



ICT-01-2016: Smart Cyber-Physical Systems

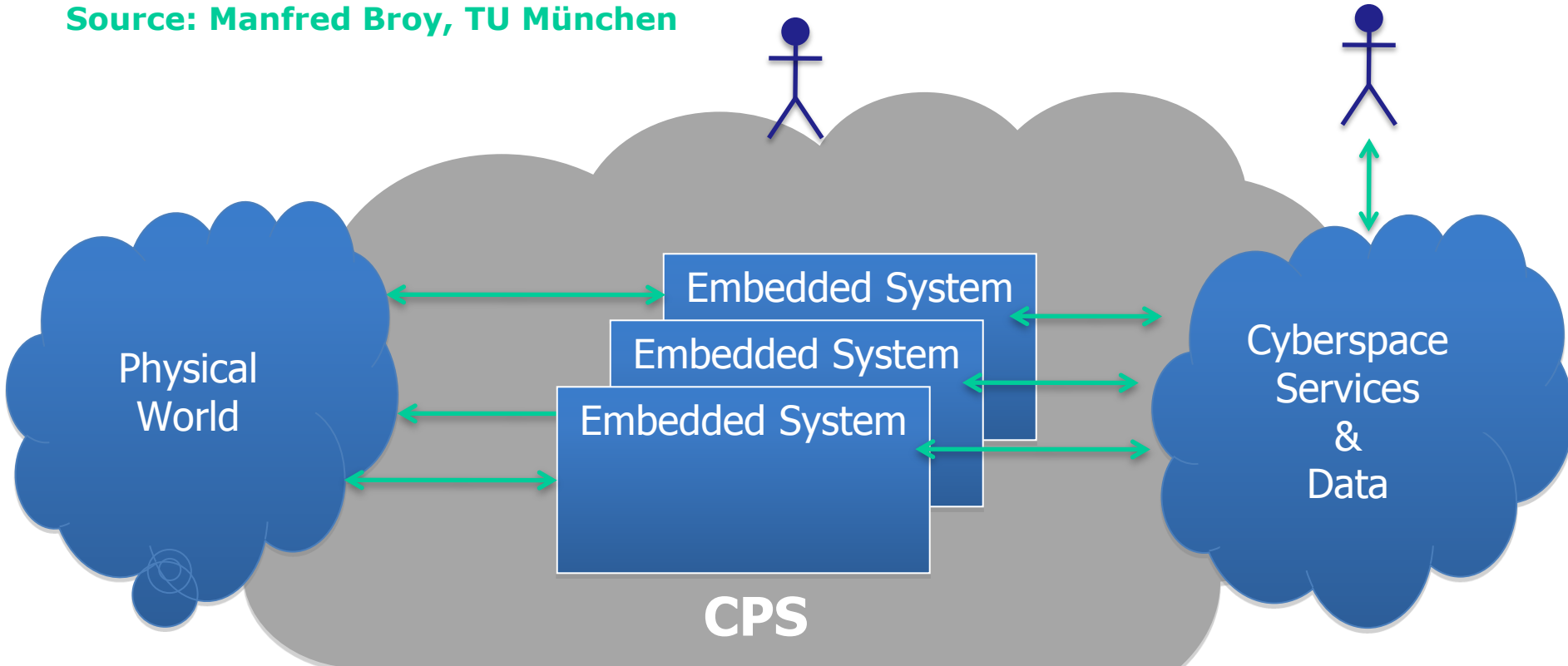
DG CONNECT,

**Unit A3: Complex Systems and Advanced
Computing**



What is CPS?

Source: Manfred Broy, TU München



For definition see strategic plan of ECSEL, page 58:

http://ecsel.eu/web/downloads/Documents_GB/ecsel-gb-2014-22_masp_2015.pdf

Challenges

- Cyber-physical systems are often time- and safety-critical
- Digital technologies are embedded in increasingly autonomous physical systems
- Critical constraints include safety, security, power efficiency, high performance, size and cost
- "System of Systems" gives rise to unpredictable behaviour and emergent properties

⇒ **Significant improvement in design and programming of CPS is needed!**

⇒ **Science of system integration**

Type of activities

a) Research and innovation activities (RIA) - EC budget 19 M€

- Science of System Integration, TRL 1-5
- Project size up to 5 M€

b) Coordination and Support Actions (CSA) - EC budget 1 M€

- Roadmaps, other programmes, pre-normative activities, societal and legal issues
- Ideally one project

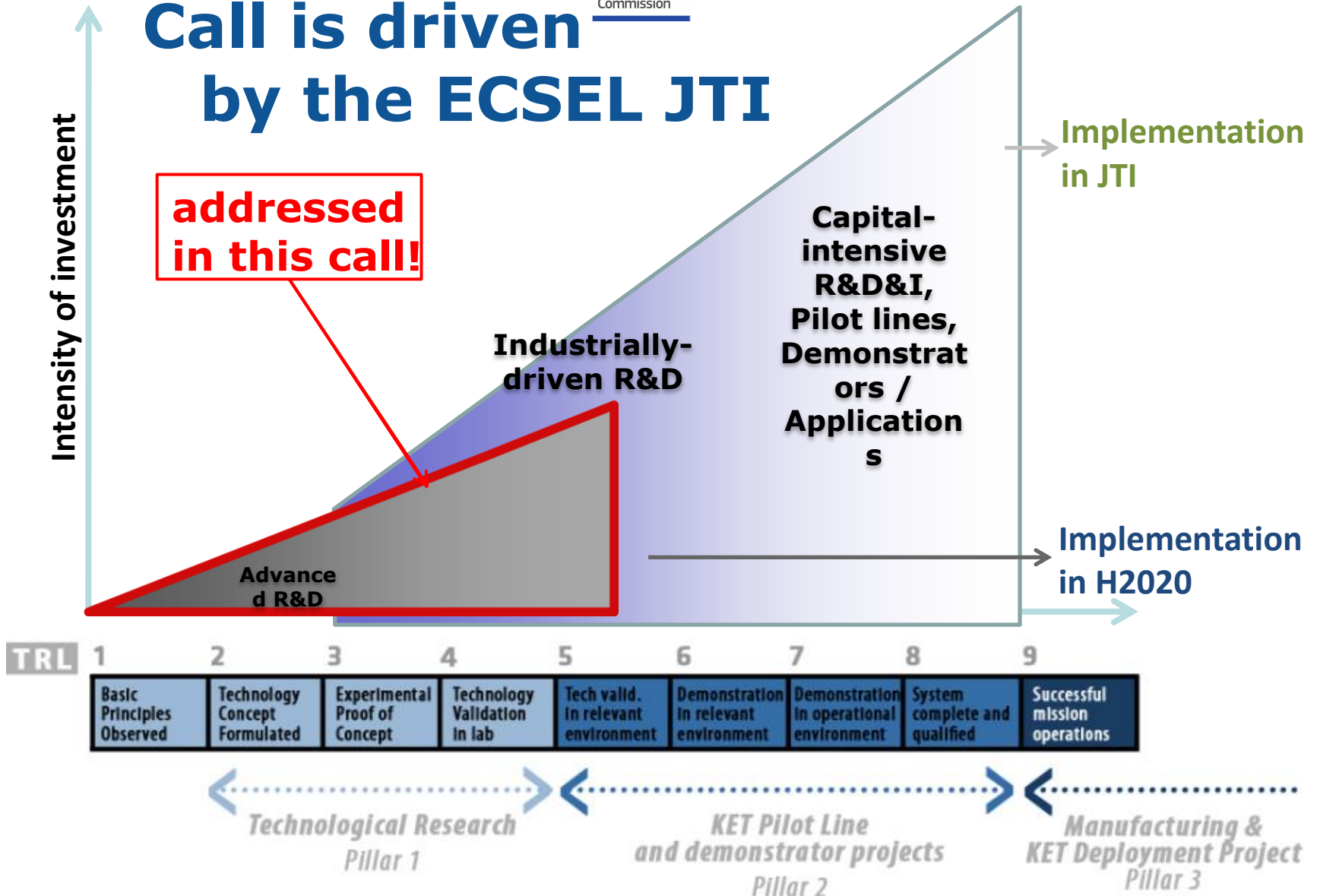
Call deadline:

12 April 2016



European Commission

Call is driven by the ECSEL JTI



RIA - Science of system integration

- New model-centric and predictive engineering methods and tools
- for CPS and systems of systems with a high degree of **autonomy**
- Important: adaptability, scalability, complexity management, security and safety, trust to humans in the loop.
- Driven by industrial needs and validated in \geq two use cases
- Integration into development environments
- Maturity: TRLs 2-4, demos up to level 5.

Stakeholders and Use cases

Stakeholders may include suppliers of CPS, related academia and research institutes, tool providers, system integrators, auditors/certification bodies and users of CPS

Use cases:

Any application sector may be addressed, where CPS engineering adds value

Examples are energy, transport, medical, food, chemistry, manufacturing and home automation

CSA – Support Action

- Structure CPS constituency
- Update and validate CPS roadmaps
- Cooperate with European programmes such as ECSEL, ITEA and reach out to other CPS activities
- Promote pre-normative activities and reflection on CPS business models
- Build consensus on societal and legal issues related to the deployment of CPS

⇒ **One support action is desired**

Expected impact

- Extend and improve the supply of CPS methods and tools
- Improve CPS engineering to reduce development time and cost of ownership
- Contribute to interoperability activities (e.g. repositories of models, interface specifications or reference architectures/platforms/patterns).

⇒ **Provide metrics to measure success**

⇒ **At least one element should be addressed**

Further information

Info day in Brussels on 1 December 2015:

Registration opening soon, watch <https://ec.europa.eu/digital-agenda/en/news/h2020-info-day-smart-cyber-physical-systems-digital-automation-smart-anything-everywhere-and>

- JTI ECSEL: www.ecsel.eu
- Cyber-Physical Systems: <http://ec.europa.eu/digital-agenda/en/cyber-physical-systems>
- Contacts: Werner.Steinhoegl@ec.europa.eu
Sandro.DElia@ec.europa.eu
Jerome.Dethier@ec.europa.eu