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## REPORT

### Cloud Computing Roundtable

Over 40 delegates drawn from academia, think tanks, business and the legal and IT professions attended a three-hour roundtable on cloud computing, hosted by the Free Market Foundation (FMF), on Thursday, 29 September 2011 at the Sandton Sun Hotel, Johannesburg. The in-depth discussion focused on two aspects:

- *The economic impact of cloud computing on South Africa, and the*
- *Potential impact of cloud technology on emerging markets and the importance of the policy and regulatory environment.*



The roundtable was facilitated by **Tim Modise**, Chief Executive Officer, Sizwe IT Group.

**Mike Schüssler**, Director, Economists.co.za, presented his paper on the *The economic impact of cloud computing on South Africa*. The paper was co-authored by the Free Market Foundation's economist, Jasson Urbach. Mike made the following points:

- Cloud computing has taken the world by storm.
- Cloud computing has the potential to foster economic growth by facilitating additional job creation – 1,000 jobs per 80,000 existing jobs in the South African economy for the same amount invested (i.e. R22 billion).



- Another major potential economic benefit of cloud computing is the economies of scale derived from the technology, as firms would be able to get more software for a lower amount of capital, lowering fixed costs.
- Through cloud computing, firms and individuals can access programs and features that would not previously have been available to them; firms will be renting the software they need for a fixed period of time instead of purchasing it.
- Cloud computing has the potential to provide firms and individuals with the benefit of expertise that may be located in different parts of the world.
- Governments too stand to benefit from the introduction of cloud computing: lower IT costs, increased efficiency, greater flexibility and generally more effective IT.
- The expansion and effectiveness of the adoption of cloud technology depends to a large extent on the policies adopted by governments.
- Governments must create enabling environments by allowing the market to effectively and efficiently provide broadband at internationally competitive rates.
- South Africans are good adopters of technology, but the country has to work to ensure that users will have a better quality and higher quantity of internet connections.
- Overall, cloud computing increases the economic potential of South Africa at basically no additional cost to the country, which in itself, will help economic growth and job creation.



**Brad Smith**, General Counsel & Senior Vice President, Legal and Corporate Affairs, Microsoft, presented *Potential impact of cloud technology on emerging markets and the importance of the policy and regulatory environment*. Brad made the following points:

- Microsoft’s R&D budget is the largest in the world and 90% of it is focused on cloud computing.
- Effectively cloud computing is using someone else’s dataset ie all the data is stored elsewhere and returned to the client in “the blink of an eye”.
- Some cloud based services are already available, such as email and search facilities.
- Advances in hardware, software and communications make it possible to move a greater array of data to data centres, and make it possible to rely on software stored elsewhere.

Benefits include:

- Economies of scale: computing becomes cheaper... when resources are aggregated in a data centre, when you buy large quantities of hardware, design once, consolidate people who upgrade and maintain computers.
- Improved agility: businesses buy what they think they will need on a peak day ie more than needed most of the time; with cloud computing, you buy as you go ie more or less resources bought depending on needs; if you employ a new employee you can simply rent another resource; if you lose an employee, you can downsize. Cloud computing gives small businesses powerful tools at a lower cost.
- Cloud computing is dependent on a good regulatory and legal framework.
- Cloud technology is reliant on the availability of broadband capacity; internet usage depends worldwide on broadband capacity.
- Cloud computing is the future in South Africa and elsewhere, but the future will arrive at different points in time.
- There are two reasons for optimism in South Africa:
  - Undersea cables will give SA an ability to use cloud. The question is how to provide broadband across the country.
  - Advances in wireless technologies (super wi-fi) will make a difference to SA. Super wi fi utilises the unused capacity or “white space” in TV signals. Microsoft is innovating and developing this “white space” technology. This is an opportunity to connect many people at low cost and leapfrog

those who have spent a fortune on traditional connectivity. Accelerating this type of technology is important for SA.

- Other issues:
  - Protection of data and security: There is more and more data online; consumers, businesses and governments care about protecting it; practical and legal steps will need to be taken to do so.
  - Individual privacy: With cloud computing data moves from one's desktop to someone else's data centre. What does the law say about this? Who can share it, see it? How does one maintain control? It is important that people have confidence in the control of their own information or the technology won't flourish.
- These issues are international in scope, especially privacy and security. A lot of information crosses national boundaries, and fast. Important for countries and governments to work on these issues together.
- Microsoft is very excited about the possibilities; they represent a transformational change in the history of computers.
- It is essential to discuss the issues in advance of the arrival of the cloud.

### **Comments & thoughts from delegates, with responses from speakers (in no particular order)**

#### ***Privacy***

- Protection of people's privacy is essential, especially in scenarios where governments may seek information to abuse human rights.
- Microsoft and others are grappling with this.
- From a legal perspective, for a government to have jurisdictional authority, data must reside within its borders, so location of the data centre is very important.
- Microsoft analyses human rights conditions in countries before locating a data centre there. At the moment, for example, Europe / Middle East / Africa is served by Ireland and Netherlands. They would not turn over information unless it would be OK under their existing laws.
- Usually the terms and conditions honour legal processes unless there is a threat to human life or safety where, for example, you might provide information to police in a case involving emails.
- The question of privacy identifies how complicated life has become in the IT industry; it is important to be thoughtful.
- Protection of personal information bill needs to be in place before we even think about cloud computing.

#### ***Security***

- Downtime: if a data centre goes down, what then? Is all information lost or inaccessible?
- It is a problem if a large data centre goes down, but industry tends toward duplicate copies of data ie part of what you buy is redundancy ie data is saved in more than one location – far away from each other ie data centre is backed up elsewhere.
- This is common with a paid service; less often the case with a free service.
- So consumers should be aware of this and keep copies of, for example, emails on their own PCs.
- Don't worry about data storage and security because all data is encrypted by default, with users holding the keys.
- Good reasons to consider encrypting by default, but two issues on other side of the ledger:
  - Encryption does afford higher level of protection, but sometimes results in performance issues depending on how much computer power is required to encrypt and decrypt.
  - Tend to find that governments are not enthusiastic about encrypted data that only users have the key for eg in India, government wanted set of keys to Blackberry access. Individual privacy is advanced by encryption, but security might not be eg security of public in terrorist attacks.

### ***Models, competition and costs***

- Financial models will come to make comparisons.
- Skills are perhaps lacking in SA, but we are going in that direction.
- Pricing and cost models: one way to bring down prices is via experimentation and various options eg perpetual license vs. annual vs. monthly licensing.
- The more options the cheaper they are likely to be.
- Flexibility is very important; not only from data centre companies, but from telecoms companies too. Need at least two in each area for competition, flexibility, lower prices ie don't want a single provider.
- Also competition between different types of telecoms.
- Cloud computing turns fixed costs into variable costs; turns capital costs into expenses via monthly or annual subscription.
- Cloud is like pre-paid; individuals and small companies can buy only what they want.

### ***Data centres***

- Microsoft does not have data centre in China; there will be data centres in China.
- Microsoft has to think about what kind of data could / should be stored in eg China.
- Some data not human rights related; Microsoft thinking about this as future unfolds.
- Must establish best practices on a global basis and encourage governments to protect personal norms of privacy and freedom of speech.
- Some companies may split their data between data centre and their own (smaller) server.
- SA could be suitable for a data centre because of its strong Constitution.

### ***Government***

- Government talks about these issues, but lags behind on implementation.
- SA government could implement cloud computing for service delivery.
- There are initiatives to get more people connected; government can allow capital projects more quickly.
- Private sector could put broadband in place more quickly and should be enabled to do so.
- We are moving to digital TV which would free up even more “white space”; then could leapfrog other countries.
- Planning enough; implementation slow; low score on assisting people to implement new technology via perhaps tax breaks eg capital write offs.
- What can government uniquely do that the private sector does not? It can provide its own services as a cloud service, which is beneficial to citizens:
  - Reduce costs, stimulate market around cloud computing, better service.
  - Protect intellectual property – only government through law can do this; good judicial system, etc, will stimulate job creation in software programming.
  - Equip population with skills needed for people to compete for these jobs.
- Can't write legislation fast enough to keep up with technology; protection of information laws not in place; this needs to come first.
- Must acknowledge what is true of governments globally, they want to control business and people. They fear industries and things they do not understand, for example, cloud computing over which they have no control.
- Caution / advice to industry: don't want US to write regulation framework; we should rather be proactive; industry should interact with government; be vigilant and careful.
- DST is very receptive to technological innovations.
- Private sector and industry must be proactive and engage government re regulatory policies rather than leaving it to them.
- No opportunities in SA without data protection laws and privacy laws in place; SA takes ages to draft legislation.

## ***IP rights***

- IP protection for, for example, artists: As technology changes, requires people to ask if laws need updating to catch up. Government has not updated IP law. For example, singers were paid if their songs were played on the radio or at a concert, but not if sung in the shower. So they were paid for “public” use to many people, but not “private” or individual use. What about YouTube? Public or private? Played to one at a time, but many overall. IT industry must help identify questions and encourage dialogue. Not one answer, but if revising law in SA, should get benefit of patterns emerging elsewhere.

## ***Jobs***

- Shedding jobs is an important issue; companies will save money, but some people will be fired.
- There will be less people employed when move to cloud occurs, but in other areas SA will gain jobs.
- Even within IT sector, will see fewer jobs in IT support / maintenance, but will see more jobs in computer programming, for example in customised applications.
- All technology / change is disruptive: Schumpeter’s destruction vs. new jobs.
- O-desk, for example, employs 1 million people online.
- SA can buy skills cheaply.
- Unemployment: human / skills mismatch; many graduates out of universities don’t supply skills demanded by market.
- Training for the right kind of jobs going forward is important.
- Business services, finance, real estate, retail, communications sectors will benefit.
- Cloud computing makes other subsectors possible eg architecture.
- Microsoft thinks a lot about job creation; Gates was an economist and technologist; he created an ecosystem around the product.
- In SA 450 people work for Microsoft, but Microsoft has 6,500 South African business partners who employ many others.
- How to create an ecosystem around all new technology / software? How to best create jobs in SA? Not useful to create jobs via more protection which sacrifices economies of scale and keeps the cost of cloud computing higher.
- What type of jobs should we be thinking about?
- *Labour Market Dynamics Report*, see p 84/85: 11m employees; 700,000 employers (ie job creators); 1.3 m work for themselves. Employees median income: R2,900pm; Employers: R7,900pm; Self-employed: R1,950pm. 1.1m employees in SA earn over R35,000pm; only 35,000 employers earn over R35,000pm.
- If South Africans could trade with the rest of the world and use cloud computing, it would increase their incomes.
- Unemployment crisis in this country because we emulated labour policies of others.
- All companies in IT doing good work; doesn’t see anything stopping companies from giving clients what they want; environment OK at the moment, but need regulatory environment for future.

## ***Protectionism vs. local job creation***

- What do you want to achieve? Productivity? Best service? Local jobs?
- Best is what matters; local providers import some hardware / software / technology.
- Cloud computing will happen, cannot hold progress back, even to protect jobs.
- How we manage it in SA is what matters.
- We live in a global economy; exchange value with countries; protectionism leads to stagnation because there is no competition.
- Better service, better quality, lower costs – we see it in SA when we break down monopolies.
- Must be internationally competitive.
- Cloud will introduce new competitiveness and services into SA.
- If you have competitive service, can get international clients, etc.
- Our exports into Africa allow us to import other things we need.

- SA rand is a representation of value only; represents what value you get for a note.
- The broken window fallacy: value added to system removed if fixing broken windows, only added if add value eg exporting rather than importing.
- Imports: does not matter if importing services or goods... if you import nothing you cannot export; does not make sense to export all goods and get nothing back.
- Money is a medium of exchange; China exports a lot more than they import; Chinese citizens would be better off if they imported more.
- Keeping jobs within a country by not exporting is a fallacy; the more you do business with other countries the better off you are because you get their best skills.
- Cloud computing is not only about skills but about experience; helpful to import if necessary; increases opportunities for South Africans to get work in other areas.

### ***Productivity***

- Not one cell phone is made in SA, but everyone has one; does not have to be made here to increase productivity; what is good for consumer is what matters.
- When people use or adapt a technology, this is a big economic plus.
- Who makes software? Most is imported and this increases productivity.
- We should not be concerned about revenue going offshore.

### ***Questions***

- Cloud computing will change hardware and the knowledge economy, and software development. How will software developers be able to get into this technology / innovation?
- SA behind on IP issues. How does cloud computing help?
- What about revenues being shipped offshore re Dropbox or Office 365? As opposed to using open office or a locally hosted server. Are we talking about promoting locally hosted data centres and retaining income?
- What is the MTN experience with cloud computing? In SA they are providing cloud services; market is accessible in SA; SA laws or lack thereof are not to date a problem. Many challenges but no major issues. In Zambia and Kenya, government says to bring proposals to put cloud computing into schools, etc, but many countries in Africa do not allow cross border interaction.

### ***Future of cloud computing***

- When technical markets start to shift, the greatest benefits flow to those who move first; this is true of countries and companies.
- Will cloud be the future? If yes, get involved now.
- SA an important hub on an important continent; should be the first to invest.
- Be among the first, then look for opportunities to move faster and put legislation in place re privacy, etc.
- There is an opportunity for SA to have data servers; on service side a better opportunity; real value in modern life comes from creativity and innovation; cloud allows collaboration and innovation.
- SA has skills to add value into Africa; cloud computing will increase this.

Dr **Cheick Diarra**, Africa Chairman of Microsoft Corporation, closed the roundtable with the following comments:

- When technology first started in Africa, what slowed down its penetration was connectivity and expense.
- To take advantage of cloud computing you must have broadband connectivity; cost has set Africa back.
- Cables will bring broadband, but we must reduce the cost of connectivity, which in Africa is far higher than in the US.
- While regulations and the siting of the server, and so on, are important issues, the most important for Africa is affordability.



## Delegates



Arthur Ashby	Technician Team Lead	Gijima
Vivian Atud	Economist	Free Market Foundation
Johnny Aucamp	General Manager	MTN Business
Tony Bunn	Professor/Director MRC Innovation Centre	Medical Research Council
Warwick Chapman	eLearning Systems Manager	Democratic Alliance
Justin Colyn	General Manager	MTN Business
Antony Cook		Microsoft
Eustace Davie	Director	Free Market Foundation
Gail Day	Events Co-ordinator	Free Market Foundation
Elaine de Beer	Patent Specialist	Bowman Gilfillan Attorneys
Jolien de Klerk		Efficient Group
Anton de Klerk	Financial Director	Efficient Group
Cheick Diarra	Africa Chairman	Microsoft Corporation
Corne du Toit	Director	Lionheart Risk Management (Pty) Ltd
John Endres	Senior Project Officer	Friedrich Naumann Foundation
Roger Fester	Director ( Acting )	University of the Western Cape
Charl Heydenrych	Member	Free Market Foundation
Bryan Kariuki	Consultant	McKinsey & Company
Robert Kayihura		Microsoft
Ronald Klazar	Junior Lecturer	University of Pretoria
Femidah Koor	Legal	Eskom Holdings Ltd
Ntokozo Kunene	General Manager - Commercial Operations	The Innovation Hub Management Company
Eddie Laubscher	National Deputy Information Officer	Eskom Holdings Ltd
Kgomotso le Roux	Director	IKS Consulting and Promotions
Lelanthran Manickum	Researcher	Meraka Institute

Jim McCarthy	Deputy Senior Commercial Officer	U.S. Commercial Service, U.S. Embassy
Tim Modise	Chief Executive Officer	Sizwe IT Group
Hamlet Morule	Director: Government Affairs	Microsoft South Africa
Anver Natha	Manager: IT Operations	University of the Western Cape
Martin Naude	CTO	Entelect Software
Sivuyise Ndzendze	Partner	Esapha Rural Innovations
Mzu Nhlabati	Photographer	Creative Nation
Temba Nolutshungu	Director	Free Market Foundation
Mteto Nyati	Managing Director	Microsoft South Africa
Ekow Oppon	Project and Marketing Manager	SA Medical Research Council
Simon Phiri	Manager: Information & Communications Technology	Technology Innovation Agency
Mike Schüssler	Director	Economists
McLean Sibanda	Chief Executive Officer	The Innovation Hub Management Company
Thokozani Simelane	Head: Science	Africa Institute of South Africa
Wojciech Skowronski	Executive Director ICT	National Research Foundation
Brad Smith	Senior Vice President	Microsoft Corporation
Jasson Urbach	Economist	Free Market Foundation
Henriques Viola	Chief Executive Officer	Center for Mozambican and International Studies

## Collateral

### 1. Programme

### 2. Mike Schüssler / Jasson Urbach paper

*The Economic Impact of Cloud Computing in South Africa*

### 3. Readings

3.1. *2011 Trends Report: Cloud Computing* by Joshua Beil, Bob Egan, Mark Fidelman, Jeffrey Kaplan, Karl Scott, and Joe Tierney

3.2. *The Economic Consequences of the Diffusion of Cloud Computing* by Federico Etro

3.3. *Cloud Computing in Developing Economies: Drivers, Effects and Policy Measures* by Nir Kshetri

3.4. *The Evolution of Cloud Computing Markets* by Stefan Ried, Holger Kisker, and Pascal Matzke

3.5. *The Economics of the Cloud* by Microsoft

### 4. FMF in Brief / Membership forms: Corporate & Individual

### 5. Sponsor inserts

Friedrich Naumann Foundation for Liberty  
Microsoft South Africa

## Media briefing & coverage

The media briefing, which preceded the roundtable, was attended by the following journalists:

Peter Griffiths, Carte Blanche

Alex Kayle, IT Web

Devon Maylie, Dow Jones Newswires & The Wall Street Journal

Gareth Vorster, I-Net Bridge

Craig Wilson, TechCentral

Barbara Wood, Woodlands Media + colleague

### Techcentral.co.za

*Cloud computing can create jobs, says Schüssler*

<http://www.techcentral.co.za/cloud-computing-can-create-jobs-says-schussler/26393/>

### BusinessLive.co.za

*Cloud to boost SA economic growth and job creation*

[http://www.businesslive.co.za/southafrica/sa\\_generalnews/2011/10/02/cloud-to-boost-sa-economic-growth-and-job-creation](http://www.businesslive.co.za/southafrica/sa_generalnews/2011/10/02/cloud-to-boost-sa-economic-growth-and-job-creation)

### Centerbeam.com

*Cloud computing could boost economic growth and job creation in South Africa*

<http://www.centerbeam.com/news/IT-Economics/Cloud-computing-could-boost-economic-growth-and-job-creation-in-South-Africa---CBOID86768186-GRPOID50590015/View.aspx>

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