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# EU initiatives on Cloud Computing

Presented by: Inês Nolasco\*

ITU Expert & Senior Legal and Regulatory Advisor, Vodafone Portugal

*\* The views expressed herein are purely personal*



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# What is cloud computing?

‘Cloud computing’ in simplified terms can be understood as the storing, processing and use of data on remotely located computers accessed over the internet. This means that users can command almost unlimited computing power on demand, that they do not have to make major capital investments to fulfil their needs and that they can get to their data from anywhere with an internet connection. Cloud computing has the potential to slash users' IT expenditure and to enable many new services to be developed. Using the cloud, even the smallest firms can reach out to ever larger markets while governments can make their services more attractive and efficient even while reining in spending.

*In 2012 EU Cloud Strategy*



Combination of three interdependent elements (i) the data infrastructures which store and manage data; (ii) the high-bandwidth networks which transport data; and (iii) the ever more powerful computers which can be used to process the data.

# A few defining features



- Hardware owned by the provider. Its use is dynamically optimised across a network of computers (i.e. location of data/processes may vary; user workload moved around e.g. between PCs & data centers)
- Remote hardware stores and processes data and makes it available e.g. through applications
- Users can access their content and use their software when and where they need it (e.g. smartphone, laptop)
- Cloud set-up consists of layers – hardware, middleware, apps.
- Payment usually by usage. Easy to upgrade hardware use (new storage capacity)

*In 2012 EU Cloud Strategy*



# Key EC initiatives on cloud computing



## EU Cloud Strategy

2012 Communication - *Unleashing the potential of cloud computing in EU*

2014 Report on implementation of the EU Cloud Strategy

## EU Cloud Initiative

2016 Communication - *EU Cloud Initiative - Building a competitive data and knowledge economy in Europe*

2016 - EU supported study - *Measuring the economic impact of cloud computing in Europe*

# Key issues



Data interoperability, portability, reversibility;  
security - avoid lock-in - **standards**

Address environmental challenges - set  
energy consumption, water consumption and  
carbon emissions **standards**

Allow users to compare offers and the  
meeting of standards – **certification**

Protect users – define **model contract & SLA  
terms**

Ensure **data protection & security**

# EU Cloud Strategy (2012)

## The Cloud computing strategy

The European Commission's strategy  
'Unleashing the potential of cloud computing in Europe'

Adopted on 27/9/2012. Its aim is to speed up the cloud uptake across Europe

## Cloud strategy's key actions

Cutting through the jungle of standards

Development of model safe and fair contract terms

A European Cloud Partnership to drive innovation and growth for the public sector.

*Enabling and facilitating faster adoption of cloud computing throughout all sectors of the economy which can cut ICT costs, and when combined with new digital business practices, can boost productivity, growth and jobs.*

# Working Groups

## Cutting through the jungle of standards

### Necessary standards:

- Security
- Interoperability
- Data portability
- Reversibility

 Cloud Standards Coordination (ETSI)

### EU-wide voluntary certification schemes:

- Guiding principles for cloud certification schemes
- List of existing certification schemes

 Cloud Select Industry Group on Certification Schemes

### Recognising technical specifications for the protection of personal information:

- European Standardisation
- Public procurement

 Multi-Stakeholder Platform

### Address the environmental challenges of increased cloud use:

- Agreeing with industry harmonised metrics for energy efficiency of cloud computing

## Safe and Fair Contract terms and Conditions

### Model terms for cloud computing service level agreements for contracts:

- Common European Sales Law
- Consumers and SMEs

 Cloud Select Industry Group on Service Level Agreements

### Code of conduct for cloud computing providers:

- Support a uniform application of data protection rules

 Cloud Select Industry Group on Code of Conduct

### European model contract terms and conditions:

- SMEs
- Consumers

 Expert Group on Cloud Computing Contracts

### Contractual clauses applicable to transfer of personal data to third countries:

- Review
- Adapt to cloud computing

## Drive innovation and growth from the Public Sector

### Procurement of cloud by public sector:

- ECP Steering Board providing advice to the Commission on strategic options
- Member States' uptake actions supported by FP7 and H2020: C4E, PICSE, and ICT8.

 European Cloud Partnership (ECP)



# EU Cloud Initiative (2016)

Open up to every research centre & project and every researcher in EU the world-class supercomputing, data storage and analysis capacity which they need to succeed in the global, data-driven innovation system (investment : €6.7 billion). Fully exploit benefits of Big Data (move, share and re-use data seamlessly across global markets and borders, among institutions and research disciplines)

## EU Open Science Cloud

- Trusted, open virtual environment for storing, sharing and re-using scientific data and results/large volumes of information generated by the big data. - Provide funding to federate existing research IE and scientific clouds and support the development of cloud based services for open science. Encourage scientific data sharing, open research data by default.

## EU Data Infrastructure

- High-bandwidth networks and supercomputing capacity necessary to access and process large datasets stored in the Cloud (1st scientific community, 2nd public sector & industry). Calls for the support of EU Member States to develop a High Performance Computing ecosystem based on European technology. Goal: to have exascale supercomputers based on EU technology in the global top 3.

Provide European science, industry and public authorities with:

- a world-class data infrastructure to store and manage data;
- high-speed connectivity to transport data; and
- ever more powerful High Performance Computers to process data.

# EU study - Measuring the economic impact of cloud computing in Europe (2016)

- Highlights the economic benefits of cloud computing uptake and supporting policy measures (2020/EU cloud market € 44.8b)
- Cloud computing - crucial driver for growth. Could add a cumulative total revenue of € 449 billion to the EU28 GDP over the next 5 ys.
- Data localisation restrictions is most concerning barrier.



Measuring the economic impact of cloud computing in Europe



FINAL REPORT  
A study prepared for the European Commission  
DG Communications Networks, Content &  
Technology by **Deloitte.**





# STATE OF THE UNION 2017

## FREE FLOW OF NON-PERSONAL DATA

### Free flow of non-personal data


#### What is the free flow of non-personal data?

Free flow of non-personal data means unrestricted movement of data across borders and IT systems in the EU. It is a key building block of the Digital Single Market and considered the most important factor for the data economy to unleash its full potential and to double its value to 4% of GDP in 2020. The new measures are in line with already existing rules for the free movement and portability of personal data in the EU.



#### What is the situation today?

The European Commission has identified 4 types of obstacles to data mobility within the EU:

<p><b>Data localisation restrictions</b> by Member States' public authorities<sup>1</sup></p>  <p>62% of surveyed respondents stated that data localisation restrictions should be removed</p>	<p><b>Obstacles to movement of data</b> across IT systems (so-called vendor lock-in)<sup>1</sup></p> <p>72% of surveyed SMEs that use cloud services <b>intended to switch providers</b></p> <p>57% of these experienced difficulties in doing so</p>	<p><b>Legal uncertainty</b> leading to caution on the market regarding cross-border data storage and processing<sup>1</sup></p> <p><b>Complex EU legal patchwork</b> applicable in different sectors/situations, but <b>lack of overarching principle</b> of free flow of non-personal data</p> <p>55% of surveyed respondents believe that legislative action was necessary</p>	<p><b>Lack of trust</b> due to security risks and concerns about the cross-border availability of data for regulatory purposes</p> <p>57% of large businesses and 38% of SMEs <b>lack trust due to risks of security breaches</b><sup>2</sup></p>
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<sup>1</sup> Synopsis Report of the Public Consultation "Building a European Data Economy" Annex to the Synopsis Report of the Public Consultation "Building a European Data Economy", [ec.europa.eu/digital-single-market/en/news/summary-report-public-consultation-building-european-data-economy](http://ec.europa.eu/digital-single-market/en/news/summary-report-public-consultation-building-european-data-economy)

<sup>2</sup> From Eurostat, "Factors limiting enterprises from using cloud computing services, by size class, EU-28", 2014 (9% enterprises using the cloud); [ec.europa.eu/eurostat/statistics-explained/index.php/Cloud\\_computing\\_-\\_statistics\\_on\\_the\\_use\\_by\\_enterprises](http://ec.europa.eu/eurostat/statistics-explained/index.php/Cloud_computing_-_statistics_on_the_use_by_enterprises)

### What does the Commission propose?

#### One single principle across the EU, guaranteeing free flow of non-personal data:

- The **free flow of non-personal data principle** removes unjustified data localisation restrictions imposed by public authorities, enhancing legal certainty and raising trust.
- The principle of **data availability for competent authorities** makes sure that the data remains accessible for regulatory and supervisory control also when stored or processed across borders in the EU.
- Actions to encourage cloud service providers to develop self-regulatory **codes of conduct** for easier switching of provider and porting data back to in-house servers.
- **Security requirements on data storage and processing remain applicable**, also when businesses store or process data in another Member State. The same applies when they outsource data processing to cloud service providers.
- **Single points of contact** in each Member State, to liaise with other Member States' contact points and the Commission to ensure the effective application of the new rules on the free flow of non-personal data.

### What are the benefits for the EU?

#### A basis to maximise the full potential of the Digital Single Market<sup>3</sup>:

<p><b>Lower costs for data services and greater flexibility for companies could boost EU GDP by up to €8 billion/year.</b></p>	
<p>Easier to do business across borders in the EU (no duplication of data storage facilities anymore).</p>	<p>SMEs and startups will more easily scale up and enter new markets across borders.</p>
<p>The new rules complement already existing rules for personal data that will fully apply as from 25 May 2018. Together both frameworks will enable free movement of all types of data in the Single Market.</p>	<p>Potential savings of up to 55% for service providers. Lower prices for users of data storage and processing services.</p>
<p>A competitive EU Single Market for secure, reliable and affordable cloud services.</p>	<p>Enabling the scale up of innovative data services across the EU.</p>

#### Examples of predicted additional revenue by sectors (2015-2020) assuming that data localisation restrictions are removed<sup>4</sup>:

<p><b>Manufacturing</b></p> <p>+ € 1.9 billion</p>	<p><b>Distribution, retail &amp; hotels</b></p> <p>+ € 4.5 billion</p>	<p><b>Finance &amp; business services</b></p> <p>+ € 2.5 billion</p>	<p><b>Government, education &amp; health</b></p> <p>+ € 1.5 billion</p>
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<sup>3</sup> "EU GDP is predicted to increase by €8 billion/year": from ECIPE, Policy Brief "Unleashing Internal Data Flows in the EU: An Economic Assessment of Data Localisation Measures in the EU Member States" [ecipe.org/publications/unleashing-internal-data-flows-in-the-eu](http://ecipe.org/publications/unleashing-internal-data-flows-in-the-eu), December 2016.

<sup>4</sup> "Savings of up to 120% ...": from study SMART 2015/0016, London Economics "Facilitating cross border data flow in the Digital Single Market", [ec.europa.eu/digital-single-market/en/news/facilitating-cross-border-data-flow-digital-single-market](http://ec.europa.eu/digital-single-market/en/news/facilitating-cross-border-data-flow-digital-single-market).

<sup>5</sup> From study SMART 2014/0031, Deloitte, "Measuring the economic impact of cloud computing in Europe".





**Thank you!**