WORK PROGRAMME 2014 – 2015

Topic ICT 9: Tools and Methods for Software Development

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From FP7 to H2020
Preparation process

Internal consultation

Public Consultation (early 2013, Workshop 17/4)

Other sources (e.g. ISTAG Report on Software, NESSI position papers)

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

Call 5

Call 8
Advanced Software Engineering
- MODAClouds
- PROWESS
- MARKOS
- RISCOSS
- ARTIST
- MIDAS
- OSSMETER
- U-QASAR

Call 10
Innovative software & tools for services
- Agile Software Prototyping
  - S-Case
- Model Driven Engineering
  - Mondo

24 Projects
95.1 M €

2007
35,6 M €*

2009
31,1 M €

2011
23,3 M €

2013
5,1 M €

*EC Contribution

Call 1

Call 8

Call 10
Background documents


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


4. Post – consultation Workshop, European Commission, 14 April 2013