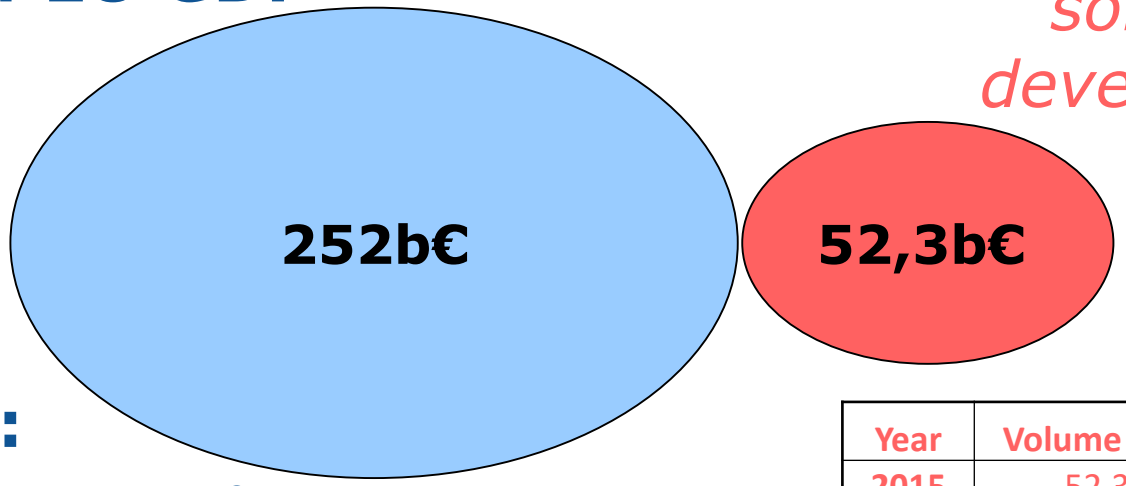
LEIT ICT WP 2018-20
ICT-16: Software Technologies

Brussels, 25 October 2017

Software impact in the EU economy

Software and Software-based services market (SSBS)

- **1,8% of EU GDP**



In-house software development

- **Market Growth:**

  2009-2015 →1,5%

  Expected 2015-2020 → 2,9%(290b EUR in 2020)

Year	Volume (b€)	SBSS share
2015	52,3	20,80%
2020	*57,2*	*19,70%*

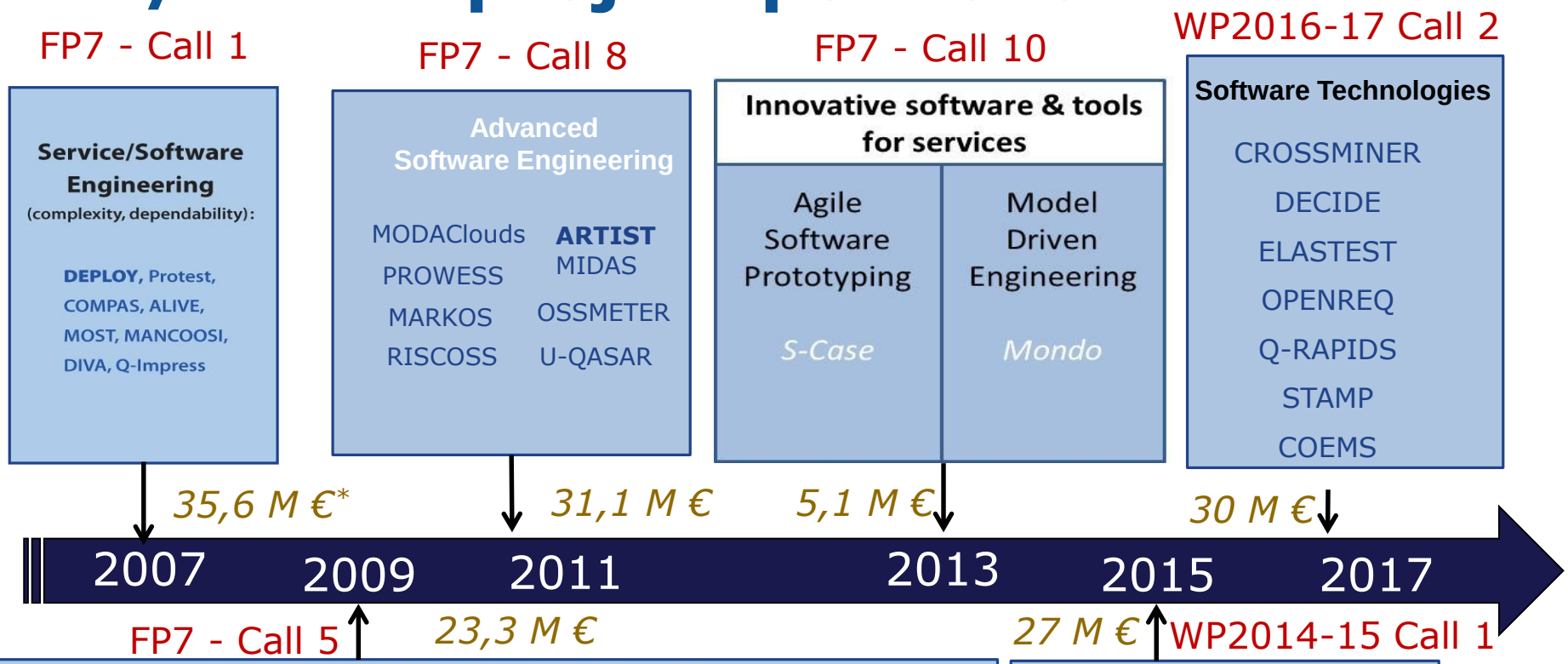
European Commission

Key findings of the "2016 Global Innovation 1000 Study"

- *Companies allocating 25% or more of their R&D budgets to software offerings report that their revenues are growing faster than those of key competitors that are allocating a smaller portion.*
- *Regionally, companies in North America are making the strongest shift to software offerings—from 15% of total R&D spending in 2010 to 24% in 2020.*
- *By 2020, companies will have shifted the majority of their R&D from product offerings to software and services.*
- *The top reason companies are shifting R&D budgets toward software and services is the "need to stay competitive"*

European Commission

FP7/H2020 project portfolio in Software



39 Projects - 152.1 M €

*EC Contribution

Acceptance ratio and participation in Software Technologies related topics

WP	Topic	EC Funding (M€)	Projects Funded	Requested Funding (M€)	# proposals	Acceptance ratio	EC funding ratio
WP2014-15	*Tools and Methods for Software Development*	27	8	244,40	74	10,8%	11,0%
Overall in ICT-LEIT (2014)		660,6	209	5.461,00	1639	12,8%	12,1%
WP2016-17	*Software Technologies*	31	7	356,80	90	7,8%	8,7%
Overall in ICT-LEIT (2016)		456,8	134	3.696,00	1071	12,5%	12,4%

European Commission

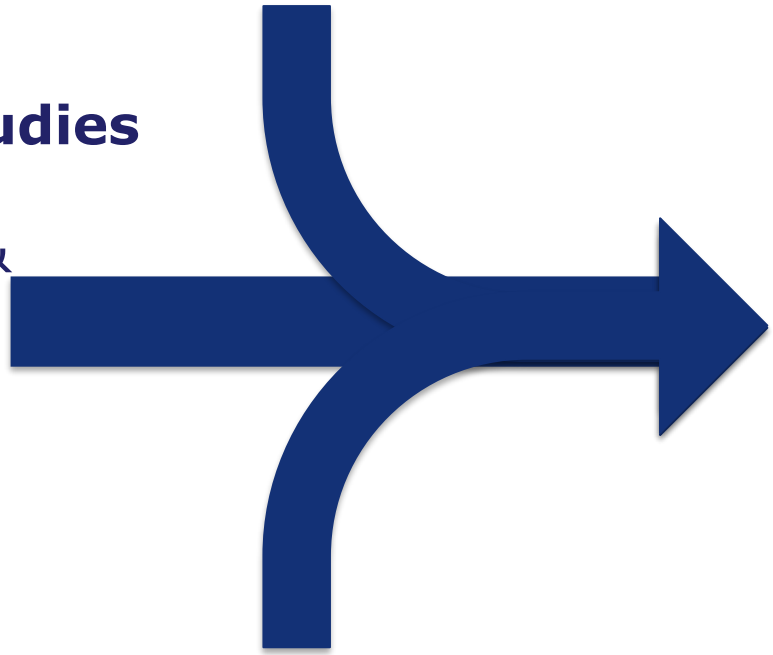
From H2020 WP2016-17 to WP2018-20

Preparation process

Internal consultation

Independent studies
(SMART 2015/15
prof. M. Hinchey &
prof. D. Spinellis)

Workshop
(6/10/16)

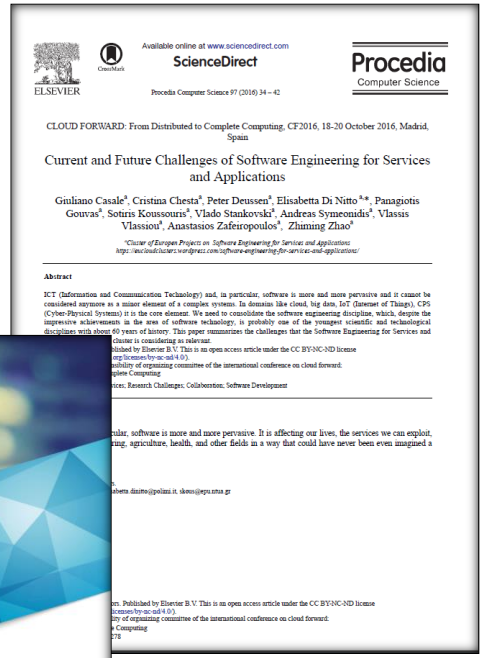


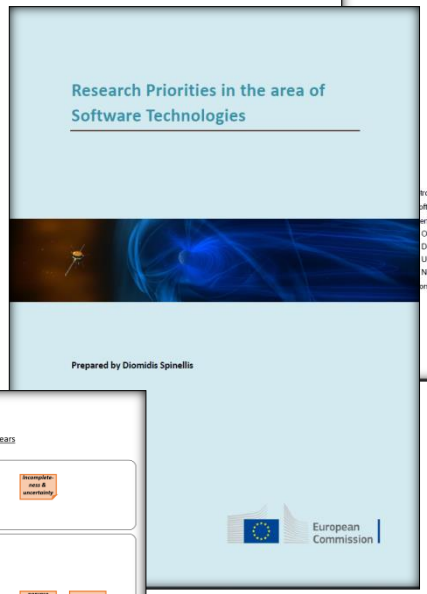
H2020
WP2018-2020

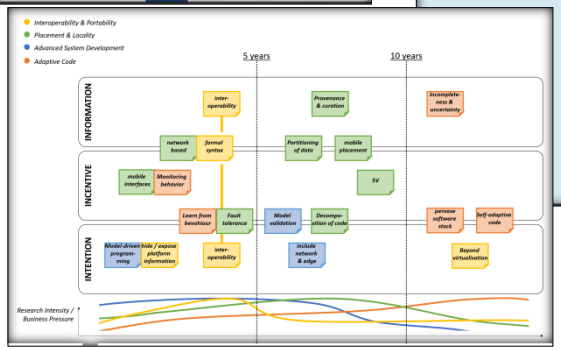
Other sources
(e.g. HolaCloud CSA, NESSI position paper, SW4SA project cluster)

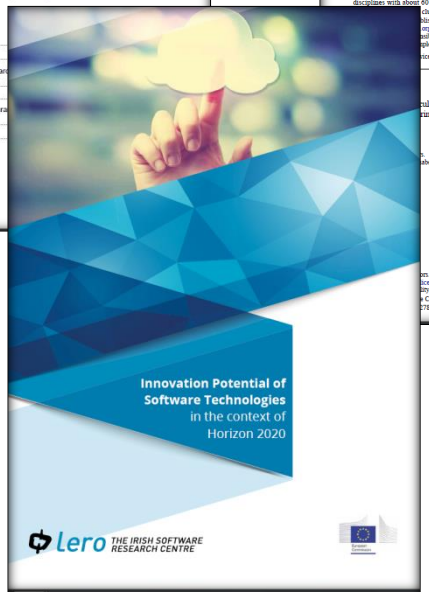
European Commission

Several sources of input









The specific Challenge

20 MEuros

- *The impact of software defined and virtualized infrastructures in the software development & management processes*
- *Transition from traditional development processes towards new paradigm which treats software, data and compute resources as abstract elements.*
  - Enable data to flow freely over heterogeneous infrastructures in a **scalable**, **distributed** and **human-understandable** fashion.
- *Increased need for reusable code and software components*

European Commission

An overview of Actions

Research & Innovation Actions (RIA) — 10 MEuros

Integrated programming models & techniques for exploiting the potential of virtualised and software defined infrastructures.

Innovation Actions (IA) — 9 MEuros

Software ecosystems exploiting the potential of existing code bases.

Coordination & Support Actions (CSA) — 1 MEuro

a. **Stakeholders coordination, projects results dissemination, R&I road mapping.**

b. **Help projects establish software ecosystems and transform their results into exploitable and viable solutions.**

Research & Innovation Actions (RIA) Scope

- **Code and resources (data, computing and networking) abstractions**. Code and data abstractions that are expressive, machine-readable and carrying out additional information about execution requirements, network topologies, data sources.
- **Advanced software systems development**. Enable flexible (de)composition and interoperability of software and data at run-time, thereby adhering to relevant operational constraints and business requirements. Programming models easier and more abstract, following the principles of human thinking, rather than standard algorithms

Demonstrate the applicability and viability of the proposed solutions across multiple application domains

Mid-sized actions: 3-5 MEuros

European Commission

Innovation Actions (IA) Scope

Software ecosystems exploiting the potential of existing code bases. Development platforms and mechanisms for code re-usability:

- Ensuring software quality (development, verification, validation and/or qualification tools)
- Supporting software reusability (storing, tracking, searching and analysing software artefacts)

Attention on:

- handling cross-platform dependencies
- quality management of diverse software components

Mid-sized actions: 3-5 MEuros

Coordination & Support Actions (CSA) Scope

- **Support actions for establishing software ecosystems** (especially in the context of H2020). From initial software development results to **commercially viable solutions**, **best practices of code reusability**, **community building and code reuse** by new initiatives.
- **Coordinate stakeholders in Software Technologies and support to R&D programmes/activities**:
  - disseminate project results, organise scientific and policy events, develop research and innovation roadmaps, address pre-standardisation initiatives.

Small actions: 400 - 600 KEuros

Expected Impact

- *Research & Innovation Actions (RIA)*
  - Increase the capacity of the European software industry to **exploit the capabilities of virtualised infrastructures through software**.
  - Overcome fragmentation in the European supply base, optimizing investments and use of resources **to yield multi-domain software-based products and related software services through R&I**.
- *Innovation Actions (RIA)*
  - Overcome fragmentation in the European supply base, optimizing investments and use of resources **to yield reusable software-based products and related software services**.
- *Coordination & Support Actions (CSA)*
  - **Creation of a sustainable European forum of stakeholders** representing the Software research, industry and end users.

Provide appropriate metrics for claimed impacts

Further Information (1/2)

The Economic and Social Impact of Software and Services on Competitiveness and Innovation (SMART 2015/15) study
https://ec.europa.eu/digital-single-market/en/news/economic-and-social-impact-software-and-services-competitiveness-and-innovation

Future trends and research priorities in the area of Software Technologies
https://ec.europa.eu/digital-single-market/en/news/future-trends-and-research-priorities-area-software-technologies

The innovation potential of software technologies
https://ec.europa.eu/digital-single-market/en/news/innovation-potential-software-technologies

Expert Workshop on the Challenges & Opportunities for the European Software Industry (6 October 2016)
https://www.pac-online.com/expert-workshop-challenges-opportunities-european-software-industry

Further Information (2/2)

NESSI Strategic Research and Innovation Agenda 2017
http://www.nessi-europe.com/files/NESSI_SRIA_2017_issue_1.pdf

HolaCloud Roadmap
http://www.holacloud.eu/roadmap/

Current and Future Challenges of Software Engineering for Services and Applications, White Paper, SE4SA project cluster
http://www.sciencedirect.com/science/article/pii/S1877050916320944

2016 Global Innovation 1000 Study, PwC
https://www.strategyand.pwc.com/innovation1000

Software Technologies R&I Project portfolio :
https://ec.europa.eu/digital-single-market/news/software-services-cloud-computing-h2020-project-portfolio