



# **WORK PROGRAMME 2014 – 2015**

## **Topic ICT 9: Tools and Methods for Software Development**

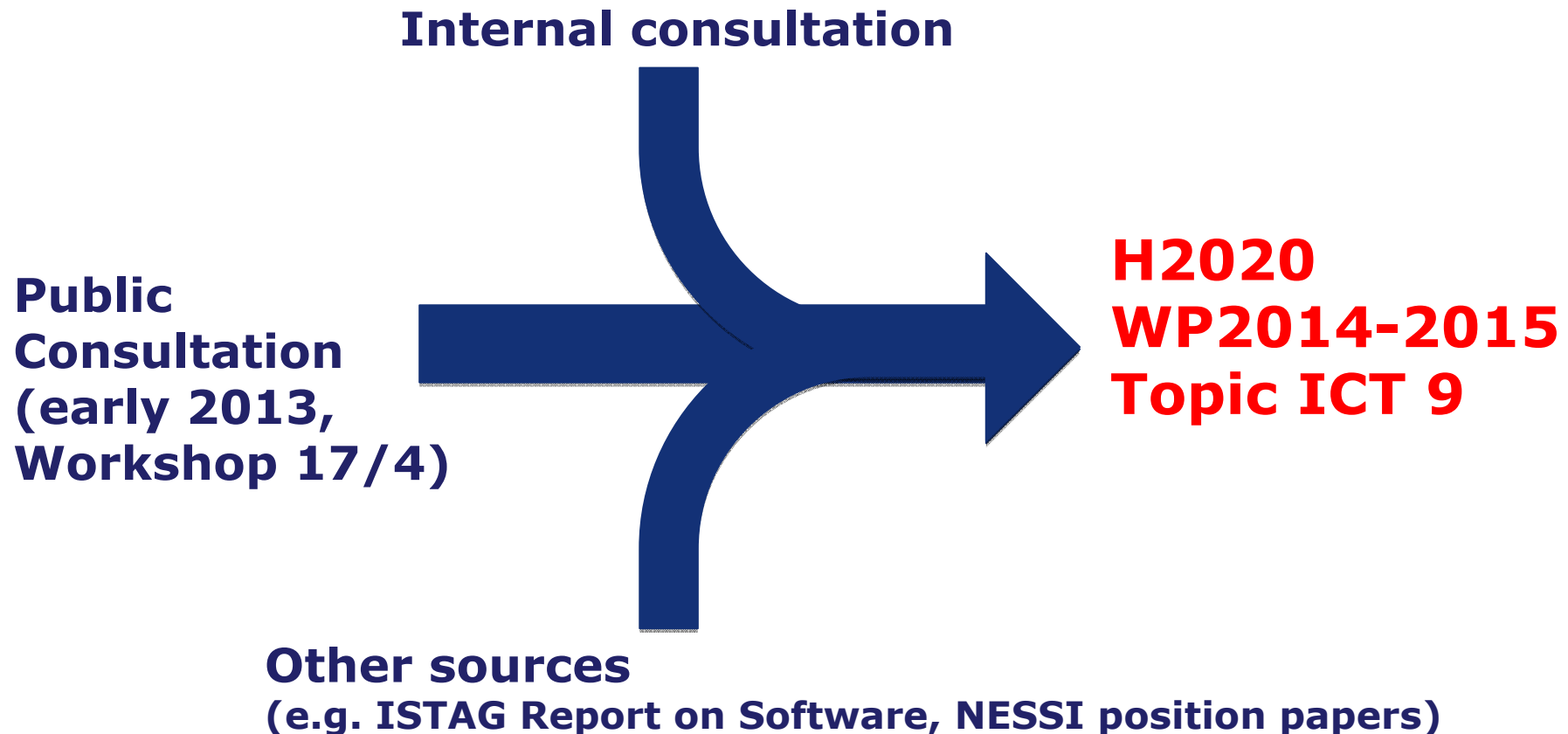
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# From FP7 to H2020

## Preparation process





# Public consultation – workshop

## Key research challenges for Software

- **Software complexity and scalability**
  - Increasingly complex large software systems. Need for techniques to simplify and manage their development and maintenance
- **Software architectures and tools**
  - New software tools for cloud and data-centric programming models to simulate and test data-driven software/services and for user interface testing in heterogeneous/federated environments
- **Software lifecycle management**
  - Efficient lifecycle management tools, especially for critical software systems
- **Software for critical systems**
  - Software for secure and operational-critical systems, especially considering issues of software evolution and change-management





# The Challenge

**Need:** Excellent quality (reliability, resilience and automatic adaptation) for complex & critical systems

- Need for innovative software development tools and methods

## **Breakthroughs in the area could significantly:**

- Improve the growth and competitiveness of the European industry
- Encourage faster innovation cycles.
- Increase European software industry's competitiveness.  
Large and interoperable software systems  
Industrial and public sector applications





# **Theme 1: Software tools and methods for large, complex and data-intensive systems**

- Tools and methods for incorporating integrity, robustness, reliability and resilience into evolving software systems
  - Especially for complex and secure business-critical systems
  - Coverage of the whole software lifecycle
- Innovation in managing the complexity of large software and data-intensive systems.
  - Inclusion of simulation, testing and verification





## **Theme 2: Software architectures and tools for highly distributed applications**

- Novel approaches to development, deployment, management and dynamic reconfiguration of distributed applications
- Architectures and tools to maximise quality of experience in elastically scalable applications, taking account of
  - data location, latency and data throughput in heterogeneous cloud environments
  - specialised hardware resources and sensors



## Expected impact

- Productivity increase in the development, testing, verification, deployment and maintenance of data-intensive systems and highly distributed applications
- Innovative tools for handling complex software systems
  - ✓ Credible demonstration that larger and more complex problems can be effectively and securely tackled;
- Macro level impact
  - ✓ Evidence of potential productivity gains through appropriate use cases in EU industry



# Implementation details for ICT9 topic

- **Call 1 – 2014**

Budget: 25 M Euro

- **Instruments:** Research & Innovation Actions

*Proposals requesting a small contribution are expected*

- Small: 2 to 4 M EUR

- Larger not absolutely precluded

(page 83 of LEIT ICT programme)







# Cross cutting role of software in H2020

## 14 objectives in the WP'14-'15 mentioning "software" (1/2)

### ICT 1 - 2014: Smart Cyber-Physical Systems

"... The network must include vertical competences from **embedded software** and systems down to the components subsystems and components level ..."

### ICT 4 - 2015: Customised and low power computing

" Focus is on integration of hardware and **software components** into fully working prototypes"

### ICT 5 - 2014: Smart Networks and novel Internet Architectures

"... Expected impact: new **open source software releases**..."

### ICT 7 – 2014: Advanced Cloud Infrastructures and Services

" .... Collaborative development, adaptation and testing of **open source software** for innovative and trusted cloud-based services ..."

"Expected Impact: Promotion of the reuse of **open source software solutions** in cloud environments"

### ICT 10 - 2015: Collective Awareness Platforms for Sustainability and Social Innovation

"Expected Impact: Pioneering new promising models of participatory innovation based on **open software**"

### ICT 14 – 2014: Advanced 5G Network Infrastructure for the Future Internet

"Combination of **software defined network implementations** with autonomic management of resources; "

"Strand Network virtualization and **Software Networks** "





# Cross cutting role of software in H2020

## 14 objectives in the WP'14-'15 mentioning "software" (2/2)

### ICT 15 – 2015: Big data – research

"Collaborative projects to develop novel data structures, **algorithms, methodology, software architectures**"

### ICT 20 – 2015: Technologies for better human learning and teaching

"Public procurement of **innovative** devices and **software** (PPI)"

### ICT 23 – 2014: Robotics

"One goal will be to define common hardware and **software platforms**"

### ICT 27 – 2015: Photonics KET

"Pilot deployment of **software-defined optics** in backbone networks"

### ICT 30 – 2015: Internet of Things and Platforms for Connected Smart Objects

"require a strong cooperation between the telecom, hardware, **software and service industries**, to create and master innovative Internet Ecosystems."

### ICT 32 – 2014: Cybersecurity, Trustworthy ICT

Security-by-design paradigms have to be developed and tested, to providing end-to-end security, across all hardware and **software layers** of an ICT system.





# FP7 project portfolio in Software

## Call 1

**Service/Software Engineering**  
(complexity, dependability):

**DEPLOY**, *Protest*,  
*COMPAS*, *ALIVE*,  
*MOST*, *MANCOOSI*,  
*DIVA*, *Q-Impress*

35,6 M €\*

## Call 8

**Advanced Software Engineering**

<b>MODAClouds</b>	<b>ARTIST</b>
<i>PROWESS</i>	<i>MIDAS</i>
<i>MARKOS</i>	<i>OSSMETER</i>
<i>RISCOSS</i>	<i>U-QASAR</i>

31,1 M €

## Call 10

**Innovative software & tools for services**

<i>Agile Software Prototyping</i>	<i>Model Driven Engineering</i>
<i>S-Case</i>	<i>Mondo</i>

5,1 M €



23,3 M €

**Advanced Software Engineering**

<b>Service coordination</b> <i>CHOReOS</i> , <i>ACSI</i>	<b>Testing</b> <i>FITTEST</i>	<b>Maintenance</b> <i>FastFix</i>	<b>Migration to clouds</b> <i>REMICS</i>	<b>Open source development</b> <i>ALERT</i>
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## Call 5

**24 Projects**  
**95.1 M €**

\*EC Contribution



# Background documents

1. "Toward a Strategic Agenda for Software Technologies in Europe", Information Society Technologies Advisory Group (ISTAG ), July 2012.  
<http://cordis.europa.eu/fp7/ict/docs/istag-soft-tech-wgreport2012.pdf>
2. "Strategic Research and Innovation Agenda", Networked European Software and Services Initiative (NESSI), April 2013  
[http://www.nessi-europe.com/Files/Private/NESSI\\_SRIA\\_Final.pdf](http://www.nessi-europe.com/Files/Private/NESSI_SRIA_Final.pdf)
3. Public Consultation on Cloud Computing, Software and Services, European Commission, March 2013  
<http://ec.europa.eu/digital-agenda/en/public-consultation-cloud-computing-software-and-services>
4. Post – consultation Workshop , European Commission, 14 April 2013  
[http://ec.europa.eu/information\\_society/newsroom/cf/document.cfm?action=display&doc\\_id=2172](http://ec.europa.eu/information_society/newsroom/cf/document.cfm?action=display&doc_id=2172)

