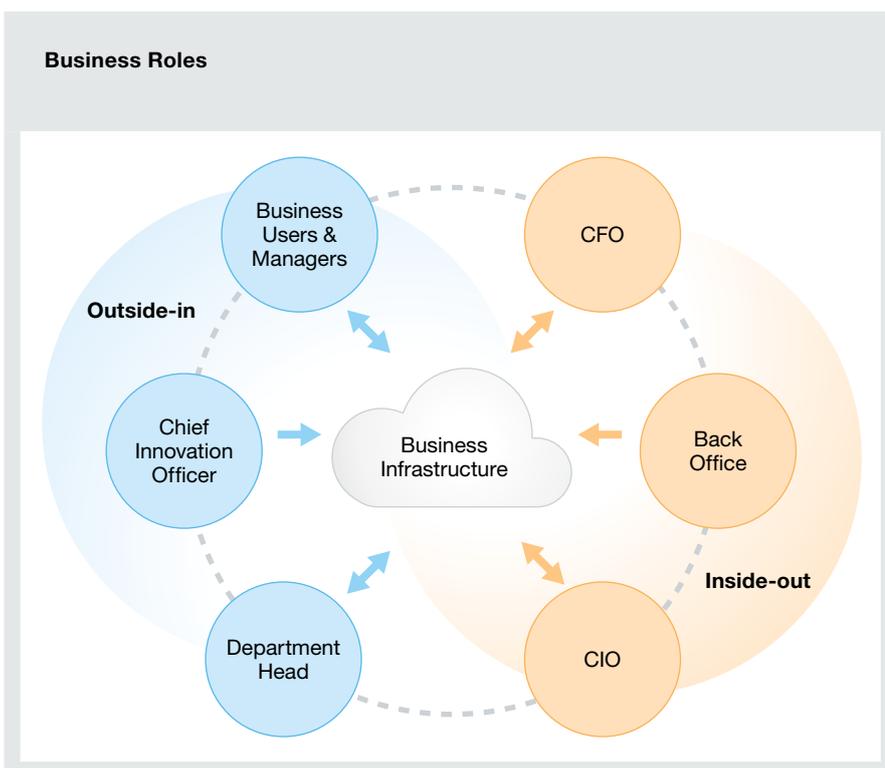
3. **“Chief Innovation Officer”** – While the job has many different titles, most government agencies have smaller groups trying to find new and innovative ways of delivering for customers. These small

groups have distinctive application and IT needs. They are, in essence, inventing the future – and thus at times are cannibalizing the present.

The back office is the home of traditional centralized IT and thus addresses inside-out cloud challenges:

4. **CFO** – The financial functions are concerned with ensuring continued compliance and keeping a tight rein on IT projects that could have expensive or unforeseen outcomes. At present, budget cuts are the dominant item on the CFO agenda.
5. **CIO** – The traditional IT function is responsible for ensuring the consistent delivery of critical IT services. Currently the CIO is under pressure to deliver significant savings to help control budgets.
6. **Corporate Services** – All functions across the back office are under pressure to reduce costs, and in some countries to look at increasing the levels of outsourcing.

The views, needs and concerns of these different perspectives must all be considered and built into a Government Cloud strategy. And they are all users of business applications and technologies, albeit in different ways and to different extents. We must understand how to map one to the other.



2. Business applications and services:

All applications are not equal. They serve different types of need and require different levels of resilience. In order to understand how to make use of cloud for different applications or services, it helps to first group them into categories that reveal their different lifecycles.

Capgemini has developed a simple metaphor based on five different modes of transport to better understand five different styles of application (or application service):

1. The **TRAIN** is a stable, robust mode of mass transportation. It is not flexible but reaches its goal in a predictable, straightforward way. It is based on an infrastructure that is designed and built to last for decades, and everybody who uses that train travels in the same way from A to B. The

functionality is provided in a highly efficient and standardized way. Many people will be affected when trains do not run.

Example: The internal ERP system of a large process-centric government department would be a good example of this type of high reliability application.

2. The **BUS** is also a relatively stable mode of mass transportation, but clearly with more flexibility. A bus can take a detour if circumstances require, and it can be used for alternative purposes on top of the fixed schedule. Moreover, it usually connects directly with the train system.

Example: A benefits payment system would be a good example of a service that must be reliable but still needs to be adjusted from time to time as benefit rules and payment amounts change in response to policy.

3. The **CAR** is a much more agile, individualized means of transport. It can take a small group of people to most of the places they want to go. There are many different types of cars to choose from and their owners will configure and adapt them to reflect their individual, differentiated styles and personalities.

Example: A job matching service for those seeking work needs this kind of customization and flexibility. Job hunters will use a set of different approaches and each type of job is different.

4. The **SCOOTER** is a lightweight, extremely flexible and individual method of transport. It can be used for the “last mile,” bringing you to places even cars cannot reach. In crowded areas, scooters are faster than any other means of transport. It is easy to rent a scooter – just for a day or so – and explore parts of the city in a flexible, cost-effective way.

Five Different Styles of Application

LIFECYCLE	 TRAIN	 BUS	 HUB	 CAR	 SCOOTER
Rhythm	Year	Season	Month	Week	Day
Application Areas	ERP, Legacy Core Application	CRM, R&D, Product Management, Supply Chain	Data Market, Apps Market, Mobile Services, Security Services	BPM, BRM, BI, Analytics, ECM, Mobile	Portal, Mashups, Site Builder, Wiki
Governance	Central IT or Outsourced/Business Requirements	IT/Business Needs	IT/Business Requirements	Business/IT-Supported	Business
Architecture	Predictability, Sustainability, Standardization, Simplification	Predictability, Agility, Model-Driven	Reliability, Openness, Service-Oriented, Aligned	Ease of Use, Flexibility, Speed to Market, Re-use	Simplicity, Configurability, Speed to Market
Testing	Formal, Regression	Business Case-Driven	Industrial Strength	Exploratory Integration	No Harm, Legal Testing
Delivery	Linear, >80% Offshore	Agile, >65% Offshore	Agile, Services Integration	Agile, BT Tools, <35% Offshore	End-User Tools <10% Offshore
Key Capabilities	AM, Continual Rationalization	Requirements Management, Agile Development	SOA, Cloud, Integration	Business Analysis, Orchestration	Mashup Building, Web 2.0



Example: An example of this light-weight flexible approach would be where a department sets up a website to meet a specific short-term need. For example a local labor agency might set up a service for former employees of a large business that has recently gone bust.

5. All of these modes of transport are tied together through a HUB, best seen as a modern train station with carefully provided additional services. Such a hub is truly multi-modal in that trains, buses, cars and scooters can all conveniently “dock” and people can easily change their means of transport, while benefiting from a host of add-on services.

Example: A HUB service would enable all the individual Labor Ministry applications described above to co-exist and co-ordinate with each other. For example it enables data to pass from job seekers profile to benefits payments to ERP.

A good Government Cloud approach deals with the resulting matrix of role and application type. Getting to this position, however, takes debate and time. This time must be recognized and planned for. It is as much an ‘awareness and alignment’ exercise as it is a rational ‘engineering’ study – perhaps more so.

3. Data Models – “is my information safe and secure?”

The key concerns of all potential cloud users in the public sector are data security and compliance. This concern can lead to the belief that no public sector services can safely make use of cloud at all. However, not all data is personal, and the level and type of sensitivity varies considerably. If an organization is to benefit from cloud, it will need to keep an open mind, and find ways to ensure that it has a sophisticated understanding of the different

types of data it uses and how to handle each type appropriately.

For over twenty years the C-I-A model has been used help define three key aspects of information security in the technical design of systems:

- *Confidentiality* – that data is only seen by those who are authorized
- *Integrity* – that data can’t be altered by those who aren’t allowed to
- *Availability* – that access is timely and reliable for those who are supposed to have access

Information Pool (iPool)

Information Pool is an example of a security-sensitive cloud implementation, currently in pilot in the Netherlands. Rather than being an everyday use system, Information Pool is designed for use in emergency situations. The system enables multiple public agencies to exchange their data on a single platform to enable high speed information sharing ‘on the fly’ at times of crisis. It creates “one truth in the cloud” instead of multiple versions as a result of uncoordinated communications between agencies and their professionals. In emergencies the facility quickly and uniformly shares all necessary data with all the involved parties. This data might include the extent and number of casualties, environmental effects, measurement details, location of first responders and their assets, and weather conditions. It thus creates one common operational picture and improved situational awareness. An agent-based cloud facility called ASK Community supports location-based rapid deployment of additional forces and first responders, thus dramatically simplifying and shortening traditional labor intensive joint up-scaling processes from the dispatch center.

When thinking about the risks of principles being breached or what the consequences of such a breach might be, it is helpful to consider the different types of data the public sector uses.

The matrix below illustrates two ways of segmenting data according to how it needs to be handled:

- i. **Who or what the data concerns** – the question here is who is the subject of the data and who is it being used by or for?
 - *Personal data* concerns an individual citizen. Personal data is used when the government needs data on just that individual and usually when providing a service to that individual – such as paying their benefits.
 - *Community data* concerns a group of people; in government this might be a set of public servants – such as the data used by police officers at a station or nurses in a hospital.
 - *Public data* is that which concerns the widest set of customers and is used by public administrations to look at issues at the macro level. For example, it might include demographic statistics used in planning for services.

- ii. **The sensitivity of the data** – here the question is how sensitive is the information involved?
 - *Non-confidential* data is in the public domain and can be safely shared with anyone.
 - *Confidential* data is not to be shared unless there is a good operational reason to do so.
 - *Classified* data can only be shared with those who have passed security checks and must be treated with the highest level of care.

An organization should aim to understand the key features, such as the legal issues, data lifespan and security concerns, associated with each data type. The paradigms of data security are changing rapidly: social media and the net-generation will have a major impact. The public sector is far less in control than in the past; people are taking control of their own information. Many are choosing to open it up, and regardless of whether this is good or bad, the reality is that it is happening. Offering user choice around different levels of security for records is perhaps something that public administration needs to consider more seriously.

By understanding such things it should be possible to design appropriate security protocols into the architecture of a solution that uses the cloud.

4. Contracting for cloud: business model, commercial, and legal considerations

The two approaches to cloud (*inside-out* and *outside-in*) will require two distinctive approaches to contracting for cloud services. When using cloud to help *inside-out* it will be important to develop a smooth

transition plan with a tailor-made contractual approach guaranteeing continuity of service. When using cloud for *outside-in* the emphasis will be on making use of pre-existing services as quickly as possible and establishing nimbleness and flexibility into ongoing buying decisions.

For *inside-out* more traditional business models of contracting with IT suppliers may still work, although there is still likely to be a shift towards performance-based contracts.

However for *outside-in* it will require a new faster cheaper way to do business, and business models will be different and change faster. Success for such an approach will be delivered through:

- Simple and expeditious approaches.
- Seeking time & cost saving in the engagement process.
- A single set of terms and conditions for each service on the menu.
- Simpler contractual systems with clear accountability, and the prime taking the risk on behalf of the client.

Example Data Types

Subject or User Sensitivity	Public	Community	Personal
Non-Confidential	Concerning the public at large or the whole nation Published statistics	Concerning only a small group such as a group of public servant Nursing rota	Concerning just one individual or family Name Address
Confidential	Departmental budget proposals	Police operational data	Medical record Public servant's HR file
Classified	National security threat assessments	Army unit deployments	Security status

5. Technology fit: How will the cloud technologies fit together?

The development of any cloud strategy takes place against the background of technology change. Governments are living in a world of new devices, such as the iPhone or iPad, which represent a new focus on the people, rather than on technology, and on intuitive usability. At the same time, new cloud products open up a constantly expanding and adapting range of services that governments can potentially exploit. The end note “*Nine game-changing technology shifts*” offers more detail on the current changes in the surrounding technology landscape – the pace of which is only going to accelerate.

To remain agile and to get the maximum benefit from cloud both now and in the future, there are three simple design principles that should be incorporated into any government cloud architecture:

- *Loose coupled* – Traditional client server systems are tight coupled, which means that there is a fixed predetermined relationship between each system. In contrast web architecture is loose coupled with no predetermined fixed relationship between devices or servers. The connection is made only if and when there is a demand to consume the service. A simple example of this is browsing the web.
- *State-less* – State-full means that there is only one version of the each data record maintained and as each transaction happens the ‘state’ of the record is updated. State-less is used to allow any number of users – and it can be

massive – to access whatever they need using REST (Representational State Transfer), which is a visual image of the record. Any changes are managed separately. As an example, think of using Google maps – anyone can use the map and place it in a ‘mash up’, however you never hold the data in your computer or device, it is merely an image to use when you are online and connected to the service.

- *Non-deterministic* – Systems are deterministic where it is easy to determine exactly how many users, records, instructions per second etc. will be needed. In contrast, in web architecture it is not known how many users or other demands on the system there will be in advance.

Embracing these principles in building cloud solutions, in contrast to traditional client server IT, will massively increase the ease of successfully integrating the best cloud services and benefiting rather than incurring cost from future changes.

A Roadmap for Government Cloud

“All good in theory – so how to turn it into reality?”: that is the question that so many public administration leaders are asking. The temptation to delay should be resisted for two simple reasons:

- Those that are in the vanguard of this initiative – and who are tackling it competently – will benefit earliest. With the potential for very substantial savings (it is not unusual to show a business case with savings of around 25%¹), they will remain in financially far healthier positions. And thus they will be able to service their core role far better.
- Change will continue regardless and it risks engulfing those public administrations that resist, particularly with reference to the outside-in model. You only have to look at the extent to which the public are taking things into their own hands, individually and collectively. For example, people (including public servants and politicians themselves) are using social networks like Facebook to comment on and find out about government

¹ For instance, Capgemini’s “Messaging as a Service” solution offers its customers a 50% overall cost reduction in the (client-generated) business case.

services. Governments need a strategy to take advantage of the opportunities this offers for getting customer feedback and informing the public. Without this strategy such social media will become an unmanaged source of false information and aggressive criticism.

Recognizing that this involves a mindset change as much as it does any other, Capgemini believes that a leadership community (frequently involving people and roles from more than one public organization) needs to come together collectively. This community should re-evaluate the context, share views and concerns, and re-set the context within

Three key actions from today

1. Appoint a leader for cloud
 - Or one for *inside-out* and one for *outside-in*
2. Set out a strategic roadmap
 - Involving business and technology
3. Select a place to pilot cloud

which its operations and services will work. This then creates a basis for making specific decisions about particular initiatives.

Crucially, approaching this in the traditional manner with “boards, chairs, and briefing papers” is not as effective as taking a far more engaging visual and story-telling (use case) approach. To that end Capgemini has developed an outline framework (see note below) for the “Journey to Cloud in the Public Sector”. It will:

- **Accelerate** the awareness building, learning, and decision making for an organization or group of agencies
- **Personalize** generic, internationally relevant public sector material and make it specific, relevant and meaningful
- Enable the business and its constituent services to be broken down into manageable components; allow the evaluation of options and priorities to take place; and **support decision making** to phase the reconstitution of services in potentially different (cloud) models, with potentially different partners
- Provide a framework for **learning**, and **leading practice** sharing, between public agencies.

Cloud is here. The technology has matured at an exceptionally challenging time for public administrations. How they choose to use it will help determine how successfully they address these challenges in the years to come.

Nine Game-Changing Technology Shifts

1. People rather than IT are the new focus.

What people want is contextually relevant information, and the ability to trigger processes to do something with this information where and when they want it. Popular demand has led to the creation of a plethora of new tools which provide individuals with near real-time communication and data. The technology to enable these tools is based on Internet, web services and cloud services and is very different from the technology of client-server application-centric IT systems.

2. Intuitive presentation and usability.

There has been a radical change in the way data is presented to users, driven by the consumerization of IT. New devices – like the iPad or Windows 7 phone – have interfaces designed to make the user's life easy. The design success of these devices has ratcheted up users' expectations. People-centricity and the new devices of the consumer technology revolution mean that the way we write and deploy software has to change, for example by making use of visually based development techniques.

3. From Big to Small IT.

The way in which new services can be developed is hugely different from big complex transactional enterprise applications. Large numbers of small services can be rapidly orchestrated into chosen processes, and equally quickly changed again. Solutions can be small, experimental and innovative, while deployments don't have to be big-bang everyone-at-once affairs. These new services will present new challenges and organizations need to make sure they don't underestimate the numbers of services or the complexity of managing this environment.

4. User-driver decisions on user-driven ICT.

The enterprise has seen the rise of a new decentralized business technology system alongside the old centralized systems. With the old centralized IT the emphasis is on keeping costs low in both the compliance systems and those that support the core operations of the business. New technologies have provided the freedom to decentralize, to adapt to the market and internal users in new ways. The decentralized technologies are focused on differentiating the business and personalizing services for customers. They are driven by those in contact with customers, rather than those sitting in the back office.

5. Tight-coupled computers to loose-coupled people.

Computers and applications 'push' structured process data. In contrast, people interact and 'pull' contextual information. The former was and still is supported by technology-based integration of the systems through enterprise architecture. For the latter, the user and devices become the focus, with management of 'services' the new integration issue. The difference between the two can be seen in the experience of using the web, where you chose where to go, versus the experience of using an application, which offers a pre-determined path.

6. Next generation data centers.

There is a shift from deterministic numbers of applications and systems to use of infinite resources and services. The move to the next generation data centre involves a radical shift in requirements towards participation in a common environment with other data centers through hybrid clouds and new generation of users/devices.

7. Context-aware rich internet applications are changing everything.

The proliferation of online data sources in the everyday environment is providing a wide range of new opportunities for innovative online applications. People-centric applications can select location and context-relevant information that is passed to us as part of the rich environment in which we will work and live.

8. An additional functional environment.

The old client-server functional environment will continue to exist, but alongside a new cloud based one. The new functional environment is justified by providing increased value, rather than cost reduction. The users of this new environment will be decentralized and customer facing.

9. New technology has enabled smart business innovation.

Achieving both low cost and high efficiency with old IT structures meant a trade-off with flexibility. As such, any new business activity had to be aligned to the current activity. Now, new quickly deployed technologies at the edge of the organization can exploit the strengths of the core systems without requiring them to be customized.



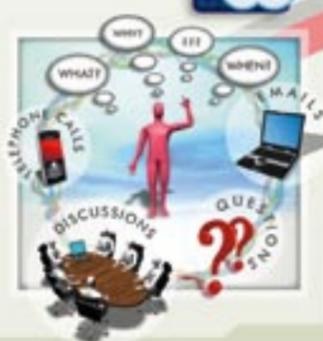
START HERE

The Context For Government Cloud

"The marketing hype around cloud has left many, both inside and outside government, skeptical confused and cautious about how to use cloud in the public sector, and what this might mean in practice"

Clarify With Stakeholders:

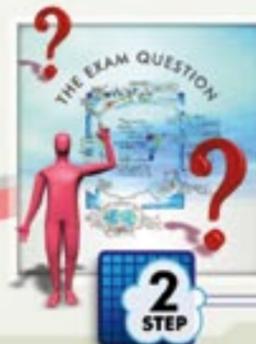
- THE BUSINESS
- TECHNOLOGY DRIVERS
- CHALLENGES



Define The Government Exam Question

"The question for public administrations is no longer if cloud is a tool for improvement, but how to take action to maximize the advantage of cloud to address contemporary challenges"

- CAPTURE A CLEAR STATEMENT OF THE CHALLENGE & GOALS
- ALIGN STAKEHOLDERS FROM ALL AGENCIES



Describe The Cloud Potential

"Cloud has the potential to help government meet the challenges by offering increased agility and lower costs, but only if governments begin to take the steps needed to take advantage of it"

- DISCUSS AND AGREE THE POTENTIAL VALUE



Frame The Approach To Cloud

"Recognizing that this involves a mindset change as much as it does any other, we believe that a leadership community (frequently involving people and roles from more than one public organization) needs to come together collectively to re-evaluate the context, to share views and concerns, and to re-set the context within which their operations/services will work"

- SHAPE THE STRATEGY IN A CO-CREATIVE ENGAGEMENT ACROSS THE STAKEHOLDER COMMUNITY



JOURNEY TO THE GOVERNMENT CLOUD

STRATEGIC DRIVERS

- Business Drivers**
- Limited Public Funds
 - Customer Expectations
 - Increasing and Changing Demand
 - Changed Delivery Models - (OS, JV, Social Enterprises, SPVs, Privatizations)
 - Globalization (Regulatory & Other)
- 9 Game-changing Technology Shifts**
- People rather than IT are the new focus
 - Intuitive presentation and usability
 - From Big to Small IT
 - User-driven decisions on user-driven ICT
 - Tight-coupled computers to loose-coupled people
 - Next generation data centers
 - Context-aware rich internet applications change everything
 - Additional functional environment
 - New technology enables smart business innovation

TANGIBLE MEASURES

- Financial Gains**
- Capital
 - Ongoing Operational long-short
- Customer Engagement**
- Trust
 - Democratic
 - Co-design/production
- Service Improvement Customer service**
- Speed
 - Responsiveness
 - Better outcomes
- Agility and Efficiency**
- Streamlining
 - Efficiency
 - Reduced error
 - Responsiveness to constant change

Build The Government Cloud Roadmap

The ultimate prize from our workshop will be a strategic framework that contains the rationale and direction for how to make best use of the Cloud in your environment.

The very last module in that framework will be a roadmap that lays down the key actions and dependencies that need to be initiated to achieve the vision that we will have developed in our workshops.



Personalize The Program For Business And Technology Stakeholders

"Cloud value comes about through bringing business and technology together, to address both inside-out and outside-in potential. It is thus imperative to consider the different types of internal users and stakeholders. We have grouped them into a set of six generic role types - each with their own needs, views and challenges"

- A CUSTOMIZED APPROACH TO YOUR SPECIFIC ENVIRONMENT AND CHALLENGES



Develop The Shared Cloud Framework

The following five perspectives help put cloud in context. For each, there are tools that enable organizations to understand how to help them in their deliberations:

- 1. Business roles:** How do we make business and technology functions connect to maximize value from cloud?
- 2. Business applications and services:** What applications and business services exist in the organization, and how suitable are they for cloud provisioning?
- 3. Data models:** How do we make sure data remains safe and secure in the cloud?
- 4. Contracting for cloud:** What do we need to buy cloud services?
- 5. Technology fit:** How will the cloud technologies fit together?



Engage Those Stakeholders

"Central to our approach is bringing together stakeholders from across the six roles, spanning frontline public services, policy and operational technology functions. Each of these groups need to engage in the process to take maximum advantage of cloud solutions."

- COLLABORATIVELY DEFINE AND FRAME THE STRATEGY





About Capgemini and the Collaborative Business Experience

Capgemini, one of the world's foremost providers of consulting, technology and outsourcing services, enables its clients to transform and perform through technologies. Capgemini provides its clients with insights and capabilities that boost their freedom to achieve superior results through a unique way of working, the Collaborative Business Experience™. The Group relies on its global delivery model called Rightshore®, which aims

to get the right balance of the best talent from multiple locations, working as one team to create and deliver the optimum solution for clients. Present in 40 countries, Capgemini reported 2010 global revenues of EUR 8.7 billion and employs around 112,000 people worldwide.

More information about our services, offices and research is available at www.capgemini.com

For further information on our point of view, and to learn how to apply this approach to respond to what is a game-changing and irreversible shift, please contact publicsector.global@capgemini.com

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