



IEEE ICC 2013 Budapest, Hungary

Industry & Business Panel: Cloud Computing and Communication

11 June 2013

Francisco.Medeiros@ec.europa.eu

European Commission

DG CONNECT

Deputy Head of Unit E2

Software & Services, Cloud Computing

Political background

27 September 2012: COM on "Unleashing the Potential of Cloud Computing in Europe"

+ accompanying Staff Working Document

http://ec.europa.eu/information_society/activities/cloudcomputing/docs/com/com_cloud.pdf

Cloud computing strategy

"Unleashing the potential of cloud computing in Europe"

- Deliver a net gain of 2.5 million jobs
- Boost of €160 billion to the EU GDP by 2020

The strategy is designed to stimulate the uptake of cloud computing across all sectors of the economy

Main barriers to cloud adoption

Non-technical barriers:

- Lack of trust
- Data protection and data portability
- Lack of uniform privacy rules
- Contractual terms and jurisdiction
- Service level agreements (between different parties)

Technical barriers:

- Storage capacity
- Faster networks
- Minimum set of standards and security certificates

Main points of the strategy

- Foster **interoperability**, **data portability** and **reversibility** (mapping of standards by the end of 2013)
- EU-wide **voluntary certification** schemes for trustworthy provision of cloud-based services
- Address **environmental** challenges (metrics for energy and water consumption, and carbon emissions)
- Development of 'safe and fair' **contract terms and conditions**, including Service Level Agreements
- Launch **European Cloud Partnership** (Member States and industry) to leverage the power of public sector procurement

- 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

Digital Agenda for Europe

The DAE review adopted on **18 December 2012** identified **seven** key areas for further efforts to stimulate the conditions to create **growth** and **jobs** in Europe:

1. A new and stable broadband regulatory environment
2. New public digital service infrastructures through Connecting Europe Facility loans
3. Launch a Grand Coalition on Digital Skills and Jobs
4. Propose a EU cyber-security strategy and a Directive
5. Update the EU's Copyright Framework
- 6. Accelerate cloud computing through the public sector buying power**
7. Launch a new electronics industrial strategy – an "Airbus of Chips"

<http://ec.europa.eu/digital-agenda/en/news/digital-do-list-new-digital-priorities-2013-2014>

Digital Agenda Assembly 2013

Dublin, Ireland, 19-20 June 2013 (invitation only)

Workshop 4: Broadband demand stimulation: the impact of cloud

- How cloud computing will foster demand for broadband
- Infrastructure requirements for cloud services
- Role of the public sector in stimulating broadband demand
- Role of cloud providers in creating demand for high speed broadband
- Experiences of collaboration between cloud providers and telecom operators in order to guarantee minimum QoS
- Private and public sector business models

<https://ec.europa.eu/digital-agenda/en/workshop-4-broadband-demand-stimulation-impact-cloud>

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 investment: €341.5 million over 7 years

Average = €48.8 million per year

FP7 implementation

	Budget [MEUR]	IP +NoE	STREP	CSA	Total
Call 1	120.0	6+1	18	3	28
Call 5	110.0	7	16	5	28
Call 8	70.0	4	15	3	22
Call 10	41.5	2	10	4	16

Total EU contribution: €341.5 million

78 projects ... plus 16 new projects from Call 10

Total: 94 projects (average: €3.6 million/project)

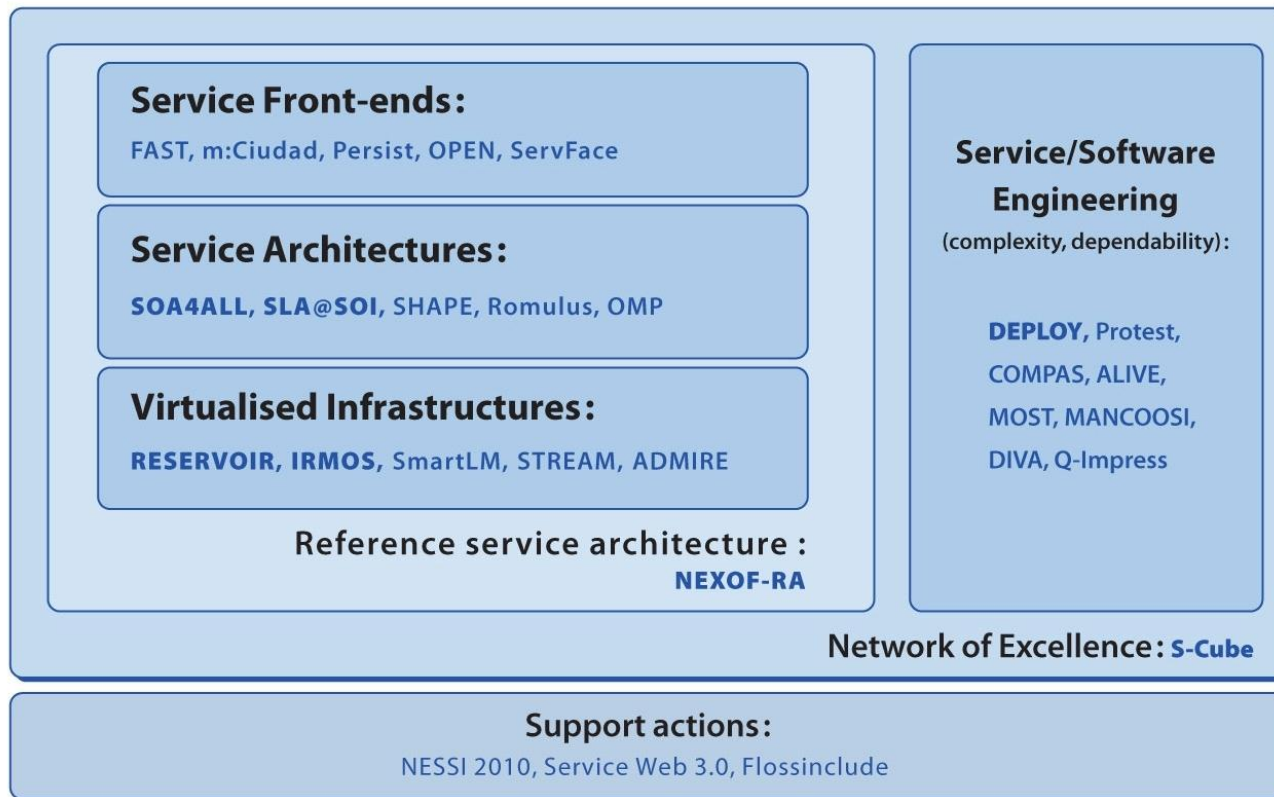
FP7 ICT Call 1: target outcomes

Service architectures, platforms, technologies, methods and tools

Services/software engineering approaches

Strategies and technologies enabling mastery of complexity, dependability and behavioural stability

Virtualisation tools, system software, middleware and network-centric operating systems



*IP/NoEs in bold

Call 1: EU contribution = €120 million

http://cordis.europa.eu/fp7/ict/ssai/projects-call1_en.html

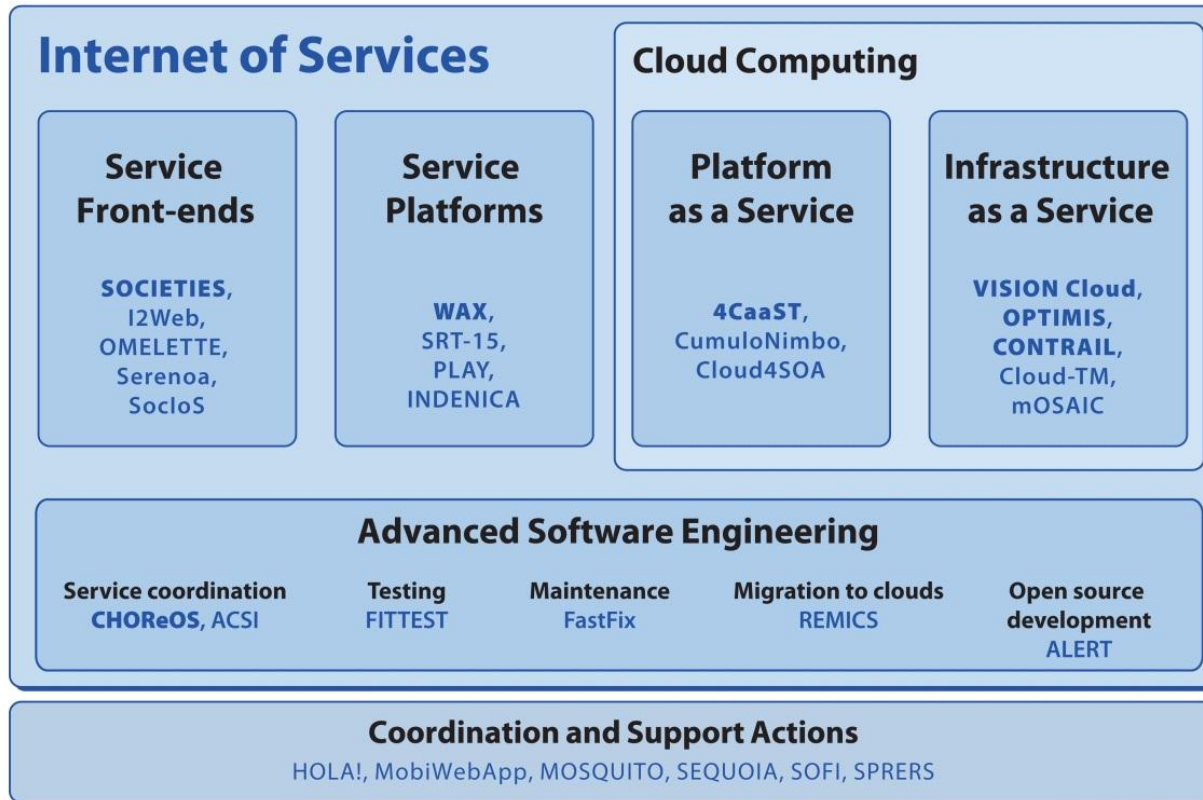
FP7 ICT Call 5: target outcomes

Service architectures and platforms for the Future Internet

- Service front ends
- Open, scalable, dependable service platforms, architectures and specific platform components
- Virtualised infrastructures

Highly innovative service/software engineering

- Service/software engineering methods and tools (re: automatic support)
- Verification and validation methods and tools (re: large scale systems)
- Methods and tools supporting open source software



* IP/NoEs in bold

Call 5: EU contribution = €110 million

<http://cordis.europa.eu/fp7/ict/ssai/docs/2010-3197-call5factsheets-final.pdf>

*SPRERS is a Call 4 coordination and support action

FP7 ICT Call 8: target outcomes

Cloud computing

- Management of cloud resources
- Infrastructure virtualisation
- Interoperability, portability, data protection

Internet of Services

- Service engineering methods and tools
- Integration of real and virtual worlds, Internet of Things
- Management of internet-scale applications

Advanced software engineering

- Architectures and front ends
- Quality assurance techniques
- OSS development, composition and life cycle management

Internet of Services

Broker@Cloud
COMPOSE
CloudScale
BETaaS

Cloud Computing

PaaSage
Celar
LEADS
BigFoot
CloudSpaces
HARNESS
OpenI

Advanced Software Engineering

MODAClouds **ARTIST** PROWESS U-QASAR MIDAS
MARKOS RISCOSS OSSMETER

Coordination and Support Actions

PROSE OCEAN SUCRE

Call 8: EU contribution = €70 million

<http://cordis.europa.eu/fp7/ict/ssai/docs/projects/factsheets-call8-brochure.pdf>

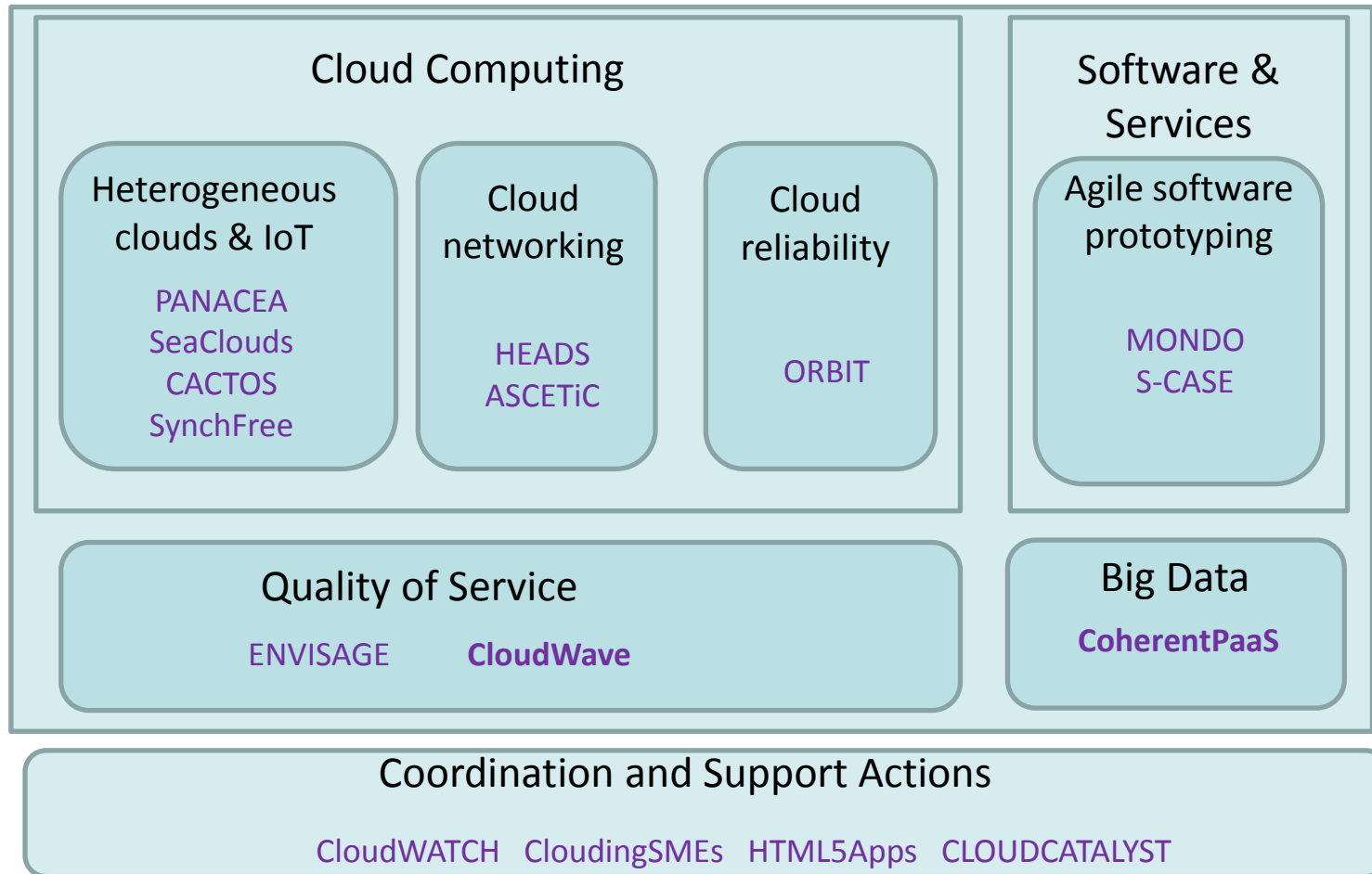
FP7 ICT Call 10: target outcomes

Advanced **computing architectures** and **software engineering** for the **cloud** and beyond

- Efficient and secure usage of distributed computing resources
- Advancing cloud architectures and standards

Innovative **software and tools for services**

- Self-adaptive Internet-based services
- Widely distributed architectures, large data sets and sensors
- Social, open and collaborative software development



Call 10: EU contribution = €41.5 million

DRAFT DIAGRAMME

Focus of projects (1)

PANACEA: addresses the ability of self-recovery after failure

SeaClouds: supports orchestration of modules across the cloud

CACTOS: optimise deployment based on dedicated simulation techniques

SynchFree: conflict-free replication of data in the cloud

HEADS: framework to manage heterogeneity of the network

ASCETiC: aims to reduce energy consumption

ORBIT: new paradigm for virtualised resource consolidation

Focus of projects (2)

MONDO: increased scalability of models used in software engineering

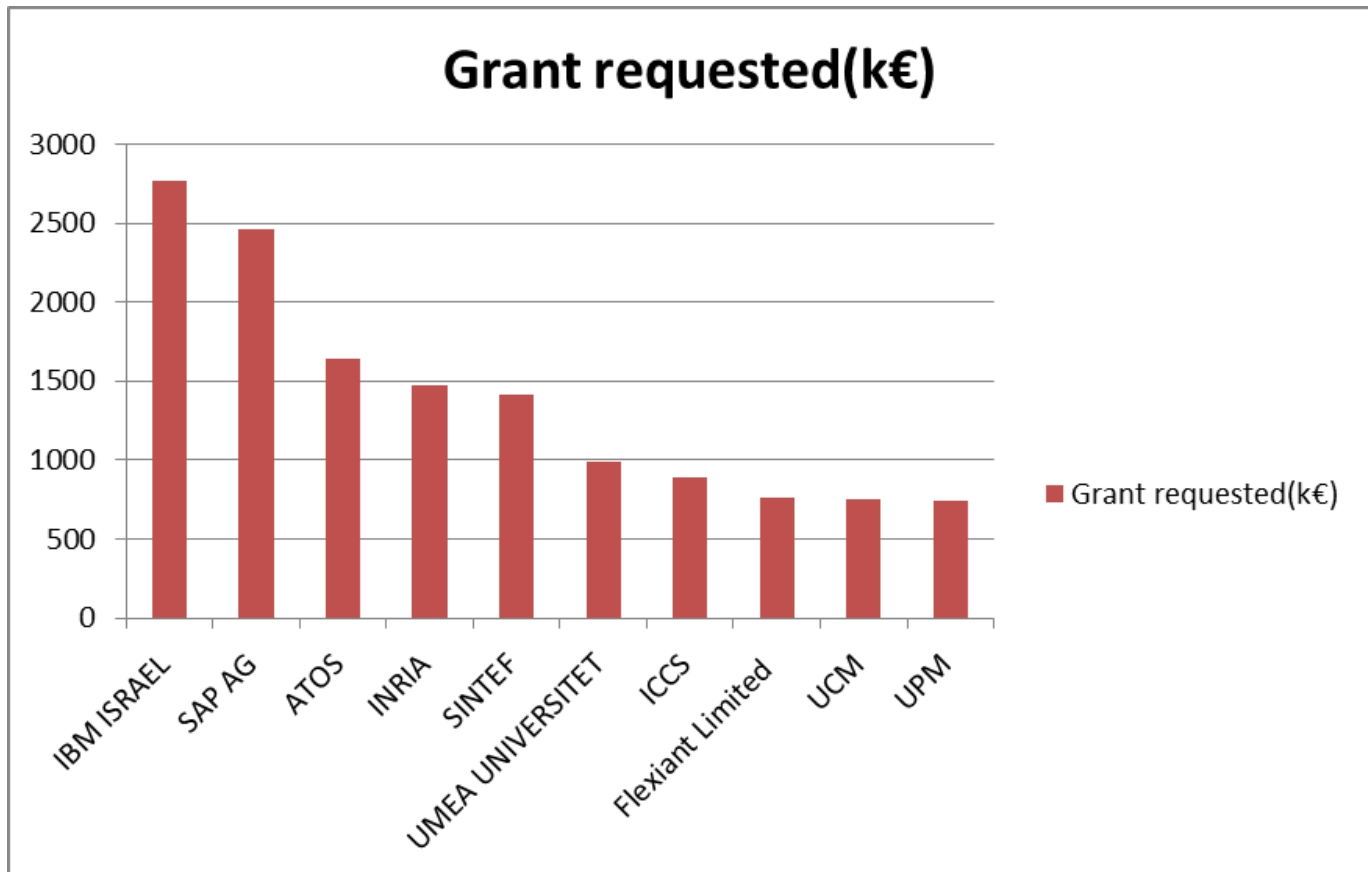
S-CASE: agile paradigm to automate mapping of user requirements to software development

CoherentPaaS: federated query language to access multiple data sources

ENVISAGE: open-source framework to develop SLA-aware services; automated analysis using formal methods

CloudWave: agile development of adaptive cloud services providing end-to-end QoS

Main beneficiaries: FP7 Call 10



H2020 Work Programme preparation

Public consultation: 27 Feb – 17 Apr 2013

Objective 1: Advanced cloud infrastructures and services (3/4 of resources)

- High performance heterogeneous cloud infrastructures
- Federated cloud networking
- Cloud security
- Automated service composition

H2020 Work Programme preparation

Public consultation: 27 Feb – 17 Apr 2013

Objective 2: Tools and methods for software development (1/4 of resources)

- Software tools and methods for large complex and data-intensive systems
- Software architectures and tools for highly distributed applications

H2020 Public Consultation

All contributions, all presentations, full report and slides available at:

<https://ec.europa.eu/digital-agenda/en/public-consultation-advanced-cloud-infrastructures-and-services>

The process towards H2020

Public Consultation launched on 26 February 2013

42 contributions received by 2 April 2013; 30 speakers invited;
26 presentations and 72 participants on 17 April 2013

Internal DG Consultation: March – June 2013

First Work Programme draft: summer 2013

European Commission interservices consultation: autumn 2013

Consultation of the EU Member States: autumn 2013

Networking activities during ICT 2013, Vilnius, 6-8 Nov 2013

WP2014 adoption + first H2020 call: by the end of 2013