

Advancing public cloud computing: What to do now?

Priorities for industry and government



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The background of the slide is a blurred image of a blue banner with the World Economic Forum logo and text. The banner is hanging from a metal rod with gold-colored clips. The text on the banner is partially visible and out of focus, showing the words "WORLD ECONOMIC FORUM".

The **World Economic Forum** is an independent, international organization integrating business, political, intellectual and other leaders of society into a community committed to improving the state of the world

Reality check

\$55 billion (1)

Forecasted worldwide revenue from public IT cloud services by 2014, a compound annual growth rate of 27.4%.

33% (2)

Global companies have deployed or are piloting the more mature layer of cloud, SaaS. 23% of high performing IT companies have already deployed SaaS

25% (3)

Global companies which will be deploying cloud computing for critical applications within 2 years

44% (3)

Executives from global companies who believe cloud computing can provide their company with a lasting competitive advantage



30% (1)

The rate at which cloud computing will grow in 2011, or more than 5 times the rate of IT industry as a whole

2.3 million jobs (4)

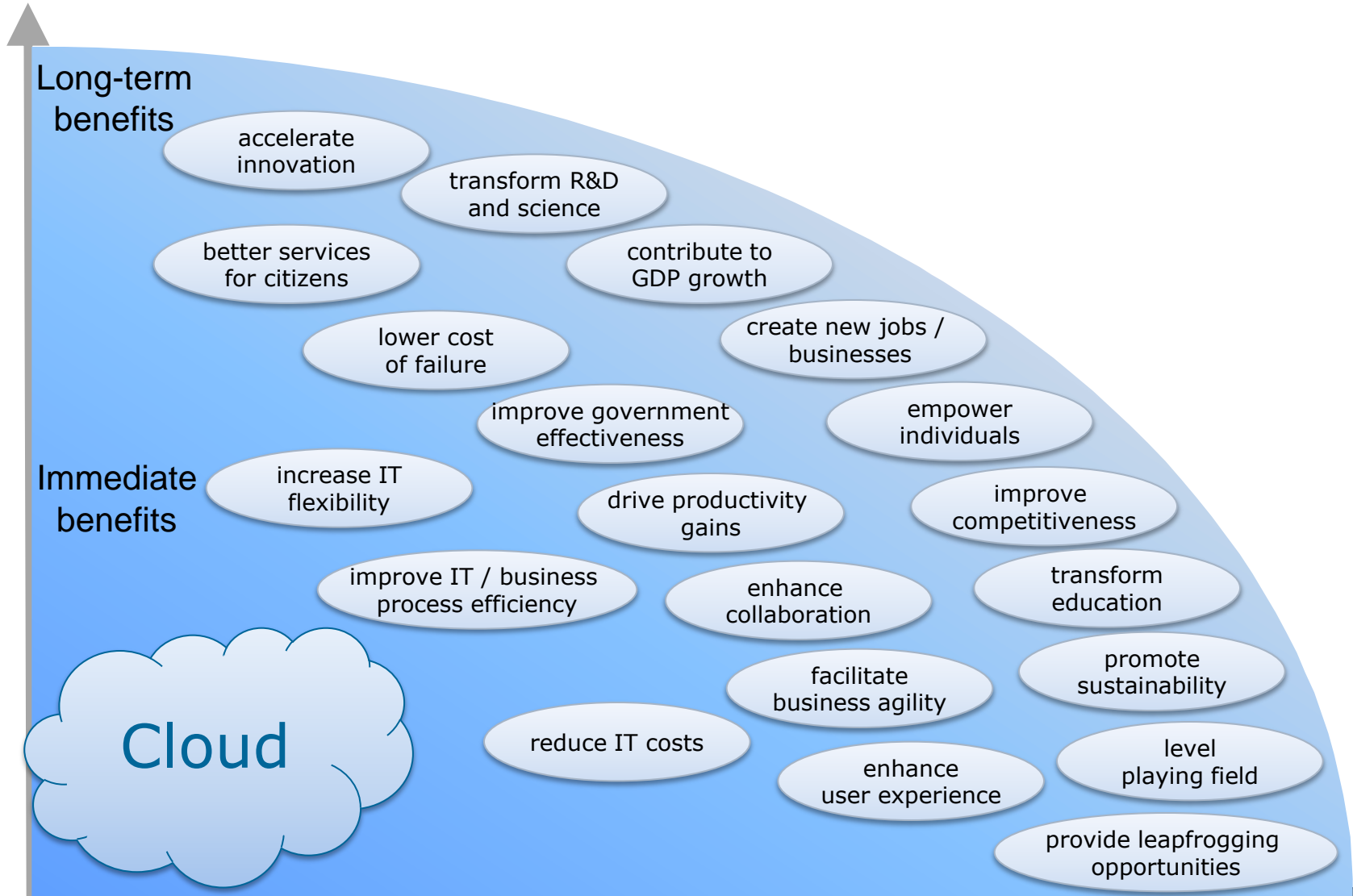
The net new jobs created by cloud on a cumulative basis over the period 2010 to 2015 across the top five EU economies

2.1% (4)

The average improvement in efficiency of an average employee because of cloud

Sources: ¹IDC [Worldwide and Regional Public IT Cloud Services 2010 – 2014 Forecast, June 2010], ² Accenture [“Mind the Gap - Insights from the 3rd global High Performance IT research study, Nov. 2010], ³ Accenture [Cloudrise: Rewards and Risks at the Dawn of Cloud Computing” Nov. 2010], ⁴ Center for Economics and Business Research [The cloud dividend”, Dec. 2010]

Potential benefits of public cloud



Challenges: clouds about cloud

1. Data governance

- Data location & jurisdiction
- Privacy & confidentiality
- Data ownership



2. Security

- Authorized access
- Integrity & availability
- Data loss
- Data destruction



3. Business environment

- Interoperability & portability
- Reliability
- Service level commitment
- Ecosystem maturity



Eight prioritized areas



1. Explore and facilitate the realization of cloud **benefits**



2. Advance understanding and management of cloud related **risks**



3. Promote service **transparency**



4. Clarify and enhance **accountability** across all relevant parties



5. Ensure data **portability**



6. Facilitate **interoperability**



7. Accelerate adaptation and **harmonization** of regulatory frameworks related to cloud



8. Provide sufficient network **connectivity** to cloud services

Examples of tangible actions

- ✓ Experimental programs to document empirical evidence about cloud's **positive social and economic impacts**
- ✓ Industry investment in **research into system-wide security risks**
- ✓ Service providers reaching agreement on **minimum transparency best practices**
- ✓ Telecoms providers working to **identify connectivity needs** by geography



Thank you

For further references

Advancing Cloud Computing: What To Do Now?

<http://www.weforum.org/reports/advancing-cloud-computing-what-do-now?fo=1>

Exploring the Future of Cloud Computing

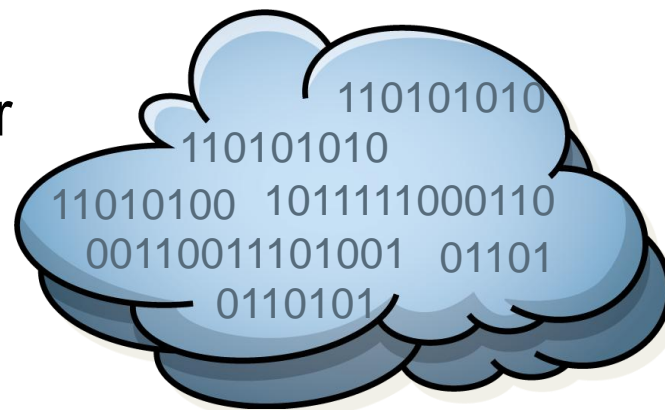
<https://members.weforum.org/pdf/ip/ittc/Exploring-the-future-of-cloud-computing.pdf>

Backup slides

What is the Cloud?

“Cloud computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the data centers that provide those services”¹.

~ *Above the Clouds: A Berkeley View of Cloud Computing* (2009)



¹ a) Access to the cloud can be provided via multiple technologies (Internet or other)
b) “Services” can include processing, storage, access to applications, and business processes

Cloud impact across sectors

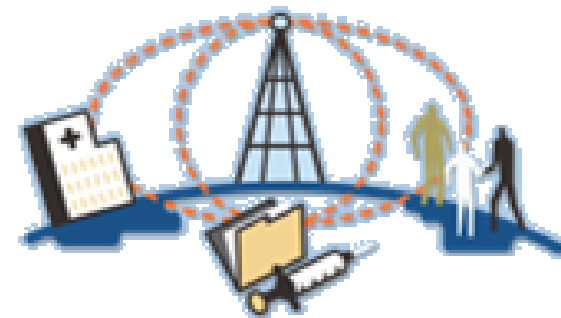
HEALTH CARE



Massive and flexible
computing power
for drug discovery



Shared platform
for health and
insurance services



Real-time health
monitoring and alert
distribution

Cloud impact across sectors

MANUFACTURING



Collaborative design
with suppliers
and customers



Improved
manufacturing
processes



Supply chain
coordination

Cloud impact across sectors

EDUCATION



Highly interactive /
collaborative learning



Access to teaching
resources from all over
the world



Low-cost
simulation

1. Data Governance



Data location & jurisdiction

It is not always clear which legal jurisdiction data in the cloud falls under – especially if the data is split up and stored in multiple locations.



Privacy & Confidentiality

In the cloud, data is stored on remote machines which are shared with other users. Concerns about data privacy & confidentiality restrict some users' willingness to use cloud for sensitive data.



Data Ownership

When a client moves data to the cloud, it is not always clear what rights the cloud service provider gains to access, modify or distribute that data.

2. Security



Authorized access

Users are concerned that data in the cloud is more susceptible to cyber attacks, as aggregating multiple users' data and services on a single platform makes it a more attractive target.



Integrity & availability

When users store their data in the cloud, it is not always clear who is accountable if the data is corrupted, lost or temporarily inaccessible. As many users' data may be shared on one machine, users are concerned about the possibility of problems with one user's services affecting another's.



Data Loss



Data Destruction

Data deletion is more challenging in the cloud, because cloud providers are the only ones with access to the physical infrastructure on which users' data is stored, and often data may be mirrored on multiple machines.

3. Business Environment

Interoperability & Portability

Government and users have lock-in concerns. Industry is concerned that a premature focus on standardization to promote interoperability & portability could hold back innovation

Reliability

Many users perceive that the reliability of cloud solutions is not yet sufficient for them to trust the cloud with their mission-critical needs. Industry believes that the market will quickly adapt.

Service level commitment

Users are held back by the lack of clear commitments from providers regarding such issues as uptime, response times, bandwidth, reliability and security – or by the lack of stipulated penalties

Ecosystem maturity

There are some concerns about cloud evolution, which include lack of understanding about cloud; speed, reliability and availability of network access; availability of expertise; underdevelopment of insurance solutions; threats to intellectual property

Governments are ready to act...

“ “ I want to make Europe not just
"cloud-friendly" but "cloud-active”

Neelie Kroes, European Commission, Davos 2011

Industry could take the initiative for a
cloud “code of conduct” and
regulation could then review it

“ “ Viviane Redding, European Commission, Davos 2011



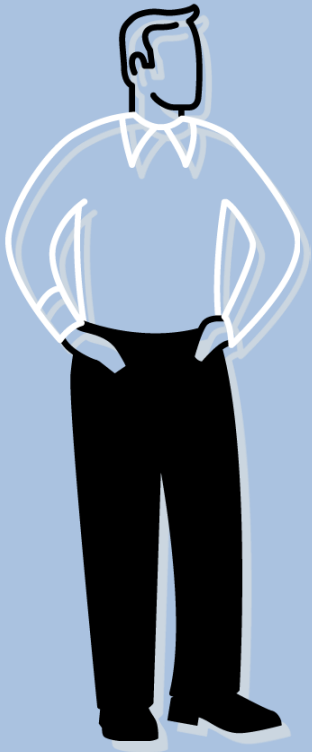
...and Industry is eager to move forward

There is **a need to be transparent** with roles, relationships, locations, and ownership of data. ”

Industry Participants, Brussels 2010

To create fair global competition, there is a need for **a globally coordinated effort** ”

Industry Participants, London 2010



A few real benefit cases

Cost reductions and savings

The **Swedish Red Cross** estimates return on investment into switching to cloud within 2 years and 20% in overall cost savings over the next 5 years

New innovative business models

Evernote (a service that allows capturing of all sorts of notes - such as text, scans, and snapshots)

Solving complex social problems

Wokai is a cloud-based non-profit organization that links up donor money with microfinance institutions in rural China

NASA uses “crowd-sourcing” to help it analyze its large collection of photos of the surface of Mars

Empowering research and innovation

Stanford University School of Medicine found that in the long run cloud computing can support clinical researchers who need to analyze large datasets

Reducing the environmental impact

Users of different **Microsoft** cloud services can reduce energy consumption per computing user by 30% to 90%, a study found

A few industry-specific benefit cases

Healthcare

With services such as HealthVault, electronic health records can follow patients from doctor to doctor, allowing more coordinated care

Retail

Laser Red app allows consumers to scan product barcode and instantaneously find out if product is cheaper somewhere else, online or brick-and-mortar

Banking

The split-the-bill app allows diners to divvy up the check from their individual accounts electronically

Energy

Cloud-based applications are now available that can automatically monitor video footage and apply logic to assess risks and accordingly trigger alerts

Government

Institutions will have the IT power to use data analytic techniques to detect data errors and potential fraud quickly and easily

Media & Entertainment

Analytics for one-to-one marketing—Pandora and Genius for iTunes—can aggregate and analyze user feedback in real time at the volume necessary requires the cloud