



GovTech 2010

WORKSHOP
**'CLOUD COMPUTING :
GOVERNMENT IN THE
CLOUD'**

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What is the Cloud and why is it relevant for Government?

- The cloud – what it is - and isn't
- The role of public and private clouds
- A utility model for public services?



Petronas Towers, Kuala Lumpur



Just exactly what is the Cloud?

- Vendors will tend to give answers that will suit their offerings
- As I see it however this can be summarized as the convergence of three distinct factors*
 - 1. The true high – speed, always available Internet
 - 2. Multi point (or distributed) Applications
 - 3. An elastic Infrastructure
- The Cloud is the past promise of Grid Computing that can now be delivered as a reliable, scaleable utility
- The cloud therefore may be seen as a *service layer* over the Internet infrastructure made possible by GB speeds



'Cloudenomics'

- The cost of a 3-minute phone call from New York to London in 1930 was 300USD in today's money, today? nothing. So long as it is made via the internet! It *does* change everything.
- The Cloud promises to out take fixed costs and turn them into a variable cost - drastically lowering the price of entry for new businesses
- A positive advantage to SME's as they can outsource the majority of their IT Infrastructure and pay on demand
- Estimate in the EU is the Cloud will enable the creation of 1 million jobs over the next 5 years in this group*
- Also see 'Above the Clouds: A Berkeley View of Cloud Computing#

* Fretderic Etro, Univ. Of Milan, Italy

<http://www.intertic.org/Media/520Briefings/Clouds2.html>

School of Electrical Engineering and Computer Sciences, UC at Berkeley,

(see <http://www.eecs.berkeley.edu/Pubs/TechRpts/2009/EECS-2009-28.pdf>)



And what the Cloud is not

- There is no single cloud, rather like real ones; Stratus, Nimbus, Cumulous - they all exist in the sky - in this case the 'internet sky'
- These can be described as private, public and hybrid
- Vendors Clouds can be any or a combination;
 - Amazon/Rackspace provides a raw infrastructure where you can rent servers on demand and pay on usage
 - Salesforce.com lets you rent the application on a per seat basis and pay on usage
 - Microsoft's Azure lets you rent applications, storage and computing and pay on usage



And what the Cloud is not/2

- It is not 'The Internet' or 'Internet 2'
- It is not a direct replacement for existing IT infrastructure
- It is not more secure – or any less secure – than existing enterprise level IT systems
- It's not about short term savings for large existing enterprise deployments



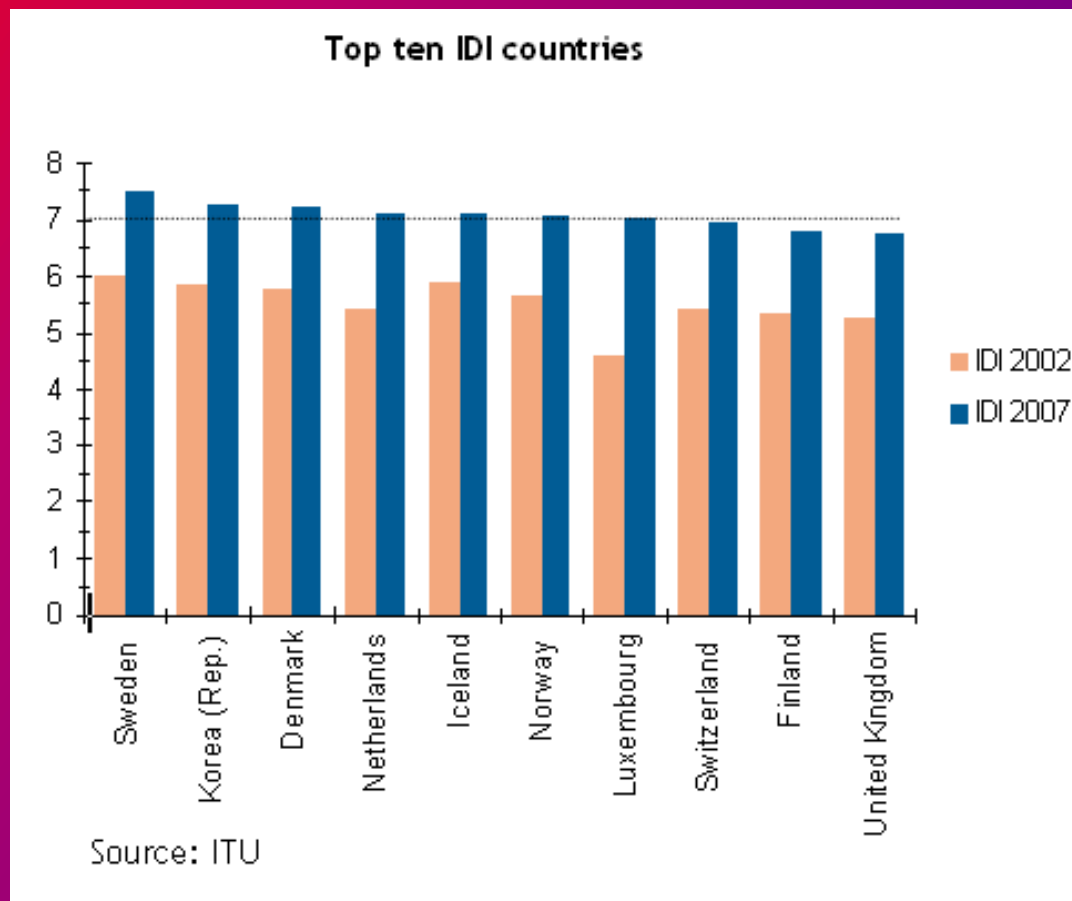
'Fathers of the Cloud'

- Vint Cerf* has compared the present Cloud to the 1960's separate proprietary networks – without interoperability.
- Sir Tim Berners - Lee has said that this problem needs to be addressed by creating the 'Semantic Cloud' which needs a separate language to link the data together
- This may form the overlay – 'The Interoperable Cloud'

* See <http://searchmarketingexpo.com/>



ICT Development Index – Only one in the top ten from Asia - Pacific

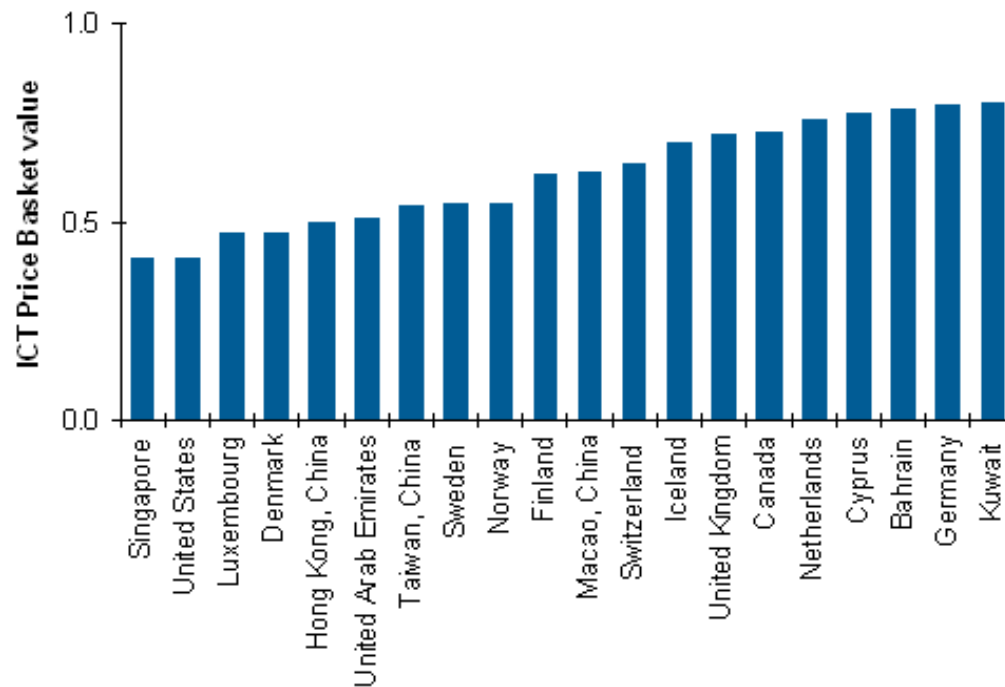


From the ITU ICT Development Index of 154 countries ITU 2009



ICT Affordability Index – better - but only for the richer economies

Economies with lowest ICT prices (2008)



Source: ITU

A comparison of ICT levels and ICT *prices* suggests a strong link between the two indices



The Current IT Generation

- In many parts of Asia, half the citizens alive today have never known a world without;
 - a mobile phone
 - A computer or the Internet
 - Email
 - Online games
- The above are *already* utility model services
- This is the generation that Government needs to address *now*



'NextGen'

- The 12-25 year olds are the future
- 5 years ago **Facebook/MySpace** did not exist;
- **Twitter** came out of the blue and is now becoming mainstream - the tragedy at Mumbai last year broke on Twitter to most of the world - like SMS - but on steroids
- They are hosted services - in the 'Cloud' and are standards agnostic - NextGen just want it to work - and *fast!*
- Speed of technology change cannot be predicted



For NextGen speed is *everything*

- For e - Gov to deliver to this group, the telecommunication Infrastructure has to be fast and reliable - and to drive adoption - cheap
- Opposite are two tests done 3 minutes apart from my own home desktop between Hong Kong and Seoul





What Does this all mean?

- NextGen are connected – always communicating
- Email is too slow – IM rules!
- Mobility, (Mobility!!) 3.5 – 4bn mobile phones globally
- In Hong Kong 21Mps Mobile service is now available
- Education and training in ICT will drive adoption



The Semantic Web is the Cloud - *plus* the Apps

- IT Frameworks
- Technical Standards
- Organizational Standards (?)
- Citizens want to interact on *their* terms
- Or they won't interact at all!
- What citizens use at home will drive their interactions with government



The Technology Neutral *Semantic* Platform

- The Network – the Platform – enables e-Gov to utilise the Cloud
- The platforms are built on specifications that are widely adopted by users – the Internet is based on TCP/IP for example
- With Apps layered on top for utility- HTTP, PC, XML and mobile phone O/S are examples
- The Cloud allows seamless access to the apps no matter where they physically reside if the infrastructure is up to standard and the underlying architecture allows interoperability
- Now recognized by the ISO with a separate Working Group under JTC-1 as WG38*

*Announced October 2009 as 'Distributed Application Platforms and Services

*



How will this be achieved?

- *Industry specifications may become standards - depending on the uptake by users – driven by **utility** as well as **value***
- *So perhaps it should be that **technical standard frameworks** that are created should be more relevant, fair and continue to evolve with the changing technology in the marketplace?*
- *Maybe the technology - particularly the proven and mature platforms - is the easy part, its the **adoption and the legal issues** that are difficult?*



Technical standards

- The informal standard setting process - the creation of **standards driven by industry** and/or consortia outside of formal standards-bodies, including non-formal standards with global reach (IETF, W3C, OASIS, WS-I, etc.) - is becoming more and more important and should be given the necessary policy attention
- EU standardization as a policy has to better integrate these **informal standards** with formal ones from the ISO/ITU, NIST and ANSI* to ensure that standards can be developed by the most appropriate party, under the condition it meets the relevant quality criteria (effectiveness, relevance, impartiality, independence, etc.)
- A structured inclusion of **multiple non-formal standards** into European Norms need to bridge the **parallel universe** of formal and non-formal standards through **multi-stakeholder partnerships**

*See ANSI http://www.ansi.org/about_ansi/introduction/introduction.aspx?menuid=1

†See ITU <http://www.itu.int/ITU-T/othergroups/ipr-adhoc/openstandards.html>

See NIST <http://csrc.nist.gov/groups/SNS/cloud-computing/index.html>



Legal Issues in the Cloud

- Unlike real clouds, there are questions of ownership
 - Where is the data stored? (Who's laws?)
 - Who has liability for security and safe storage?
 - What happens if I cannot access my data?
 - Real and consequential liability?
 - Privacy - Personal and Data laws in Hong Kong very strict
- Some of the answers may lie in the Hybrid Model
 - Sensitive data may be stored as today, locally by the 'owner' and made available for use via Cloud services (such as under SaaS) then 'returned' to safe storage
 - Not all data will be available or used in the Cloud - the most sensitive data will be accessed and used within closed systems
 - This will preserve critical legacy files - land titles, medical records, court proceedings, for example



Govt feedback on the Cloud

- A recent survey* of 300 IT managers in Government in the US revealed the following;
 - 44% already using some form of Cloud based apps
 - Email the most likely application to be moved to the cloud
 - 50% said cost saving from hardware
 - 45% said they expected reduced costs from pay as you use utility model
 - 41% said that they had privacy concerns
 - AND 80% said they had security concerns

*Merlin Federal Cloud Initiative total sample 605



What the Analysts Say

- Gartner analysts in March 2009 said global cloud services revenue could move beyond \$56.3 billion this year—from \$46.4 billion in 2008—and grow to \$150.1 billion in 2013.
- IDC was more tempered in its projections, calling for worldwide spending on cloud services to reach \$42 billion by 2012.



A Guideline for the Future/1

- A Cloud Policy must not only allow but *embrace technological* change -
 - With respect to IT there is a need to recognize that we cannot predict the future with any reasonable accuracy; policies therefore need to be open to innovation no matter from where it comes from or the business model
- The IT industry is working with global standards bodies to enable innovation in Cloud computing to flourish through *interoperability* -
 - Interoperability is vital for the wide uptake of the Cloud and uptake of e-Gov services
 - With respect to IT there is a need to recognize the work done by all researchers from industry that enables the Cloud and 'info-structure' of modern society
 - Specifications that are created by industry and accepted by users may form the basis of sound standards going forward.
This is a dynamic and ongoing process



A Guideline for the Future/2

- NextGen Citizens want to use many different kind of devices that will be delivered by Cloud based services in formats, because they all have **different needs and interests**, and because they benefit by that from **ongoing innovation**
- **Diversity and competition are good for all Citizens and Government-** because they allow them to **choose** between different offerings that will 'reside' in the Cloud that will contain features and at prices meeting their own specific devices and needs
- Increasingly, Citizens (and businesses) are able to choose products that may be delivered by the Cloud or reside on their devices in *all* the formats they need – governments need to accommodate this
- Technological innovation will allow **multiple ways to manage data in the Cloud** with effective competition based on merits

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