

Cloudscape II event
Brussels, 22-23 February 2010

Europe's position and the Challenges ahead

Economic crisis

Pres. Barroso to Heads of States & Governments, Feb 2010

- While between 2000 and 2008, the GDP per capita increased in EU by 13.5% and unemployment fell to 7%...
- ... in 2009 alone (year of crisis) GDP has fallen by 4%; industrial production is down 15% and is back to 1999 levels
- Since 2008, the number of unemployed has jumped by 7 million and unemployment increased to 10%, i.e. more than 23 million people, levels not seen since the early 1990s
- Public finances are severely affected, with average deficits now reaching 7% of GDP and debt levels having increased by 20 percentage points in two years, undoing 20 years of consolidation



We are in the midst of a profound social and economic business transformation!!!!

- ❖ We are now all connected: technically , socially and economically
- ❖ The world is becoming smarter: systems, processes, service delivery
- ❖ The world is becoming instrumented, interconnected, intelligent
- ❖ We can turn data into intelligence
- ❖ Hybrid Intelligence (AI+user feedback) is prevalent

- Europe has 23 Million SMEs
- They make up 99% of all firms and host 90% of the European workforce
- They are the prime candidates for a Cloud Experience

Source: Dr. Joao Schwarz Da Silva

IT-challenges

Public organisation & Enterprise

- Data deluge
- Services outside organisation's regime
- Need to align and sync with the business in a constantly changing environment
- Always faster product/service cycles

Resulting in:

- data-centre (infrastructure) complexity
- Increasing management/administration spending
- Scalability issues (low resource utilization..)
- IT-capital investment more difficult (particularly for start-ups) and riskier (particularly for SMEs, small organisations)

The Cloud promise

Cloud computing - Wikipedia, the free encyclopedia - Microsoft Internet Explorer provided by European Commission

W http://en.wikipedia.org/wiki/Cloud_computing

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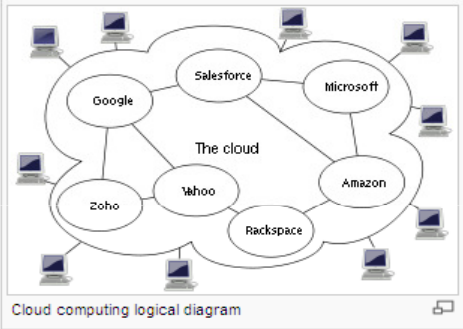
Cloud computing

From Wikipedia, the free encyclopedia

Cloud computing is Internet- ("cloud-") based development and use of computer technology ("computing").^[1] In concept, it is a **paradigm shift** whereby details are abstracted from the users who no longer have need of, expertise in, or control over the technology infrastructure "in the cloud" that supports them.^[2] Cloud computing describes a new supplement, consumption and delivery model for IT services based on the Internet, and it typically involves the provision of dynamically **scalable** and often **virtualized resources as a service over the Internet**.^{[3][4]}

The term *cloud* is used as a **metaphor** for the Internet, based on the cloud drawing used to depict the Internet in **computer network diagrams** as an abstraction of the underlying infrastructure it represents.^[5] Typical cloud computing providers deliver common **business applications** online which are accessed from a **web browser**, while the **software** and **data** are stored on **servers**.

A technical definition is "a computing capability that provides an abstraction between the computing resource and its underlying technical architecture (e.g., servers, storage, networks), enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction."^[6] This definition states that clouds have five essential characteristics: on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service.^[6]



Cloud computing logical diagram

The diagram illustrates a central cloud labeled "The cloud" connected to several major providers: Google, Salesforce, Microsoft, Amazon, Rackspace, and Zoho. Each provider is represented by a laptop icon, and they are all interconnected to the central cloud.

key economic incentive:

*renting cost is higher than owning cost over long-term;
in IT (rapid lifecycle of HW and to a lesser extent SW)
little motivation to own something for more than a few
years (the faster the technology moves, the more
incentive there is to rent it)*

Cloud issues

- **High-speed Internet access**
 - particularly for large datasets
- **Interoperability**
 - lock-in risks
 - portability of data, settings;
- **Privacy & Legal**
 - where is my data? whose law applies? who can access it?
- **Governance, control**
 - no control of updates, problem resolution priorities
- **Security**
 - data, outages
- **Operational**
 - inadequate application modelling to the cloud

Where do clouds appear today?

- **Business**

- 20% of world servers (over 1m annually) being bought by a small handful of companies which include cloud-service provision in their business portfolio (“cloud” giants)
- US dominance
- Rapidly increasing commercial interest in Europe – *single market / regulatory issues pose obstacles*

- **Governments**

- Attractive technology: cost cut; competition - efficiency

- **Research**

- Increasing efforts in the world
- In EU: Expert Group, RESERVOIR, new e-Infrastructure & ICT projects on clouds expected to be launched soon

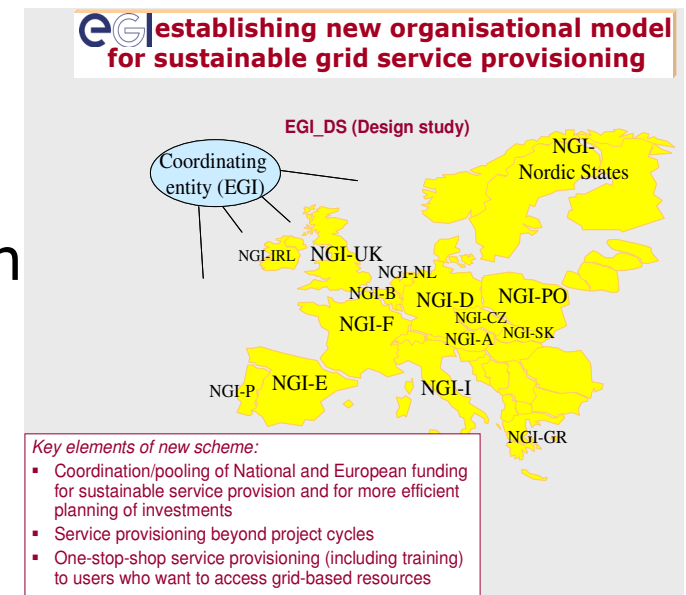
- **Standards**

- (Cloud-Standards Coordination WG, Cloud Security Alliance)
- *important EU support through OGF-Europe*



Cloud as a science infrastructure?

- Incentives: cost, flexibility/scalability, grid shortcomings
- Exploration phase, pilots (*which business models?*)
 - Big science? Small science? both?
 - Computation? Data storage/sharing? all?
 - Secondary tasks? Core tasks? (security?)
 - Public / private cloud services? Incentives? Sustainability?
- Grids-Clouds: converging? diverging? Hybrid solutions?
 - Example: OpenNebula toolkit (RESERVOIR) in EGEE case
- Link to existing investments?
 - Investment protection vs innovation
 - European Grid Initiative (EGI)



Roles for the EU/governments

- Research, e-Infrastructures (advanced platforms pioneering solutions in real world-settings)
- Open solutions, standards (innovation)
- Broadband
- Coherent framework for data flow and data protection (within Europe, in the world)
- Privacy and Security regime
- Energy, environmental (green) aspects
- Power of public procurement

Next steps for Europe (*in plan*)

- The European Digital Agenda (*in preparation*)
 - A Public European Cloud? (*role of e-Infrastructures as a proof of concept facility?*)
 - Very fast Internet access; Trust & Security..
- Research
 - ICT, RI (e-Infrastructure) Work-programmes 2011-12 (*in preparation*)
 - EGI establishment
- Data flow/protection, Trust and Security
 - Directives: Data Protection (*currently in review*), e-Privacy
 - Enhancement of cross-border security (including cyber-crime) through Lisbon Treaty
 - Opportunity for Europe to lead international initiatives based on internal experiences

Overcoming old ideas and business models

“I believe in horses....

The automobile is a transient phenomenon”



There's no better time to innovate than right now, anticipating the eventual upturn in the economy and laying the intellectual foundation for new products and services

Source: Dr. Joao Schwarz Da Silva

Thank you!



www.cordis.europa.eu/fp7/ict/e-infrastructure/