



PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

Pre Commercial Procurement

F. Berberich, Forschungszentrum Jülich, June 12, 2012, CoPoRI Workshop,
Hamburg, Germany



State of play

Pre-Commercial Procurement (PCP)

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Strategy for ICT research and innovation unit

PCP website: [http:// cordis.europa.eu/ fp7/ ict/ pcp/ home_en.html](http://cordis.europa.eu/fp7/ict/pcp/home_en.html)

PCP brochure: [http:// cordis.europa.eu/ fp7/ ict/ pcp/ key-docs_en.html](http://cordis.europa.eu/fp7/ict/pcp/key-docs_en.html)

PCP 2010 survey: [http:// cordis.europa.eu/ fp7/ ict/ pcp/ policy_en.html](http://cordis.europa.eu/fp7/ict/pcp/policy_en.html)

PCP cases: [http:// cordis.europa.eu/ fp7/ ict/ pcp/ msinitiatives_en.html](http://cordis.europa.eu/fp7/ict/pcp/msinitiatives_en.html)

EC cross-border PCP projects:

[http:// cordis.europa.eu/ fp7/ ict/ pcp/ projects_en.html](http://cordis.europa.eu/fp7/ict/pcp/projects_en.html)

Upcoming EC funding opportunities for PCP:

[http:// cordis.europa.eu/ fp7/ ict/ pcp/ calls_en.html](http://cordis.europa.eu/fp7/ict/pcp/calls_en.html)

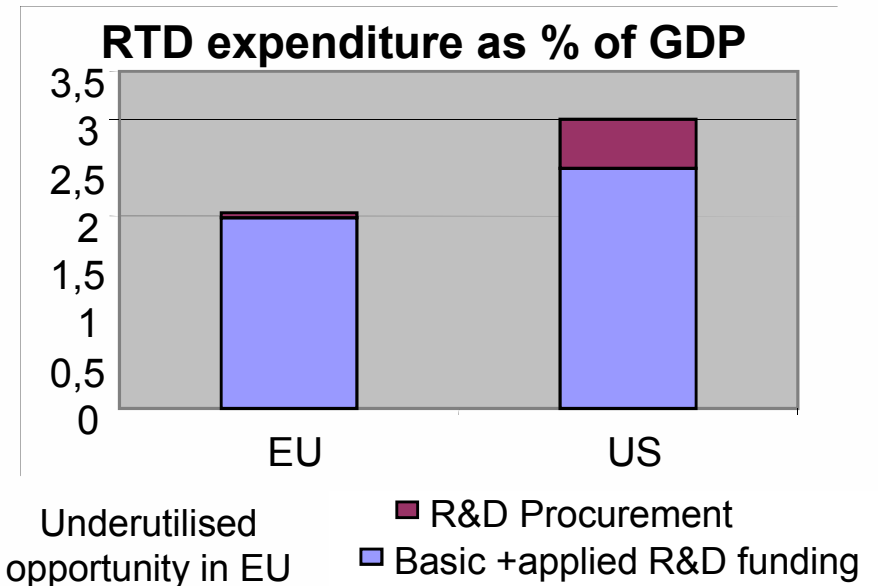


Why R&D procurement?



... but ...

Many public sector challenges unsolvable
via public procurement of existing solutions
Forward looking R&D procurement strategy required

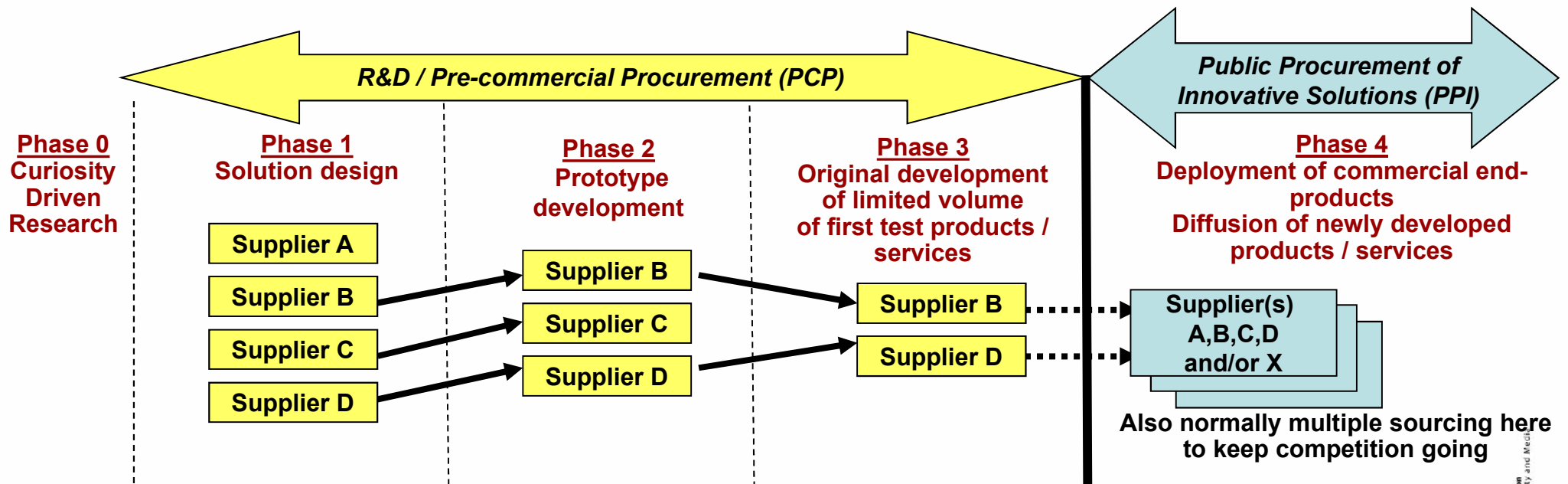


- Public expenditure is 47% of EU-25 GDP, but ~ 20 times less is spent on R&D procurement in EU (~ 2,5 Bn€) versus US (~ 50Bn€)
- More demand to develop new innovative solutions for public sector challenges for which there are no products on the market yet (R&D procurement) can fill half of the EU-US R&D investment gap

Where do we come from?

December 2007 COM on PCP

- Specific approach for public sector to procure R&D services aimed at improving quality and efficiency of public services:
 - Competitive development in phases
 - Risk-benefit (IPR) sharing between procurers & suppliers
 - Separation from deployment phase



... in line with WTO proc. rules, EU Treaty, State aid free

Based on good practice

- Procure R&D in steps (solutions, prototypes, test series) to reduce risk for procurer and give SMEs a chance
- Risk-benefit sharing with suppliers
- Competing development with multiple suppliers
- Sharing R&D costs with other procurers

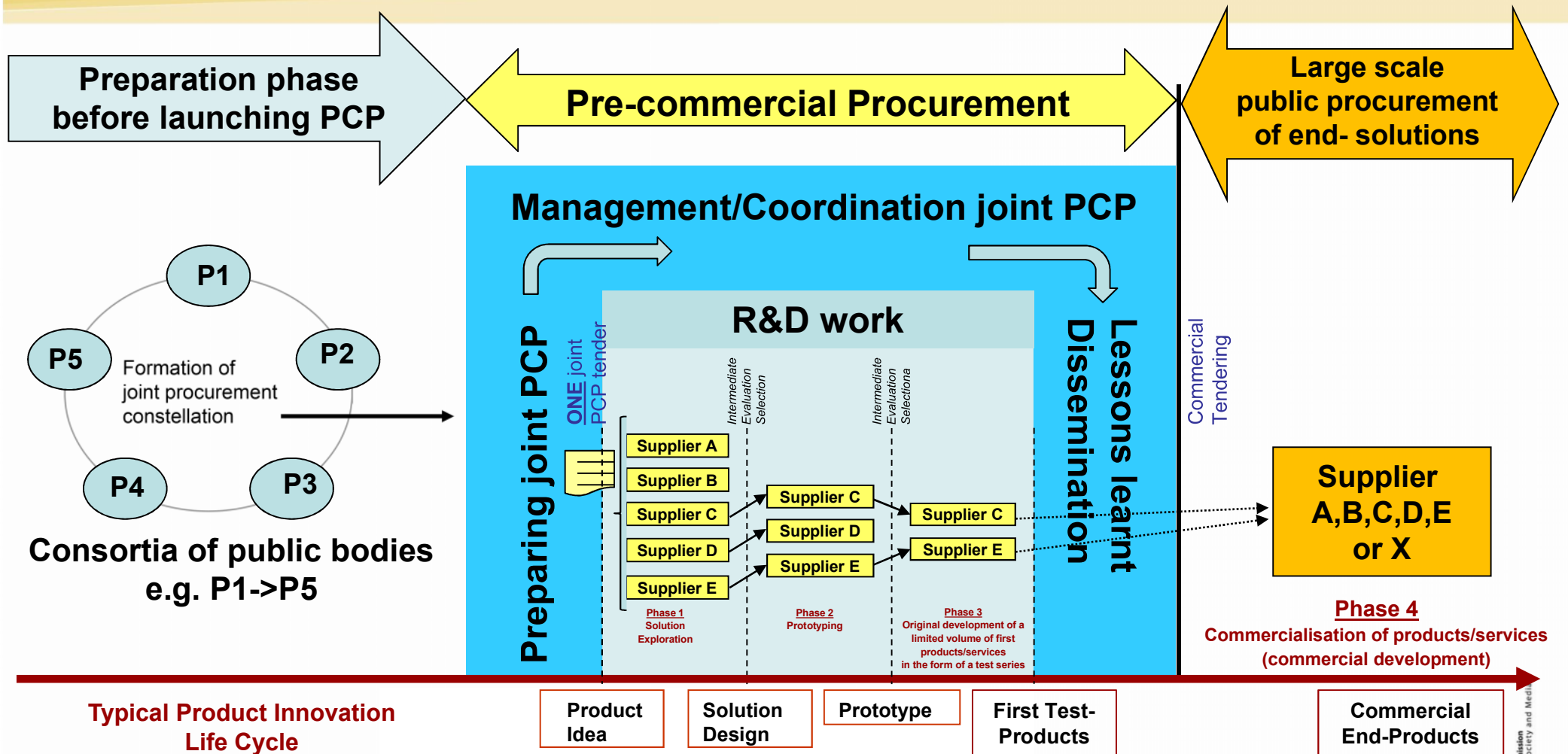
PCP support piloted in FP7 WP 2011-12

Cross-border PCPs on topics of common EU interest

- Support for public authorities planning joint implementation of pre-commercial procurements on topics of common European interest
- EU contribution (CP-CSA): combination of
 - CSA: Reimbursement of eligible costs for **preparation, management and coordination** of the joint PCP call for tender (100% funded)
 - CP: Reimbursement of max 50% of the eligible costs for the **development of the new ICT solutions procured through the joint PCP** (for financing of the R&D to be performed by the bidders/subcontractors selected via the joint PCP)

* CP-CSA = combination of CP and CSA funding within the same EC grant agreement

What does joint PCP procurement cover



Specific requirements for EC co-financed cross-border PCP procurements

- **EU wide publication** of PCP tender, at least in English
 - in compliance with Treaty principles
- All offers evaluated based on **same objective criteria**
 - regardless of company size, location of head office
- Use **functional/ performance based specifications**
 - not prescribing specific solution approach
- Joint PCP has to cover **phase 1 to 3** and needs to have **multiple companies** developing in competition
 - one framework contract with 3 specific contracts/phase
- Tenders awarded based on **best value for money** (not just lowest price) and **market price** (no State aid)
- **IPRs shared**: ownership rights with companies, free usage rights & right to license with procurers
- Support Europe 2020 objectives of **growth and job creation**
 - relevant portion of the activities related to PCP contract in Europe*

* In the EEA or a country having a Stabilisation and Association Agreement with EU

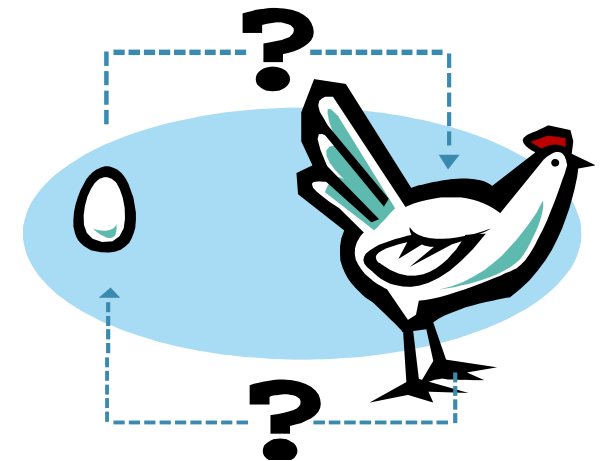
Outlook for Horizon 2020

Where are we now – where can we go?

- Awareness Raising: events, PCP newsletter etc
- Political agenda's
 - EU level: DAE & Innovation Union targets on PCP & PPI
 - MS agenda's: half of EU MS are/start engaging in pilots or are defining their PCP / PPI policy strategy
- Ongoing pilots EU support to procurement actions
 - Creating networks of public procurers
 - Co-financing PCP & PPI procurements
- Mainstreaming EU support in Horizon 2020
 - Draft Commission Horizon 2020 proposal includes financial support for cross-border PCP & PPI actions
 - Possibility for EU to be involved itself also

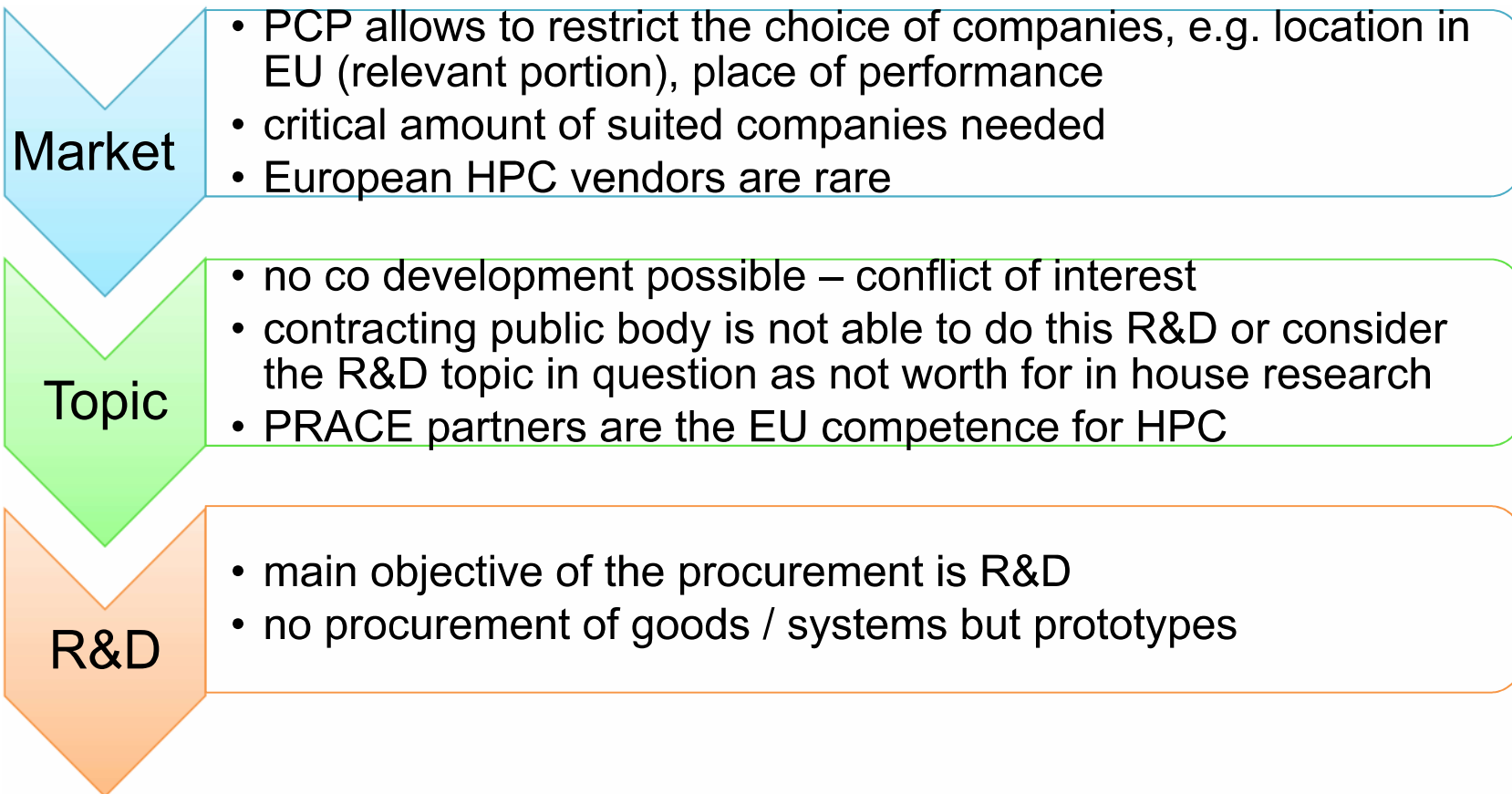
Foster Innovation in Europe through PCP

- Location of R&D and operational activities related to the PCP:
 - Relevant portion of R&D activities located in the European Economic Area or in a country having concluded a Stabilisation and Association Agreement
- Main players in HPC are mainly based in US, only few companies in EU
- EU: Mainly Integrators, Software and Network Competences

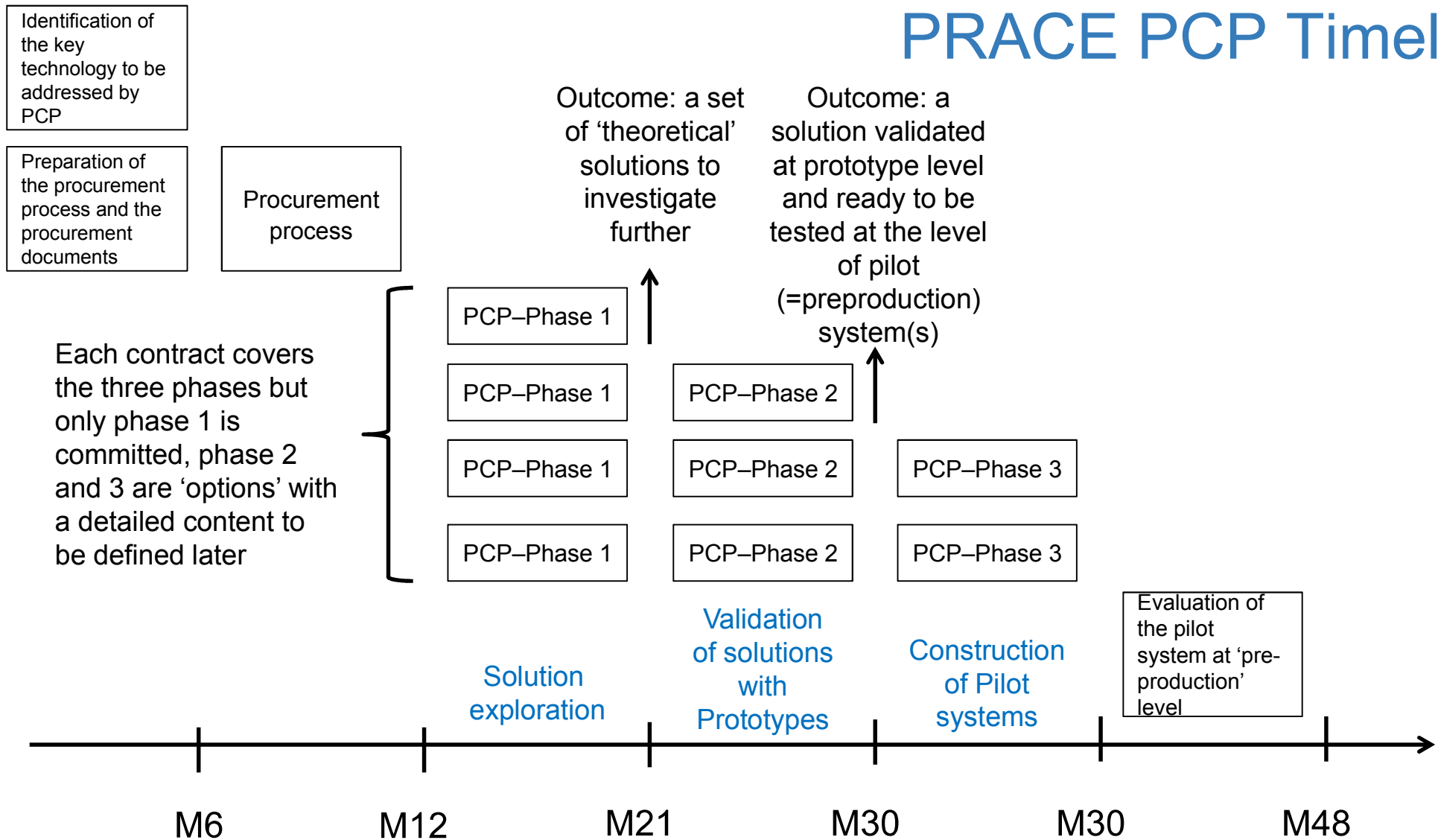


Need to start to developing and supporting HPC industry in EU

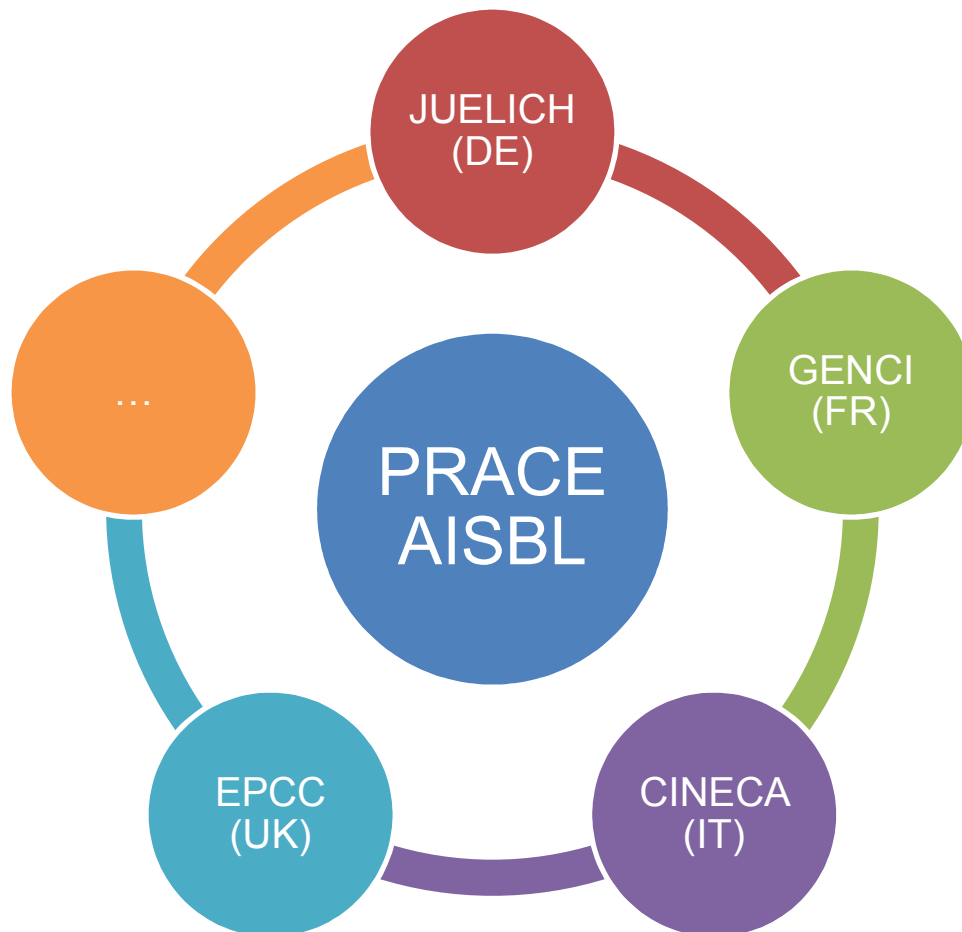
Preconditions for PCP



PRACE PCP Timeline



Joint – PCP Procurement



- Final set of PCP consortium not yet defined
- Difficult Negotiations with funding agencies due to new PCP process
- Contracting body: PRACE AISBL as a public body
- Each partner has a different tax status e.g.
 - JUELICH – full tax payer but entitled to deduct input tax
 - GENCI – full tax payer
 - CINECA – limited tax payer
 - PRACE AISBL - non-taxable person

Future System Architecture Projections/Targets

Systems	2010	2012	2015	2018	Difference Today & 2018
System Peak [PF]	2	25	200	1000	O(1000)
Power [MW]	6	6-20	15-50	20-80	O(10)
System Memory [PB]	0.3	0.3-0.5	5	32-64	O(100)
GB RAM/Core	0.5-4	0.5-2	0.2-1	0.1-0.5	-O(10)
Node Performance [GF]	125	160-1000	500-7000	1000-10000	O(10)-O(100)
Cores/Node	12	16-32	100-1000	1000-10000	O(100)-O(1000)
Node memory BW [GB/s]	40	70	100-1000	400-4000	O(100)
Number of nodes	~20.000	10.000- 100.000	5000- 50.000	100.000- 1.000.000	O(10)-O(50)
Total concurrency	~240.000	O(10 ⁶)	O(10 ⁷)	O(10 ⁹)	O(10.000)
MTTI	days	days	O(1 day)	O(1 day)	-O(10)

Source: Rick Stevens and Andy White, IESP Meeting, Oxford 2010

Whole System Design for Energy Efficient HPC

- Transformation of HPC Data Centre efficiency through the production of energy efficient hardware and systemware components
- Development of extreme cooling technologies in order to remove more than 90% of the heat from the system
- Demonstration of an integrated whole system design for low total energy-to-solution values as enabled by highly energy efficient computing and extreme cooling technologies

Market survey

- PCP approach in HPC in Europe is new
- exchange with all potentially interested suppliers on both the technical challenge of energy efficiency and the practical implementation of a PCP in HPC
- Workshop on the usage of Pre-Commercial Procurement (PCP) in HPC



Conclusions

- PCP is a powerful tool to foster innovation in Europe
- PCP should be used by Funding Agencies and Ministries, Regions, Cities
- FP8 Horizon 2020: PCP without endanger the excellence principle
- Conflict of interest: own competence – co development
- PRACE will pilot PCP in HPC
 - Find right topics and right partners
 - Open dialogue