European Cloud Computing Strategy

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What is at stake?

Cloud as a growth engine

Boost GDP:
- €940 bn cumulative impact for 2015-2020
- €250bn in 2020

Boosts productivity and efficiency:
- Up to 90% of cost savings for public administrations and private companies

Business creation:
- 400,000 new SMEs

Potential for job creation:
- 3.8 million cloud-related jobs

"Several strategic technologies such as Big Data and Cloud Computing are important enablers for productivity and better services.

Cloud computing should improve access to data and simplify their sharing. Big Data aims to process, collect, store and analyse large amounts of data.

EU action should provide the right framework conditions for a single market for Big Data and Cloud computing, in particular by promoting high standards for secure, high-quality and reliable cloud services.

The European Commission and the Member States, with the support of the "European Cloud Partnership", should continue to make every effort to put Europe at the forefront of cloud adoption.

The European Council calls for the establishment of a strong network of national digital coordinators which could play a strategic role in Cloud, Big Data and Open Data development."

Almost all users see cost savings (2012)

We have seen (or expect to see) a cost increase. Too early to tell. Don't know.

Cost Savings

- 1% to 4%
- 5% to 9%
- 10% to 19%
- 20% to 29%
- 30% to 49%
- 50% or more
- We have seen (or expect to see) a cost increase
- Too early to tell
- Don't know

3/12/2014
But.... Need for Trust, Regulatory Certainty and Openness

Legal jurisdiction

Where does legal jurisdiction of the service reside?
And jurisdiction of the data?
I don’t want any of my data being hosted in the US...

Security and data protection

Who protects my data?
Who backs it up?
Security breaches?
Who is responsible when something goes wrong?

Trust

How do I tell which services are trustworthy?
Who guarantees the data integrity?
Availability?

Data Access and Portability

Can we interoperate with other systems?
Can we move from one service to another?
IDC Western European Cloud Cloud Forecast 2014

Cloud Models

- Public Cloud: 30%
- Hosted Private Cloud: 53%
- IT for Private Cloud: 20%

Bill. €10.2
Bill. €4.02
Bill. €4.3

% of General IT spending
- Public Cloud: 5.6%
- Hosted Private Cloud: 2.2%
- IT for Private Cloud: 2.4%
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<th>The Cloud Computing Strategy</th>
<th>Cloud strategy's key actions</th>
<th>Groups working on implementing the strategy</th>
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<tr>
<td>The European Commission's strategy 'Unleashing the potential of cloud computing in Europe'</td>
<td>Cutting through the jungle of <strong>technical</strong> standards</td>
<td>ETSI: Cloud Standards Coordination Launched on 4-5/12/2012</td>
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<tr>
<td>Adopted on 27 September 2012, it is designed to speed up and increase the use of cloud computing across the economy</td>
<td>Development of model 'safe and fair' contract terms and conditions</td>
<td>The Cloud Select Industry Group on Certification Schemes Launched on 21/02/2013</td>
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<td>A European Cloud Partnership to drive innovation and growth from the public sector.</td>
<td>The Cloud Select Industry Group on Service Level Agreements Launched on 10/04/2013</td>
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<td>The Cloud Computing Contract Group Launched on 19/11/2013</td>
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<td>Steering Board Launched on 19/11/2012</td>
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<td>The European Cloud Partnership To be launched In 11/2013</td>
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European Cloud Computing Strategy

- Identification of relevant standards (ETSI) for security, service level agreements (SLAs) and interoperability (Dec 13)
- Objective catalogue of security certification schemes (ENISA) (Feb 2014)
- Commitments to adhere to Data Protection rules (Code of Conduct) (Feb 2014)
- European Cloud Partnership Vision Paper (March 2014)
- Common terminology and metrics for SLAs and contract terms (Mid 2014)
ETSI CSC - Main conclusions

Key action 1-1

NO Jungle of Standards

Enough Standards to start with

Despite new standards coming, some gaps identified

Foster collaboration to ensure no fragmentation happens

Cloud-CERT Solutions - ENISA

- Listing certification schemes
  - Objective list of security certification schemes related to cloud
  - Who governs the scheme, who audits, what is the standard
  - A process for adding/updating schemes

- Meta-framework to be developed by ENISA
  - High level security objectives
  - Detailed auditable security measures
  - Security measures divided in levels
  - Mapping to existing schemes
  - Close collaboration with CERT-SIG
  - First draft due mid 2014
Cloud Computing Certification

Cloud Certification Schemes List - CCSL

Welcome to the Cloud Certification Schemes List (CCSL) - a listing of different certification schemes for cloud computing customers, developed and maintained by ENISA in tight collaboration with the European Commission and the private sector (see below).

**What is a cloud certification scheme?**
Before buying a cloud service, customers want to know if the service is secure and reliable. But cloud computing services are complex and built up from many different ICT components (cables, large data centers, software, etcetera), so it is not really feasible for customers to check all the technical details by themselves. In a cloud certification scheme one fixed set of security requirements is checked, once for all customers. In this way a certification can simplify the procurement of cloud services by customers.

**How to use this list?**
CCSL gives an overview of the different existing certification schemes which could be relevant for cloud computing customers. CCSL also shows which are the main characteristics of each certification scheme, for example, which are the underlying standards, who can perform the certifications, who audits the cloud services. CCSL also provides links and references to each certification schemes for further reading.

Click on the icons of each certification scheme below, to view the characteristics of each scheme. Note that in the future more schemes may get listed here.
**Key action 2-1**

**SLAs: Creating A Common Vocabulary of Understanding**

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<th>Purchaser’s Dilemma</th>
<th>SIG SLA Support</th>
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<td>“Cloud Contracts are not comparable and use different definitions”</td>
<td>Template SLAs and Terms and Conditions</td>
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<td>“I don’t know which Cloud Delivery Options are right for my specific need”</td>
<td>Cloud Decision Flowchart</td>
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<td>“I don’t know if I have considered the most important aspects for this contract”</td>
<td>Cloud Contract Checklist</td>
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Code of Conduct on DP: Background

• Directive 95/46/EC art 27 encourages adoption of codes of conduct and their endorsement by art 29 Working Party

• EC Cloud Computing Strategy of 29-09-2012
  “Work with industry to agree a code of conduct for cloud computing providers to support a uniform application of data protection rules which may be submitted to the Article 29 Working Party for endorsement in order to ensure legal certainty and coherence between the code of conduct and EU law.”
Data Protection Code of Conduct

Key action 2-2

- Code of Conduct Working Group
  Launched 10 April 2013
  Cloud Select Industry Group
  DG JUST & DG Connect Co-Chair

- Work progress
  - Code for data processors (B2B)
  - Draft sent to WP29 end February 2014
  - Aim for endorsement before end of this Commission
  - Working on governance structure to put into practice
**European Cloud Partnership**

**Steering Board:**

**Trusted Cloud Europe Report Consultation - March 2014**

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**Action: Identifying and creating best practices**

- Standards / Security
- Code of Conduct
- Fair Contracts
- SLA

Including: support for cross border recognition of best practices

- Encouraging voluntary adoption
- Supporting self-certification
- Supporting third party certification

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**Action: Consensus building**

- Between industry bodies
- Between citizens
- Between Member States

Through consultation, workshops, studies, working groups

In order to better understand requirements for use cases

- Data type requirements
- Service type requirements
- Need for enforcement

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**Expected results:**

- Alignment of policies
- Alignment of legislation
- Pilots

And ultimately: functioning Single Market:

- Common understanding of use cases
- Common understanding of requirements
- Common application of best practices
Key action 3-2

Cloud-for-Europe

Prepare public sector procurement of secure, reliable, cost-effective CC services avoiding lock-in

• Funded FP7 RTD programme (10m€ CSA/PCP).
• Umbrella initiative: builds on national initiatives
• Inclusive: (CSA) all interested countries can take part consultation, awareness raising, training.
• Cooperation public sector & industry (pre-commercial procurement)
• Industry briefing at CloudSecure2014 (Amsterdam) 31/3/14
• Further details: project coordinator Fraunhofer FOKUS (linda.strick@fokus.fraunhofer.de)
What about research and innovation?

COM(2012)529 of 27 September 2012:

- Make full use of other instruments, notably through research and development support under Horizon 2020 on long term challenges specific to cloud computing as well as assisting the migration to cloud-based solutions

Current status: significant resources allocated to support cloud computing research and innovation within the H2020 LEIT ICT WP2014-2015

Additional possibilities: under Societal Challenges and through other instruments e.g. SME Instrument
**FP7 ICT Work Programmes**

**WP 2007-2008 (Call 1):** Service and Software Architectures, Infrastructures and Engineering: €120 million

**WP 2009-2010 (Call 5):** Internet of Services, Software and Virtualisation: €110 million

**WP 2011-2012 (Call 8):** Cloud Computing, Internet of Services and Advanced Software Engineering: €70.0 million

**WP 2013 (Call 10):** Software Engineering, Services and Cloud Computing: €41.5 million

**Total:** 94 projects (19 IPs, 1 NoE, 59 STREPs & 15 CSAs);
Average size: €3.6 million/project

**Total EC funding** over 7 years for Software & Services and Cloud Computing: €341.5 million + parts of the Future Internet PPP

**Average EU budget:** more than €50 million per year
• **10 out of 12** research projects from FP7 Call 10 focused on cloud computing

• **Research priorities have adapted to the fast evolution of cloud computing and related services**