Innovation Procurement in Horizon 2020

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Public expenditure is 47% of EU-25 GDP, but ~5 times less is spent on R&D procurement in EU (~10Bn€) versus US (~50Bn€). Half of the 10Bn€ in Europe happens in defence.

Underinvestment in R&D procurement is responsible for half of the EU-US R&D investment gap. Need to step up our game.

Linked to lack of early adopters to procure first innovative solutions in Europe (e.g. 5% in e-gov compared to 15-20% in healthy market)

Many public sector challenges unsolvable via public procurement of existing solutions. R&D /innovation procurement strategy needed.
Tackling public sector challenges often requires public sector transformation.

- In many cases, solutions are close to the market and would be provided if clear requirements/sufficient demand expressed by the market. R&D is not required and the Public Sector acts as launching customer/early adopter that deploys the innovative solutions as early adopter through Public Procurement of Innovative solutions (PPI).

- In other cases, the solution sought lies beyond the state of the art, no available solution on the market yet. R&D is still needed to de-risk technology, still competing solution approaches to compare and still too risky to commit to go for large scale deployment or tie your hands to specific solutions / suppliers. The Public Sector procures R&D to get new solutions developed and tested (Pre-Commercial Procurement PCP).
- **PCP** to steer the development of solutions towards concrete public sector needs, whilst comparing/validating alternative solution approaches from various vendors
- **PPI** to act as launching customer / early adopter / first buyer of innovative commercial end-solutions newly arriving on the market

**Innovation Procurement: PCP + PPI Complementarity**

- **PCP** is exempted from WTO GPA and public procurement directives
How does supply / demand side benefit

**Suppliers**
- Shorter Time to market
- Faster company growth
- Economies of scale
- Wider market
- First customers
- Shared risks & benefits

**Politicians**
- Implement political priorities
- Modernize public services
- Improve innovation climate
- Attract foreign investment
- Create growth and jobs
- Cheaper / better products
- Lower risk of modernization

**Procurers**
- Economies of scale
- Usage / Licensing rights
- ‘First time right’ product
- ‘EU interoperable’
- Attractive to venture capitalists
- Reduce unforeseen expenditure

Win-win for all
Get the ‘Best Product’…
- Shape product development to public needs
- Increase technology knowledge
- Reduce risk in commercial tendering
- Reduce supplier lock-in
  open up market to smaller players

… at the ‘Lowest Price’
Why European cooperation on PCP-PPI?

- **Speed up public sector modernisation** – improve quality and efficiency of public services with breakthrough solutions.

- **Get better value for money through cooperation** - enable public sector around Europe to share cost + experience to buy new solutions that can respond to concrete public needs.

- **Address issues of common interest together** – e.g. where interoperability and coherence of solutions across borders, pooling of resources or market defragmentation is required.

- **Create growth and jobs in Europe** – help innovators bring European R&D to the market (the majority of R&D in H2020 funded PCPs should take place in Europe, ltd set of first test products can be bought in the PPI from companies in the PCP).

Overview of EU funded innovation procurement projects: [http://ec.europa.eu/digital-agenda/eu-funded-projectss-around-europe](http://ec.europa.eu/digital-agenda/eu-funded-projectss-around-europe)
• **Shortening time-to-market:** Customer drive & feedback -> design to tested & deployed pre-series model in 18 mths (e.g. THALEA)

• **Min 20% cheaper products and higher product quality:** evidence from US defense multi-competitor, multi-phase PCP procurements

• **Removal of supplier lock-in -> 20% cost reduction:** outcome of benchmarking of e.g. Lombardy and CHARM PCP

• **Opening market to new players and stimulating cross-border company growth:** in EU funded PCPs 2.5 X more new players and 25 X more cross-border contracts compared to procurement average in EU

• **Creating lead markets:** Companies in UK ministry of defence PCPs are selling now also to US department of defence

• **Retaining lead market position:** possible via sustained PCP/PPI procurements (e.g. 60 ys of supercomputing PCPs --> IBM, Cray, HP)

• **Benefits on local economy:** Estonia PPI buying Mitsubishi electric vehicles increased local Estonian economic activity in related sectors
Info about impacts of EU funded PCPs

• Opening a route-to-market for new players/SMEs
  - 59% of total value of contracts directly won by SMEs
  - Compared to 29% average in public procurements across Europe
    Mostly small young SMEs: 23% below 10 people, 58% below 50 people, 51% less than 10 years old

• Helping also larger market players bring products to the market
  - 18% of contracts won by large companies as single bidder
  - 11% of contracts won by consortia of larger companies plus SMEs
  - 71% of contracts won by SMEs (SMEs alone, or as lead bidder)

• Relevance to universities & bringing scientific results to market
  - 28% of winning contracts have also a university/R&D center partner in consortium
  - Winning SMEs are also often university start-ups

• Stimulating cross-border company growth
  - 34.6% of contracts won by bidders that are not from a country of any of the procurers in the buyers group (e.g. DE company working for UK+NL procurers)
  - Compared to 1.7% average in public procurements across Europe

• Creating growth and jobs in Europe
  - 97.5% of bidders do 100% of R&D in Europe (2 do 68% resp. 85% of R&D in EU)
Examples PCPs
EU funded Learning

**IMAILE**

*URL: www.imaile.eu*

**Procurers:** schools and universities (SE, ES, DE, FI)

Joint PCP developed personalised learning solutions that increased motivation and success of students to study maths, science with 50-75% and decreased teachers' planning/assessment time with 30/40%

*Artificial intelligence* adapts the subject to the interests and learning habits of the study. *Gaming* aspect makes the learning experience more interactive, interesting and rewarding for students.

Serial entrepreneur testifies: SME in the PCP grew 4 times faster than his other SMEs outside PCPs

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**EU funded Transport**

**CHARM**

*URL: tinyurl.com/CHARM-PCP*

3 road authority procurers: Rijkswaterstaat (NL), Highways Agency (UK), Department Mobility and Public Works - MOW (BE).

Joint PCP procured R&D to support the move towards an open modular traffic management architecture by getting modules developed that optimise network performance, increase road safety and reduce CO2 emissions by improving network management, incident prediction and prevention and cooperative ITS.

**Benchmarking:** 20% expected cost savings
PCP (June 2015 - Oct 2016) developed, tested and deployed in small scale a highly interoperable platform for tele-detection and tele-care of ICU patients at increased risk. PCP started with 5 vendors: 3 delivered a system that meets the needs (PCP opened market for SMEs). Self-learning and prediction algorithms enable earlier diagnosis and higher efficiency in ICU.

- Cost savings (buyers group), 25% reduction in sepsis mortality and 20-50% in length of hospital stay.

Enlarged buyers group now starts THALEA II PPI to deploy certified solutions at wider scale across EU.

Buyers group: supercomputing centers Juelich (DE), CAE/GENCI (FR), CINECA (IT) and BSC(ES) will launch a joint PPI procurement of € 73M.

PPI for HPC participants will coordinate their procurement roadmaps to contribute to building a European Data Infrastructure with high-end supercomputers, which will around 2022 reach the exascale performance level. Cooperation paves the way for further joint investments in EUROHPC (new € 1Bn JTI setup in Jan 2018).

Examples PCPs EU funded Health

THALEA (I & II)


See also videos (Aachen hospital & Newcompliance) here

5 buyers: Univ, hospitals of Aachen(DE), Maastricht(NL), Parc Tauli Sabadell (ES), East Limburg (BE), Oulu (FI).
12 companies & procurers talk openly about their experience and lessons learnt in PCPs and PPIs [http://eafip.eu/resources/videos/](http://eafip.eu/resources/videos/)
H2020 funding instruments supporting PCP/PPI
Forms of support

- **Coordination and Support Actions (max 100% funding rate):**
  - Support only coordination activities e.g. preparation of a PCP or PPI by a group of procurers (investigating feasibility to start PCP/PPI, open market consultation with industry before initiating a concrete PCP or PPI etc)
  - CSAs do not provide EU co-financing for an actual PCP or PPI procurement

- **PCP Actions (max 90% funding rate):**
  - Provide EU co-financing for an actual PCP procurement (one joint PCP procurement per PCP action) + for related coordination and networking activities (e.g. to prepare, manage and follow-up the PCP procurement)

- **PPI Actions (max 35% funding rate):**
  - Provide EU co-financing for the actual PPI procurement(s) (one joint procurement or several separate but coordinated PPI procurements per PPI action) + for related coordination and networking activities (e.g. to prepare, manage and follow-up the PPI procurement(s))
2018 (41,2 M€)

- **PCP actions**
  - ICT based solutions for any area of public interest: 6 M€ (ICT-34)
  - Digital health & care: 22 M€ (DTH-10)
  - Security: 8,2 M€ (SU-GM03)

- **CSA actions**
  - Integrated healthcare / diagnosis: 2M€ (HCO-12)
  - Digital health & care: 3M€ (HCC-04)

- **PPI actions**
  - Digital health & care solutions for an ageing society: 10 M€ (DTH-05)

2019 (83 M€)

- **PCP actions**
  - ICT based solutions for any area of public interest: 6 M€ (ICT-34)
  - Next generation sequencing for routine diagnosis: 40 M€ (BHC-10)
  - Wave energy: 20 M€ (LC-SC3-JA-3-2019)
  - Security: 7 M€ (SU-GM03)

- **PPI actions**
  - Infection & integrated care: (BHC-20)
  - Next generation sequencing for routine diagnosis: 40 M€ (BHC-10)

2020 (100+ M€)

- **PCP actions**
  - Infection & integrated care: (BHC-20)
  - Climate Change resilience (LC-CLA-13-2020)
  - 100% renewable energy: (LC-SC3-RES-10-2020)
  - Security (SU-GM03)

- **PPI actions**
  - Infection & integrated care: (BHC-20)
  - Innovative HPC systems (INFRAEDI-04)

PCP actions: co-finance (max 90%) actual procurement cost for joint PCPs + coordination costs

*Note: Lower max funding rates are used for the security PCPs (70%) and wave energy PCPs (50%) !!!*

PPI actions: co-finance (max 35%) actual procurement cost for joint or coordinated PPIs + coordination costs

CSA actions: co-finance (max 100%) only coord/netw costs e.g. procurer networks preparing future PCP/PPIs

*Note: WP2020 info is still indicative. WP2020 will only be finalised next year.*

Info about scope of each call topic, online drafting and submission of proposals on H2020 participants portal (search per topic e.g. ICT-34): http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/search/search_topics.html

Overview ongoing EU funded PCP/PPI projects in ICT and other domains: https://ec.europa.eu/digital-single-market/en/eu-funded-projects

More info about results ongoing PCPs: https://ec.europa.eu/digital-single-market/en/eu-funded-projects

Background info on Innovation Procurement (news, events, case examples): http://ec.europa.eu/digital-agenda/en/innovation-procurement

Section in Horizon 2020 online manual about innovation procurement: http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/innovation-procurement_en.htm

Finding partners: EU procurement forum, PCP-PPI Linkedin group, National Contact Points for Horizon 2020, National Competence centers for innovation procurement
Background slides
PCP and PPI: legal framework

PCP and PPI are NOT new public procurement procedures. They are approaches to use existing public tendering mechanisms in such a way - to optimise the innovation outcome (best value for money for procurer) - to optimise growth opportunities for suppliers

**PCP**
- **Open tendering**
- **R&D services** procurement (possibility to buy also end-product)
- **IPR sharing** between supplier (keeps IPR ownership) and procurer (right to use/license)
- **Multiple sourcing** (# suppliers)
- **Phases** (FW contract for the PCP + specific contracts/phase)
- **Job creation** (majority R&D done in EU MS or associated countries)

*Exempted from EU public procurement directives, WTO*

**PPI**
- Early announcement (via PIN) of the *'intention' to buy* a critical mass of solutions *'if' the market can deliver solutions that match predefined specific requirements by a set date*
- **Conformance testing** (optional) to verify if market can meet needs
- **Tendering**: different procedures possible e.g. open, negotiated procedure, competitive dialogue

*Subject to applicable provisions EU public proc. directives, WTO*

(for more info on legal framework: see background slides)
Get 20% better value for money products (US defense data)
Use PPI also if no (more) R&D needed for procurement need
Use a small budget PCP to de-risk a large budget PPI
  · PPI spec can be 'completely rephrased' benefiting from PCP lessons learnt
Use conditions that encourage job creation 'in Europe'
  · Because PCP falls outside WTO rules
Prevent foreclosing of competition & crowding out of private investment in R&D
  · Companies that are not financing their R&D via procurement/PCP (e.g. via grants, own company resources) can still bid for deployment contracts/PPIs
Facilitates access to procurement market for SMEs*
  · Gradually increasing contract sizes, tasks, required manpower
  · Stringent financial guarantee/qualification requirements: 'no' in PCP, 'ltd' in PPI

All the above is not the case if R&D is procured as part of a deployment contract (e.g. innovation partnerships)

* (more on differences PCP-PPI/innovation partnerships: eafip toolkit)
## Comparison PCP – regular procurement – innovation partnerships

<table>
<thead>
<tr>
<th>Indicator for</th>
<th>Pre-Commercial Procurements</th>
<th>Average across all public procurements in Europe</th>
<th>Innovation Partnerships</th>
<th>% of procurements that receive only 1 offer</th>
<th>% of procurements that award contracts to single versus multiple vendors</th>
<th>% of vendors winning a contract for the first time with the procurer</th>
<th>% of contracts awarded to suppliers from another country than the procurer</th>
<th>% of procurements stopped</th>
<th>% of total value of contracts that is awarded directly to SMEs</th>
<th>% of number of contracts that is awarded directly to SMEs</th>
<th>% of number of SMEs &lt; 10 years old that are awarded contracts</th>
<th>% of winning tenders with university / non profit research center in it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of interest of suppliers to participate</td>
<td>12,0</td>
<td>3,0</td>
<td>2,0</td>
<td>0,0%</td>
<td>13% to 3 vendors 53% to 3 to 6 vendors 34% to &gt; 6 vendors</td>
<td>77,0%</td>
<td>34,6%</td>
<td>0,0%</td>
<td>59,0%</td>
<td>71,0%</td>
<td>51,0%</td>
<td>28,0%</td>
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<tr>
<td>Level of interest of suppliers to participate / Degree of competition in bidding</td>
<td>no data</td>
<td>30,0%</td>
<td>56% to 1 vendor 19% to 2 vendors 25% to &gt; 2 vendors</td>
<td>1,7%</td>
<td>/</td>
<td>no data</td>
<td>1,5%</td>
<td>no data</td>
<td>29,0%</td>
<td>56,0%</td>
<td>0,1%</td>
<td>0,0%</td>
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<tr>
<td>Degree of competition in product development / Resilience to prevent supplier lock-in</td>
<td>no data</td>
<td>44,0%</td>
<td>8% to 1 vendor 15% to 2 vendors 25% to &gt; 2 vendors</td>
<td>16,0%</td>
<td>1,7%</td>
<td>no data</td>
<td>1,5%</td>
<td>no data</td>
<td>25,0%</td>
<td>6,0%</td>
<td>0,1%</td>
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<tr>
<td>Opportunities for suppliers to find new customers</td>
<td>no data</td>
<td>1,7%</td>
<td>16,0%</td>
<td>no data</td>
<td>1,7%</td>
<td>1,5%</td>
<td>0,0%</td>
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<td>5,5%</td>
<td>0,1%</td>
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<tr>
<td>Cross-border growth opportunities for suppliers</td>
<td>no data</td>
<td>1,7%</td>
<td>16,0%</td>
<td>no data</td>
<td>1,7%</td>
<td>1,5%</td>
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<td>0,1%</td>
<td>0,0%</td>
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<tr>
<td>Degree of difficulty for procurers to setup / manage the procurement procedure</td>
<td>no data</td>
<td>1,7%</td>
<td>16,0%</td>
<td>no data</td>
<td>1,7%</td>
<td>1,5%</td>
<td>0,0%</td>
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<td>5,5%</td>
<td>5,5%</td>
<td>0,1%</td>
<td>0,0%</td>
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<tr>
<td>Facilitating access of SMEs to the market</td>
<td>no data</td>
<td>1,7%</td>
<td>16,0%</td>
<td>no data</td>
<td>1,7%</td>
<td>1,5%</td>
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<tr>
<td>Facilitating access of young SMEs to the market</td>
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<td>5,5%</td>
<td>5,5%</td>
<td>0,1%</td>
<td>0,0%</td>
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<tr>
<td>Degree of upstream R&amp;D / disruptive innovation involved</td>
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<td>16,0%</td>
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<td>1,5%</td>
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</tbody>
</table>

*Based on data from EU funded PCP procurements and data from procurements published in TED and awarded up to 26 October 2017*