



Update on results from completed and ongoing FP7 and Horizon 2020 funded Pre-Commercial Procurements (PCPs)

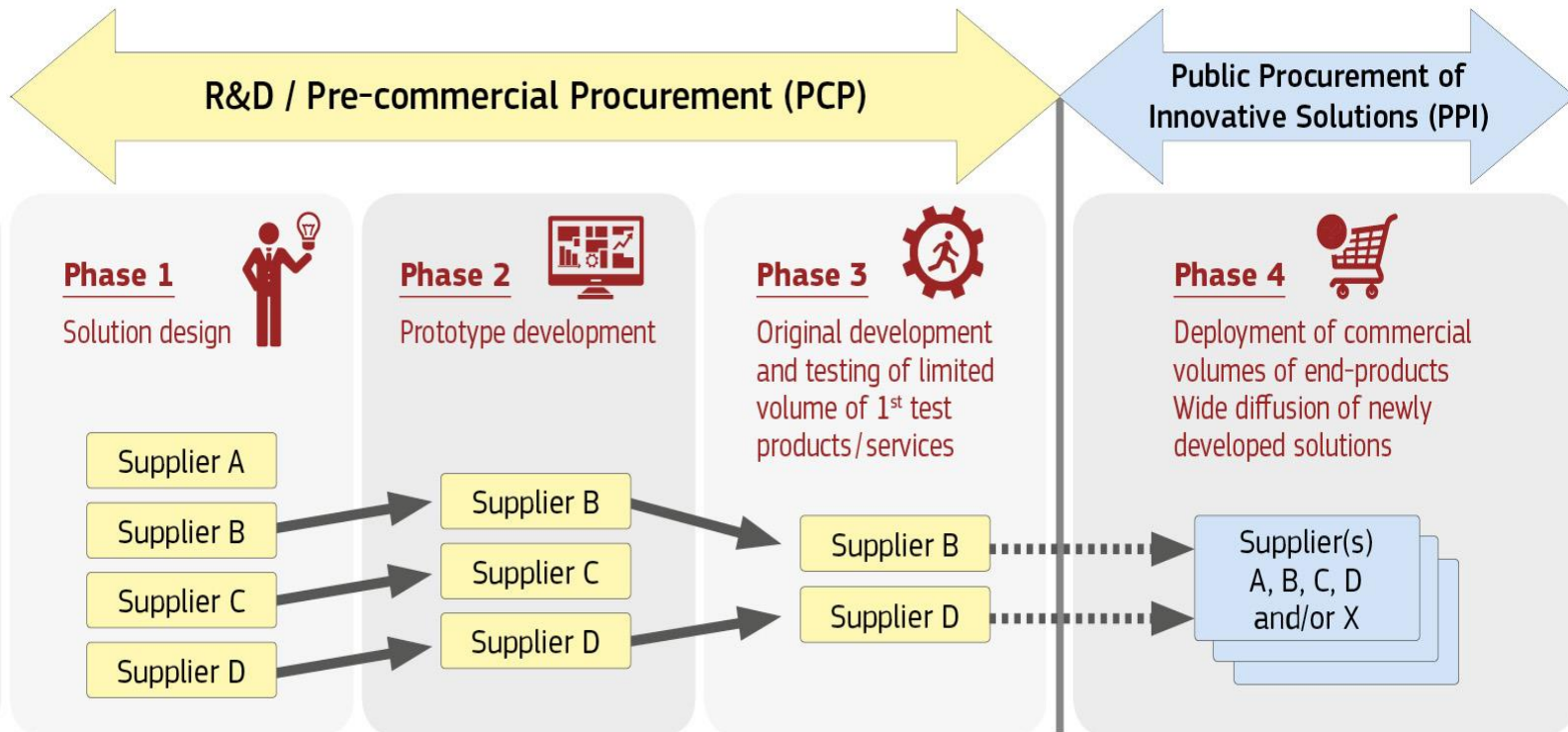
Lieve Bos

DG CONNECT F3 unit ("Digital Innovation and Blockchain")

The EC supports PCP & PPI, but... this ppt is about PCPs only



- **PCP** to steer the development of solutions to concrete public sector needs, while comparing/validating alternative solution approaches from various vendors + possibly first deployment (non-commercial volumes)
- **PPI** to act as early adopter / first buyer of commercial volumes of innovative end-solutions newly arriving on the market



The following slides **only** provide information **about results of PCPs** (not PPIs)

Ongoing and completed PCP procurements



- 12 PCPs have completed (phase 3 finished)
 - [SILVER](#) (Robotics for elderly care)
 - [THALEA](#) (Telemedicine for intensive care unit patients at increased risk)
 - [SMART@FIRE](#) (Smart protective equipment for fire fighters)
 - [Human Brain Project](#) (High Performance Computing for brain simulation)
 - [DECIPHER](#) (Cross-border mobile health services)
 - [V-CON](#) (Virtual construction of road infrastructure)
 - [CHARM](#) (Advanced Traffic management and prediction)
 - [PRACE 3IP](#) (Energy efficient supercomputing)
 - [PREFORMA](#) (Long term digital preservation)
 - [IMAILE](#) (Personalised e-learning solutions)
 - [NYMPHA-MD](#) (Mental care for bipolar disorders)
 - [HNSciCloud](#) (Science cloud platform for research community)

HBP PCP doesn't result from a PCP call. HBP decided itself to implement a PCP in the HBP research project. [Cloud for Europe](#) (Cloud computing for govts) was only partially implemented (up to mid phase 2)

- 13 PCPs are ongoing (procurement contracts ongoing)
 - [QUACO](#) (Quadrupole magnets for large hadron collider)
 - [MAGIC](#) (Post stroke recovery)
 - [SELECT4Cities](#) (Internet of Everything platform for Cities)
 - [RELIEF](#) (Pain self-management)
 - [NIGHTINGALE](#) (Wearable sensors for safer patient monitoring/care)
 - [PROEMPOWER](#) (Diabetes patient empowerment)
 - [LIVE INCITE](#) (Lifestyle interventions in perioperative medicine)
 - [MARINE-EO](#) (Marine earth observation)
 - [FABULOS](#) (Automated bus lanes)
 - [SMART.MET](#) (Smart water metering)
 - [STARS](#) (Health stress reduction)
 - [POSIDON](#) (Polluted site decontamination)
 - [BROADWAY](#) (Interoperable mobile broadband for public safety)

- 9 buyers groups are in open market consultation (preparing the PCP) or in the tendering phase of the PCP
 - [ANTISUPERBUGS](#) (detection/reduction of superbugs and other infections)
 - [SHUTTLE](#) (Toolkit for trace analysis by forensic laboratories)
 - [CIVILnEXT](#) (Next gen information systems for EU external policies)
 - [ARCHIVER](#) (Archiving and preservation for research environments)
 - [eCARE](#) (Continuum of care for frailty prevention in old adults)
 - [HSMONITOR](#) (Health status monitoring + optimise hypertension care)
 - [AI4CITIES](#) (Breakthrough AI solutions for climate neutrality)
 - [oncNGS](#) (Next Generation Sequencing diagnostics in 21st century oncology)
 - [Instand-NGS4P](#) (Next Generation Sequencing workflows for Personalised therapy)

Procurers involved



European
Commission



OULU

Region Syddanmark



VÄSTERÅS STAD



STOCKPORT
METROPOLITAN BOROUGH COUNCIL



City of Eindhoven



Stadt Dortmund
Feuerwehr



in
cooperation
with



DECIPHER PCP



Procurers involved



European
Commission

V-con



Rijkswaterstaat
Ministerie van Infrastructuur en Milieu



TRAFIKVERKET

CHARM



HIGHWAYS
AGENCY



Rijkswaterstaat
Ministerie van Infrastructuur en Milieu



Vlaanderen
is mobiliteit &
openbare werken



PRACE 3IP



JÜLICH
FORSCHUNGSZENTRUM

GENCI
epcc



IMAILE
Innovative Methods for Award Procedures of ICT learning in Europe

Halmstad



Konnevesi
Metsien ja vesien pitilijä

AJUNTAMENT DE
VILADECANS



Alexandersoninstitutet

PREFORMA

Riksarkivet

PACKED
Centre d'Expertise
pour le Patrimoine Numérique

Institut für
Museumsforschung
Staatliche Museen zu Berlin

BEELD EN GELUID

Ajuntament de Girona

National Library
of Sweden



REPUBLIC OF ESTONIA
MINISTRY OF CULTURE

IRPA
KIK

GREEK
FILM
CENTRE

LGMA
AN GHIŊMIHAREACHT BAINISTIŊHTA BIALTAIS AMŊIL
LOCAL GOVERNMENT MANAGEMENT AGENCY

Procurers involved



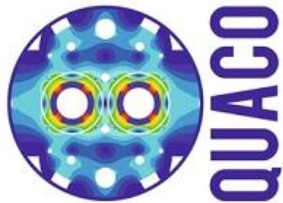
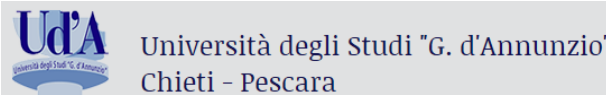
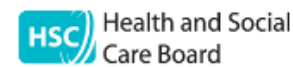
European
Commission



Mental Health
Services



Parc Taulí Sabadell
Hospital Universitari



Procurers involved



European
Commission



Servicio Andaluz de Salud
CONSEJERÍA DE SALUD



AKADEMISKA
SJUKHUSET
UPPSALA UNIVERSITY HOSPITAL



Sheffield Teaching Hospitals **NHS**
NHS Foundation Trust



NHS
National Institute for
Health Research



Procurers involved



European
Commission



Bispebjerg og Frederiksberg
Hospital



Gemeente Helmond



REPUBLIC OF ESTONIA
MINISTRY OF ECONOMIC AFFAIRS
AND COMMUNICATIONS

Procurers involved



European Commission

POSIDON



SECRETARÍA DE ESTADO DE SEGURIDAD

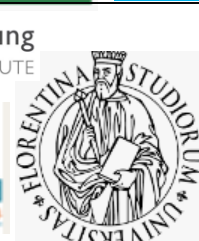


MINISTRE DE L'INTERIEUR

SHUTTLE



Procurers involved



Achieved market engagement (ongoing + completed PCPs)



- **Open Market Consultations**
 - Involving between 70 to 300 companies and researchers per PCP
 - Broaching the views of companies and researchers from all over Europe and beyond in preparation of the upcoming PCP procurement
- **Call for Tenders**
 - Tender docs downloaded typically between 50 to 300 times
 - Nr of offers received typically between 10-50 (4-7 for specialised/low budget PCPs)
 - Offers received from all over Europe and beyond
- **Contract award**
 - 132 procurers cooperating/buying jointly across the different buyers groups
 - 167 contracts awarded in total
 - Winning bidders involving 349 companies and 63 universities/research centra
 - Total value of the PCP procurements: between € 450.000 and € 9.000.000
 - Contract values for phase 1: between € 15.000 and € 180.000 (per contractor)
 - Contract values for phase 2: between € 20.000 and € 900.000 (per contractor)
 - Contract values for phase 3: between € 65.000 and € 2.700.000 (per contractor)

Companies & univs / research centra involved



Companies & univs / research centra involved



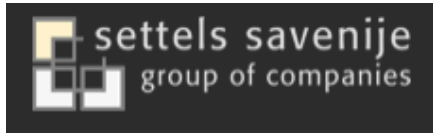
European Commission



energising mobility



ARS Traffic & Transport Technology



Companies & univs / research centra involved



VIVO™ Smart Medical Devices
Bringing Innovation to Lives

NE
neuroelectrics®

indra **INSPIRO**

CAMLIN

ENGINEERING

ReboundPhysio™
helping you bounce back

Starlab®
Living Science

made for movement

Tech4Care
Nuove tecnologie per l'assistenza

Corehab
empower your training

FONDAZIONE BRUNO KESSLER **AppAttic**

BLUE ROOM

PDF association

abc Digital Preservation Coalition

dual lab

Preservica Digital Preservation
Open Preservation Foundation



KEEP SOLUTIONS
University of Minho SPIN-OFF

LIBIS
INTO INFO

KU LEUVEN



UCL
Université catholique de Louvain



intoPIX
secure image technology

schoolpoort
POWERED BY DIGILOKAT

grupo **edebé**

imc

finpeda
Innovations in education

Almerin ky

Linfre Education AB

SUNSTONE

IK4 TEKNIKER
Research Alliance

Bilbomática

trilogis

T-Systems

HUAWEI

CYFRONET

RHEA GROUP

exoscale

advania
Welcome to IT

divia

indra

tecnalia Inspiring Business

tesla
ENGINEERING LTD

KTH
VETENSKAP OCH KONST

antec®

ELYTT ENERGY

SIGMAPHI
ACCELERATOR TECHNOLOGIES

TU/e Technische Universiteit Eindhoven
University of Technology

Jotne

telerobotlabs

MICELab

VWINGS
ICT SOLUTIONS

Companies & univs / research centra involved



miThings idieikon RAMEM HealthCareCoCreation gp

Ulster University LARZEP Hospital Universitario de La Princesa COGNUSE GRUPO PULSO

HOSPITAL UNIVERSITARIO de LA RIBERA ventus consult SaludMadrid FORTH ARISTOTLE UNIVERSITY OF THESSALONIKI umio

CHECKPOINT ARTICA KOMEK salumedia ESTEVE ICZ PrYv everis

SMARTLIFE XIOX mindray INNOMEDIQ CRONOS GROEP FESNOR EMFIT

aparito TU/e Alot TicSalut RICOH Germans Trias i Pujol Hospital

WelchAllyn patienttrack biovotion gnosis Fundación cidaut

DataLong 16 SenLab FONDAZIONE DDIMIO VECCI ED virtask TRUST medical systems PlayBenefit

EMERGYA mecanitzatsPUJOLAR ubiwhere therapænis ATC international eit Digital

JIG Secmotic Effective Knowledge s.r.l. SUPRASYS TEAMDEV

Advanced solutions UNIVERSITÀ DEGLI STUDI DI MILANO B2m SOFTWARE GREENAPES UrbanDNA

Companies & univs / research centra involved



European Commission



Centro Euro-Mediterraneo sui Cambiamenti Climatici



Centre Tecnològic de Catalunya



AN ASI / TELESPAZIO COMPANY



suez



planetek hellas



planetek italia



creo TECH

Instruments S.A.



HIDROMOD



gmv

INNOVATING SOLUTIONS



IPMA



ASTER

SYSTEMS ENGINEERING & SMART TECHNOLOGIES



abering

SMART METERING



sonaca GROUP



inovaworks

COMMAND AND CONTROL



satways



skytek



s&t



orbital eye



GOMEZ GROUP

METERING



FAST

CONTROL TECHNOLOGY



TELEREADING

INTEGRATED SYSTEMS



PROMPTLY



gpi hydroko



DePuy Synthes

PART OF THE Johnson & Johnson FAMILY OF COMPANIES



KONGSBERG



ICAR

CNR



CERTH

CENTRE FOR RESEARCH & TECHNOLOGY HELLAS



TELESPAZIO

a LEONARDO and THALES company



PML Applications Ltd



International Diabetes Federation



MAGALDINNOVA

building reliable systems



METEDA

ORACLE Platinum Partner



HEMO SOFT



Medisanté



vree health

MORE LIFE TO LIFE



KOMPAI robotics



ACTIA



fortum



lifeina



ANNE CARE



HAVELSAN



TAL TECH



SILBERAUTO

EESTI



spare



shotl



RAMBOLL



VTT



ecofleet

A Fleet Complete Company



Halogen



Forus PRT

A part of SEABROKERS GROUP



AUTONOMOUS MOBILITY

Companies & univs / research centra involved



Immediate impacts of EU funded PCPs (ongoing + completed PCPs)



- **Opening a route-to-market for new players/SMEs**
 - 61,5% of the total value of all PCP contracts goes directly to SMEs
 - Compared to 29% average in public procurements across Europe

Mostly small young SMEs: 31% below 10 people, 48% below 50 people, 60% less than 10 years old
- **Helping also larger market players bring products to the market**
 - 16% of PCP contracts won by large companies as single bidder
 - 19% of PCP contracts won by consortia of larger companies plus SMEs
 - 73,5% of the PCP contracts won by SMEs (SMEs alone, or as lead bidder)
- **Relevance to universities & bringing scientific results to market**
 - 30% 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**
 - 33,1% of contracts are 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**
 - 99,5% of contractors do 100% of R&D activities for the PCP in Europe
(2 have committed to do minimum 68% resp. 85% of R&D in Europe)

Lessons learnt (ongoing + completed PCPs)



- **Separating PCP (R&D) from PPI (commercial volume deployment) and using a phased PCP approach**
 - Opens the market for small players/SMEs (smaller gradually growing contract sizes)
 - Enables procurers to steer industry R&D to meet their needs, achieve desired quality and efficiency improvements in public services and reduce vendor lock-in
 - Stimulates cooperation with universities and larger companies
 - Enables use of place of performance clauses that create growth/jobs in Europe
- **Joint cross-border PCP procurement**
 - Stimulates cross-border company growth
 - Facilitates the creation of more open standards based interoperable solutions
- **Leaving IPR ownership rights with contractors**
 - Reduces the cost / the R&D risk for procurers with 50%
 - Encourages wider commercialisation of solutions by vendors
- **Using a place of performance condition in PCPs**
 - Can effectively stimulate growth and job creation in Europe



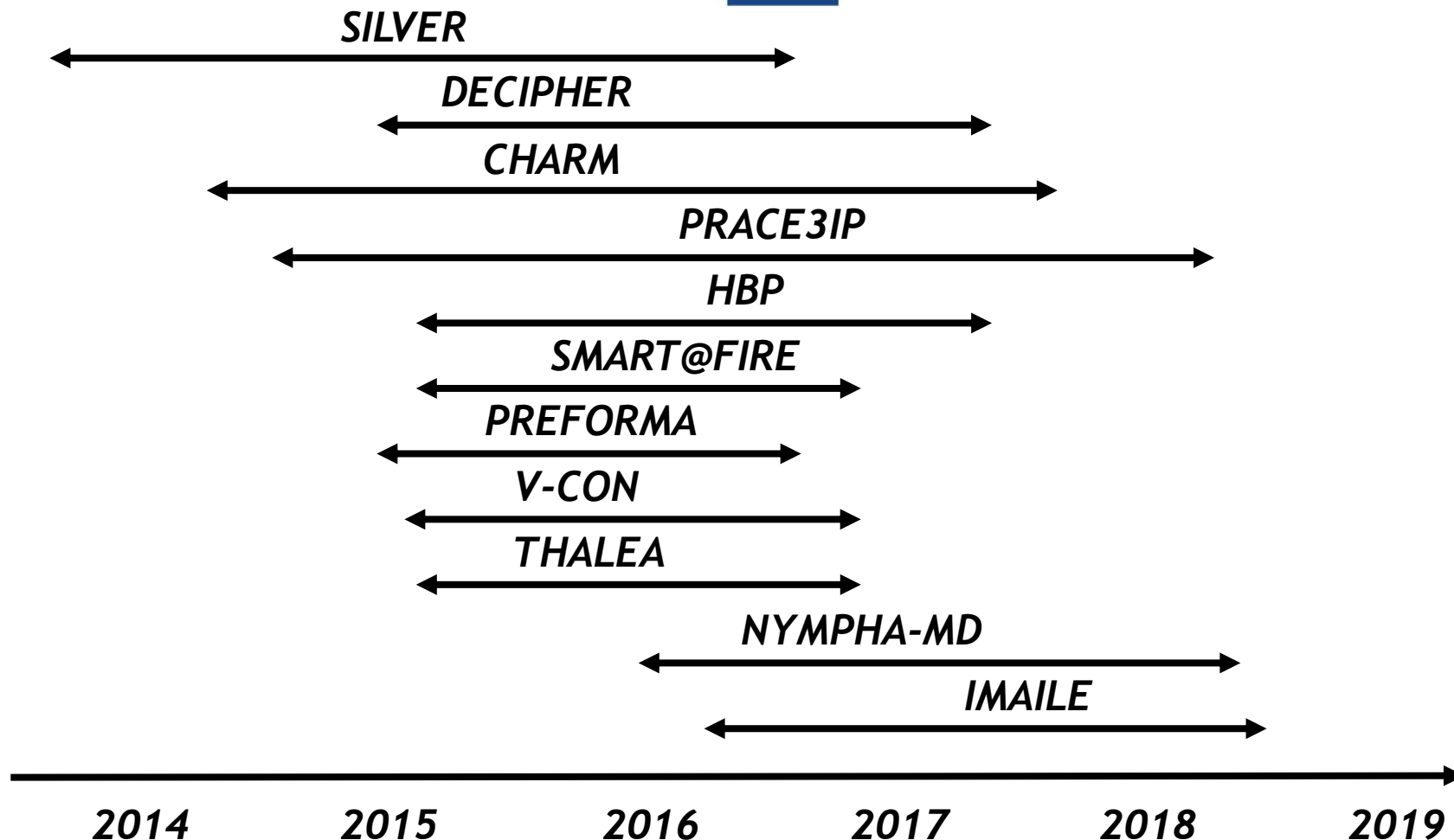
LONGER TERM IMPACTS OF COMPLETED PCPs

Results of survey with companies and procurers of all completed FP7 funded PCPs

**94% of the 66 contractors and 98% of the 46 procurers from the 11 completed FP7 PCPs
replied to the e-mail & phone survey conducted by DG CNECT in April-May 2019**



Timeline of the completed FP7 PCP procurements Ph1 to Ph3 contracting



Note that 3 PCPs have only finished 1 year ago, 3 finished 2 years ago, 5 finished 2,5 years ago
Several companies and procurers are therefore still busy commercialising and preparing deployment.
Impacts reported below are therefore the impacts achieved 'so far'. More is still to come in the future.

Longer term impacts of completed PCPs 'so far'

Impacts for procurers



- Improving the quality and efficiency of public services
 - All completed PCPs delivered solutions that improve quality and / or efficiency
 - 60% of procurers use PCP also to obtain more open, interoperable solutions
- Deployment of solutions by procurers in the project
 - Procurers from 55% of completed FP7 PCPs have already deployed solutions developed during the PCP (SILVER, PRACE3IP, HBP, PREFORMA, THALEA, IMAILE)
 - Open source solutions deployed without needing procurement: PREFORMA, HBP (part open source)
 - Solutions procured as part of the PCP: PRACE3IP, THALEA, IMAILE
 - Solutions procured after the PCP: SILVER, HBP
 - Procurers from 45% of completed FP7 PCPs have *not procured yet*
 - Delay in other deployments that need to be finished first before buying the PCP solutions: CHARM
 - Slow standardisation is delaying deployment: V-CON
 - Product commercialisation/certification/clinical trials not finished yet: SMART@FIRE, NYMPHA-MD
 - Market situation / deployment EPSOS interoperable health records delayed: DECIPHER
- Wider deployment of solutions by other procurers on the market
 - Procurers from 27% of completed FP7 PCPs are already preparing additional larger scale procurements with enlarged buyer groups (THALEA, PRACE3IP, IMAILE)

Typical hurdles to scale up further in some areas: slow standardisation, certification, regulation, unclear health insurance/reimbursement rules, fragmented market in EU

Longer term impacts of completed PCPs 'so far'

Impacts for companies



- **Commercialisation of solutions (product available on the market)**
 - 86% of Ph3 contractors, 75% of Ph2 contractors and 30% of Ph1 contractors have already commercialised (part of) their solutions
 - 11% of contractors (across Ph1/2/3) still expect to commercialise within 2 years
 - 17% of contractors do not plan commercialisation of solutions
- **Business growth**
 - ~ 50% of contractors already increased their revenues thanks to the PCP solution
 - 24,2% of start-ups have secured equity investment since the PCP
 - 18% of start-ups concluded partnerships with large corporates
 - ~1 SME per PCP attracted additional financing from the EU SME instrument
 - Either before the PCP to verify the feasibility of their idea and setup their business for the PCP
 - Or during/after the PCP, for wider marketing activities and/or to diversify also into other markets
- **Exit strategy (62,8% of companies in the PCPs are Start-Ups)**
 - 12,1% of start-ups have undergone a merger or acquisition
 - 3% of start-ups have done an IPO since end of the PCP (1 on NASDAQ)

Typical additional support that SMEs/start-ups are looking for, to scale up further:
Introduction to investors, corporates, international distributors, budget for more trials/
demonstrations with new customers and marketing of solutions (e.g. specialised fairs)

€171,5M

Additional funds leveraged
(VC & grants)

66

PCP contracts awarded

33

Contractors increased revenues

€37,4M

Funds invested

57

IPRs protected
(patents, TM, ©)

40

Products on the market

20%-30%

Cost savings and higher quality public services

**11 completed
FP7 funded PCPs**

20

Solutions exported

9

Solutions exported outside EU

Lessons learnt – Recommendations for the future



- **Feedback from procurers**
 - More regular and higher budget open PCP calls, synchronised with prior CSA calls
 - Allow for budget, time and task flexibility in project implementation
 - H2020 template tender docs: great help, add more guidance (e.g. on IPR clauses)
 - Simplify? (so much work to evaluate tons of offers, work with many suppliers etc.)
- **Feedback from companies**
 - Don't make big changes to the PCP instrument: it works well. More PCPs, please!
 - Don't compromise on the EU wide transparent, competitive approach
 - Keep EU reviews on the tender docs: delivers higher quality, more open tenders
 - Don't combine the purchase of R&D and wide scale deployment in one procurement (most innovative start-ups/SMEs would otherwise not have won contracts, it would crowd out R&D investments and foreclose competition also for larger companies)
 - Give start-ups and SMEs in PCPs priority access to EU SME support instruments
- **Common feedback**
 - Simply and accelerate without changing the core features of the PCP instrument: simplify EC IT tool for reporting/payments, fast track PCPs with combined ph2/3, make more visible that PCP can include 1st deployment (not commercial volumes)
 - More capacity building on PCP around Europe needed for procurers and companies
 - Create a European home market where we can scale-up fast (remove regulatory market fragmentation, speed up certification, standardisation... alongside the PCP)

Telemedicine for ICU-patients at increased risk

THALEA: benefits for procurers

Thalea⁾⁾⁾

PCP: procured the R&D, testing and deployment (for 4 years) of the resulting pre-series systems

June 2015 -> Nov 2016

5 suppliers (ph 1) -> 3 suppliers (ph 3)



*Certification of solutions
Scaling up development
SMEs grow their business
Enlarged buyers group*

Thalea⁾⁾⁾ II

PPI: larger scale wider deployment of final certified systems

Call for tenders

Expected by summer 2019

Procurers PCP: Univ Clinic Aachen (DE), Univ Hospital Maastricht (NL), Hospital East Limburg (BE), Parc Tauli Sabadell University Hospital (ES), Northern Ostrobothnia Hospital District (FI)

Enlarged buyers group for the PPI: includes also Austrian procurers.

Benefits for procurers and intensive care patients:

- ❑ **Interoperable (lower cost)** platform for tele-detection / tele-care of ICU-patients at increased risk
- ❑ **Significantly improved risk-detection, earlier diagnosis and higher efficiency** in the ICU, enabling a reduction in sepsis mortality by 25% and in length of hospital stay by 20-50%.
- ❑ **Faster time to market:** From research to deployed systems in 1,5 year time. The three pre-series systems delivered during the PCP by Dendrite Clinical Systems (UK/IE), New Compliance (NL) and Philips (DE) all met the procurers' needs. They are **deployed and in use** in the hospitals since 2016.

Telemedicine for ICU-patients at increased risk

THALEA: benefits for companies



- THALEA enabled companies to grow their business cross-border and bring disruptive innovations to the market: Telemedicine center with big data analysis, self-learning and prediction capabilities.

Nov 2016 (end of PCP)

Certification as medical device (2018)

Today



Company setup office in the US (12/2016)
Distributor agreements (2017)
Integration with hospital platforms of big corporates (e.g. GE, Johnson, Philips..)
ERDF funded safety demonstration (2018)
Finalising VC investment round (2019)

OR Cockpit Solution
already installed in 25 Dutch and 2 US hospitals.
Distributing also in BE



SME, IE

Setup new company ICView specifically for commercialising the solution in Europe, Middle East, Russia (2017)

ICView Solution
running as a pilot system in several hospitals



DE

Further solution enhancements in cooperation with hospitals (2017-19)
Marketing ongoing

eICU Solution
deployed in several clinics.
Commercialisation of TeleICU extensions for critical care ongoing now

Robotics for independent living of elderly

SILVER: benefits for procurers



PCP: procured the development and testing in 5 countries

Oct 2013 -> Aug 2016

7 suppliers (ph 1) -> 3 suppliers (ph 2-3)



**Certification of solutions
Scaling up production
SMEs grow their business**

INDIVIDUAL PURCHASES by public procurers (DK,SE), elderly persons and elderly care organisations (worldwide)

End 2016 - Present

Procurers PCP: City of Odense and region of Southern Denmark (Denmark), city of Västerås (Sweden), city of Vantaa and Oulu (Finland), city of Stockport (UK), city of Eindhoven (Netherlands)

Deployment: Only SE and DK cities are responsible for buying elderly care equipment. NL, UK, FI cities promoted SILVER to elderly (wide deployment depends on sickness reimbursement schemes).

Benefits for procurers and elderly people:

- ❑ Concrete contribution to the goal to market solutions that enable to **care by 2020 with same amount of staff for 10% more elderly people** living a **higher quality independent life** at home
- ❑ **Choice between 5 new products:** 5 out of 7 contractors are successfully commercialising their solutions: Robot Care Systems (NL), Bioservo (SE), Camanio (SE), Robosoft (FR), Marsibionics (ES)
- ❑ Several hundreds of the robotics solutions resulting from SILVER have already been sold and deployed in the SILVER countries and beyond. **Elderly users are very happy.**

Robotics for independent living of elderly

SILVER: benefits for companies



- SILVER triggered the creation of new start-ups and helped existing startups grow their business.

Aug 2016 (end of PCP)



SME, NL

Certifications as medical device (2017-18)

SME ph1 grant (2012) setup the SME
Lerovis merged into RCS (2014)
Raised equity investment (2016)

Today

~32 LEA robots (walking and other assistance) sold in NL, UK, DE, Scandinavia



SME, SE

Agreements with NASA, Airbus, GM, GE,...
3 equity investment rounds ('13, '14, '16)
NASDAQ listed (2017)
SME ph2 grant (2018) wider commercialisation

~ 245 i-Hands (smart wearable giving muscular support) sold worldwide to industrial and health market



SME, FR

SME, FR

Equity investment round (2013)
Spun out Kompai robotics company (2016)
Partnering with AGFA healthcare

~ 50 Kompai robots (walking+other assistance) installed in several nursing homes + hospitals



SME, SE



SME, SE

Merger and renamed Camanio Care (2016)
Stocklisted on Spotlight (2017)
Office in US, distributors in China, AU, EU

~350 Mealtime devices (eating assistance) sold worldwide



SME, ES

ECHORD ++ support
Agreement with ESCRIBANO (2016)
SME ph2 grant (2018) wider commercialisation
Clinical trials (ES) & crowdfunding ongoing

Wearable bionic exoskeleton (muscular assistance) in trials now

Long term digital preservation

PREFORMA: benefits



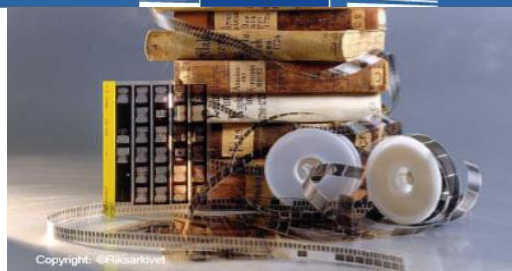
for procurers



PCP: procured the R&D and tested the solutions in 8 countries

June 2014 -> Dec 2017

6 suppliers (ph 1) -> 3 suppliers (ph 3)



Publication and continued extension and updating of the open source code

INDIVIDUAL DOWNLOADS of the open source solutions by memory institutions from around the world (incl. from PREFORMA countries)

Beginning 2018 - Present

Procurers PCP: National Archives - Riksarkivet (SE), Sound and Image - Beeld en Geluid (NL), Royal Institute for the art patrimonium - KIK (BE), Greek Film Center (EL), Local Government Management Agency - LGMA (IE), Foundation Prussian Cultural Heritage (DE), Town Hall Girona (ES), Ministry of Culture - EVKM (EE), National Library - Kungliga (SE)

Benefits for procurers and citizens:

- ❑ Goal achieved to market open source products that enable **reliable assessment and correction of the increasing amount of electronic collections** to be archived
- ❑ **3 Conformance checkers for the 3 most common file formats** (PDF, TIFF, AV) successfully marketed by: MediaArea.net (FR) and Open Preservation Foundation (UK)
- ❑ The new solutions are **saving time and money, reducing the error rate and improving the quality** of digital preservation

Long term digital preservation

PREFORMA: benefits



for providers

- ❑ PREFORMA helped companies and foundations to bring to the market reliable, standardised conformance checker tools and to raise the interest of the community to keep on investing in extending the high quality tools
- ❑ Within only 1,5 years, the open source tools have already been downloaded by memory institutions from over 150 countries: 60% from EU, 30% from US and 10% from the rest of the world. The number of downloads is still growing.

End 2017 (end of PCP)

Today



SME, FR



*New release published in 2018 and 2019
Contributing further to standardisation
to improve for video format*

MediaConch
*(for Audio Visual files)
15000 downloads and still
increasing*



Foundation, UK



*Blueroom licensed further development
and commercialisation of DPF to OPF
New release published in 2018 and 2019
Nr of employees increased with 60%*

DPF (for TIFF format)
VeraPDF (for PDF format)
*32000 downloads and
still increasing*

DPF license



SME, ES

Personalised e-learning IMAILE: benefits for



procurers



PCP: procured the R&D, tested and deployed the solutions

October 2015 -> September 2017
7 suppliers (ph 1) -> 2 suppliers (ph 3)



***Enlarging buyers group
SMEs grow their business
and scale up development***



***Solutions already deployed by
IMAILE partners. PPI under
preparation (with larger buyers
group) for wider deployment***

September 2017 - Present

Procurers: Halmstad Commune (SE), Alexandersson University Institute Varberg (SE), University of Magdeburg (DE), Municipality of Konnevesi (FI), City Council Viladecans (ES).

Benefits for procurers and children/teachers:

- ❑ Goal achieved to obtain solutions that offer a **more personalised, gaming-like learning experience** to children in primary and secondary schools. Two solutions continuously analyze and interactively motivate students to improve their learning behaviour with the help of **artificial intelligence**
- ❑ **Result: Students 55-75% more motivated and successful in learning mathematics, technology and science topics and reduction in the teachers' planning and assessment time by 30-40%**
- ❑ Solutions usable on any device (compatible with Bring Your Own Device approach)
- ❑ **4 suppliers commercialized their solution: Almerin (FI), Edebe (ES), Digiloket (NL), Finpeda (FI)**

Personalised e-learning IMAILE: benefits for



companies

- IMAILE triggered the creation of new start-ups and helped existing startups grow their business.

Sept 2017 (end of PCP)

Today



Large comp + SME, ES

Mydocumenta raised VC investment
Doing marketing to expand to other markets

AMIGO
Deployed in Konnevesi (FI), Saxony-Anhalt (DE) and Villadecans (ES) schools



Attracted 2 VC investment rounds (2017, 2018)
Distribution partnership with OPPI
Moving international in 2019
Diversified also into corporate learning market

YIPTREE
Deployed in Cities (FI) Tampere and Jyväskylä



Attracted additional angel investment (2018)
New release coming for more personal learning experience and reducing teacher admin
Expanding to more schools across EU in 2019

Schoolpoort.nl
40 schools signed up more in the pipeline



Working on further releases to improve the virtual school experience
Expanded trainings in India, Asia and China

Virtual 3D STE(A)M Lab
Piloted by city of Turku

Energy Efficient High Performance Computing PRACE3IP: benefits for procurers



PCP: procured the R&D, tested and started using the prototypes

July 2014 -> February 2018
5 suppliers (ph 1) -> 3 suppliers (ph 3)



Preparing larger scale deployment

PPI: €73M procurement ongoing. Vendors from PRACE 3IP PCP have already won contracts.

Today

Procurers PCP: CINECA (IT), Juelich Supercomputing Center (DE), Genci (FR), EPCC (UK), CSC (FI)

Procurers PPI: CINECA (IT), Juelich Supercomputing Center (DE), Genci (FR), CEA (FR), BSC (ES)

Benefits for procurers and other HPC end-users:

- ❑ The PCP accelerated key R&D activities on high energy efficiency supercomputing and delivered three pilot solutions that use different technology approaches that improve the state-of-the-art of energy efficient high performance computing: Bull/Atos (FR), E4 Engineering (IT), Maxeler (UK)
- ❑ The results have clear potential for a real impact on future HPC procurements (e.g. PPI4HPC, ICEI/FENIX, the new EUROHPC Joint Undertaking) and on the larger European HPC community
- ❑ The PCP enabled supercomputing centers to pilot for the first time joint procurement and joint ownership of innovative HPC prototypes. This paved the way for the creation of a Joint Undertaking (EUROHPC) that will invest over 1Bn EURO on joint HPC procurement in coming years

Energy Efficient High Performance Computing PRACE3IP: benefits for companies



- PRACE3IP helped both large companies and SMEs accelerate the energy efficiency of HPC solutions

February 2018 (end of PCP)

Today



Large comp, FR



Added the power measurement innovation to its cluster software product portfolio. Commercialised the solution.

Power measurement framework
Already sold to several customers



SME, IT



Added the power monitoring / capping and SLURM innovation to its product portfolio. Working on an updated improved version. Commercialising in partnership with IBM.

OP206 Gold
Commercialisation ongoing



SME, UK



Commercialised as a service on AWS cloud and separately, the Conjugate Gradient kernel. Commercialising in partnership with Xilinx.

AWS cloud and Conjugate Gradient kernel solution
Commercialisation ongoing

Interactive HPC for Human Brain research

HBP PCP: benefits for procurers



Human Brain Project

PCP: procured R&D and testing. Pilot solutions also deployed at the end

July 2014 -> End 2016

3 suppliers (ph 1) -> 2 suppliers (ph 3)



Preparing larger scale deployment



No need for PPI for open source part of solutions. €23M PPI for wider deployment of other part is ongoing (FENIX/ICEI)

Today

Buyers HBP PCP: Juelich Supercomputing Center (DE) in collaboration with Swiss National Computing Center
Buyers FENIX/ICEI PPI: Juelich Supercomp. Center (DE), ETHZ/CSCS (CH), BSC (ES), CEA (FR), CINECA (IT)

Benefits for procurers and other HPC end-users:

- ❑ The Human Brain Project PCP delivered innovations for specific High Performance Computing requirements for brain simulation, including **interactive supercomputing** and **large memory capacity**.
- ❑ **Two vendors successfully completed** the final phase of the PCP: Cray and IBM / NVIDIA consortium. Both performed all R&D in Europe and deployed pilot systems based on their solutions, which are now **deployed and widely used for brain research**.
- ❑ Procurements for **wider deployment across an enlarged buyers group** are under the way e.g. in the ongoing FENIX / ICEI procurements

Interactive HPC for Human Brain research

HBP PCP: benefits for companies



- HBP accelerated the developed of interactive computing and large memory capabilities for HPC. It opened up business opportunities for companies to partner with other HPC players on the market.

End 2016 (end of PCP)

Today



The PCP strengthened the cooperation between NVIDIA and IBM Together they are successfully commercialising and rolling-out the solution

**JURON
Interactive in-situ HPC visualisation with NVIDIA graphical processing unit accelerators in IBM Power Processors**



DE

The core technology developed in the PCP has grown further and split into two strands of engineering (for which Cray attracted also further funding) that will likely result in products

**JULIA
KNL-based compute nodes. Intel processors. Omni-path 100 Gbps network**

In their own words



Boosting start-up growth

"As a serial entrepreneur, my experience is that the IMAILE PCP has had a crucial impact on the growth and success of our company. Thanks to the PCP our small start-up company has been able to grow from a 1 person to a 34 person company and has developed a state of the art product to global markets. The success of the PCP has given us credibility to negotiate and partner with leading companies in education technology business.

Thanks to the PCP, our start-up company can become a part of the new e-learning ecosystem that will have a strong influence on millions of students. Indeed, many parents struggle today with kids that are more interested in playing computer games than in studying their mathematics or science subjects for school. The IMAILE PCP helped our company develop a practical solution to this challenge: a new tool that, using continuous analysis of patterns in students' behavior based on artificial intelligence, offers a more personalized gaming-like learning experience to children in primary and secondary schools. This stimulates students to be more interested and successful in learning also difficult subjects like mathematics and science."

Teemu Laitinen, CEO, Almerin Ltd, start-up company that is currently in the last testing phase of the [IMAILE](#) PCP

Impact on company R&D and innovation behaviour

"We have participated in other collaborative R&D projects before. Compared to this, PCP is more helpful for us because it gives us more freedom to innovate, and pushes us more to establish collaboration with technology providers, with European universities and with the community of PRACE users, and gives us a lot more precise vision of the future need of the PRACE Community."

Piero Altoè, Marketing & Business Development Manager, E4 Computer Engineering spa (SME that participates in the FP7 funded PRACE 3IP PCP project on energy efficient supercomputing: <http://www.prace-ri.eu/pcp/>).

"We received similar positive feedback from all three vendors, big or small, in the PCP."

Philippe Segers, Project Manager at GENCI (GENCI is public procurer in the buyers group of the PRACE 3IP PCP)

In their own words



Improving the quality of public services for European citizens

"I couldn't really believe how good the innovative telemedicine solutions are that were developed in our THALEA PCP, until I saw it in action with my own eyes. Last week the system predicted the risk that a sepsis infection would occur in the intensive care unit in our hospital. Four hours later this situation really happened and thanks to the telemedicine solutions we were able to save lives.

The novel algorithms and improved risk-detection of the new telemedicine solutions result in earlier diagnosis and improve efficiency in the ICU significantly, enabling a reduction in sepsis mortality by 25% and a reduction in the length of hospital stay of patients by 20-50%."

Robert Deisz, Head Doctor, Intensive Care Unit, University Hospital Aachen (procurer in [THALEA PCP](#))

Stimulating commercial exploitation of industry R&D

"As public procurers of large research infrastructures, we have participated in numerous traditional collaborative research and innovation actions in Horizon 2020. When we started the PRACE3IP and HBP PCPs on supercomputing, we were sceptical about how the PCP approach would compare to these traditional collaborative research projects and to our usual public procurement practices. We were also not sure how companies would respond to the PCP model that puts multiple vendors in competition.

At the end of both PCPs, we now realise that the results are actually really positive: PCPs are resulting in products reaching exploitation and productisation in a reasonably short period of time, which indicates that compared to traditional collaborative research and innovation actions, PCP could be a better approach for the public sector to steer industry R&D towards commercialisation. The competition among companies in the PCPs is encouraging both small and large corporates to innovate more than in our usual procurement approaches. Both small and large vendors that participated are positive about PCP. The stepwise approach with gradually growing assignments per phase has proven to be an effective way, in particular also for SMEs, to mature their business. Initial concerns that PCP may limit co-design have been overcome as PCP enables companies and researchers to participate in team, as consortia or subcontractors."

Dirk Pleiter, Forschungszentrum Jülich, Jülich Supercomputing Centre, Germany (buyer in the HBP and PRACE3IP PCP)
Philippe Segers, project manager at GENCI, France (buyer in the PRACE 3IP PCP)

In their own words



Procurers about the benefits of European cooperation / joint cross-border PCP procurement

"We have definitely strengthened our position with the marketplace by joining partners with Rijkswaterstaat (to implement the CHARM PCP that aims to create an open modular architecture for the next generation traffic management centers). To say we are buying for 14 traffic management centers has really caught the market's attention and made them listen and respond to us."

Source: Ian Chalmers, project manager for the CHARM PCP funded by the FP7 program, Highways England

Danish CEO of top public procurer about the efficiency of R&D expenditure

"Rows of studies document that innovation contributes significantly to growth and value creation. Given that public-private innovation partnerships have been around and growing exponentially in numbers since years, where is this increase in economic growth and value creation?"

Current public-private R&D collaborations are not working well because both parties have to focus on developing something together, without this necessarily leading to sales or purchases that increase company revenues in the long run. It is not enough for private companies that they can learn a lot or get access to testers and users by engaging in an R&D collaboration project. They need to tailor development to tangible commercialization and export opportunities from the start.

PCP is a good tool to increase the efficiency of public-private cooperation. In PCP the development of a new solution is driven by customers with a purchase in mind. Thus, there are pre-built incentives which focus on commercialization when developing a workable solution for a public sector need."

Source: Af Allan SØgaard Larsen, CEO of Falck (the world's largest rescue service headquartered in Denmark), <http://www.denoffentlige.dk/falck-topchef-stjael-andres-innovation-og-bliv-beloennet-det>

Help us spread the message



There are still plenty of public procurers out there that don't know yet about this type of EU support for innovation procurement!

Who can help promote the Horizon 2020 support to help public procurers carry out PCPs/PPIs across the EU Member States and Associated Countries?

There are still plenty of companies out there that don't know yet about these innovation procurement sales opportunities!

Who can help promote upcoming open market consultations and call for tenders in for PCP/PPI procurements in their countries?



More info - Overview EU funded innovation procurements

<https://ec.europa.eu/digital-single-market/en/innovation-procurement>

<http://ec.europa.eu/digital-agenda/en/eu-funded-projects>



HOW DO THE IMPACTS OF EU FUNDED JOINT CROSS-BORDER PCPs COMPARE TO THOSE OF NATIONAL PCPs AND OTHER INNOVATION PROCUREMENT APPROACHES



Comparing all TED/EU wide published PCP versus innovation partnership procurements



European
Commission

<u>Status Dec 2019</u> Comparing only EU wide/TED published procurements (including all national funded & EU funded joint procurements)	Pre-Commercial Procurements (421 contracts €177M)	Average across all procurements in Europe	Innovation Partnerships (178 contracts €2,5Bn)	Indicator for
Average Nr of offers received	14,8	3,0	1,5	Level of interest of suppliers to participate Degree of competition in bidding
% of procurements that receive only 1 offer	3,0%	30,0%	38,8%	Level of interest of suppliers to participate Degree of competition in bidding
% of procurements that award contracts to single versus multiple vendors	6,5% to < 3 vendors 11,8% to 3 vendors 81,7% to > 3 vendors	no data	88,2% to 1 vendor 10,7% to 2-3 vendors 1,1% to > 3 vendors	Degree of competition in product development Resilience to prevent supplier lock-in Safeguard for obtaining better value for money
% of vendors winning a contract for the first time with the procurer	70,0%	no data	12,0%	Opportunities for suppliers to find new customers Ability to mitigate integrity risks in procedure
% of total value of contracts awarded to suppliers from another country	23,7%	3,5%	2,2%	Cross-border growth opportunities for suppliers Access to wider / better value for money product pool
% of tendering procedures stopped i.e. no contract awarded	0,0%	no data	9,0%	Degree of difficulty for procurers to setup the procurement and for companies to make offers
% of <i>total value</i> of contracts that is awarded directly to SMEs	58,8%	29,0%	13,4%	Facilitating direct access of SMEs to the market, not as subcontractor but for their own product strategy
% of <i>total number</i> of contracts that is awarded directly to SMEs	72,6%	56,0%	45,5%	Facilitating direct access of SMEs to the market, not as subcontractor but for their own product strategy
% of number of Startups < 10 years old that are awarded contracts	59,4%	no data	16,3%	Facilitating access of Start-ups to the market Degree of disruptive innovation involved
% of winning tenders with university / non profit research center in it	17,8%	no data	3,4%	Degree of upstream R&D involved Degree of stimulating new further research
% of contract activities performed in EU Member States or Associated Countries	98,0%	no data	65%**	Creating growth and jobs in Europe Strategic autonomy / technological sovereignty

* The figures reflect the status of all awarded PCP respectively innovation partnership procurements published EU wide / in the TED database up to May 2019

** Estimate based on whether the contractors' R&D and production facilities for these type of solutions are located inside / outside of the EU

Comparing all TED/EU wide published EU funded joint PCPs versus national PCPs



European
Commission

Status December 2019 Comparing the effect of EU wide promotion of the call for tender and the effect of joint cross border procurement	EU funded joint PCPs (TED published / EU wide promoted) 167 contracts €69M	National PCPs (TED published / EU wide promoted) 254 contracts €108M	National PCPs (not TED published or EU wide promoted) 2634 contracts €662M	Indicator for
Average Nr of offers received	16,6	13,9	9,0	Level of interest of suppliers to participate
% of procurements that receive only 1 offer	0,0%	2,4%	3,4%	Level of interest of suppliers to participate Degree of competition in bidding
% of procurements that award contracts to single versus multiple vendors	0% to < 3 vendors 7% to 3 vendors 93% to > 3 vendors	10% to 2 vendors 14% to 3 vendors 76% to > 3 vendors	12% to 2 vendors 17% to 3 vendors 71% to > 3 vendors	Degree of competition in product development Resilience to prevent supplier lock-in Safeguard for obtaining better value for money
% of vendors winning a contract for the first time with the procurer	85%	60%	45,0%	Opportunities for suppliers to find new customers Ability to mitigate integrity risks in procedure
% of total value of contracts awarded to suppliers from another country	33,1%	12,6%	0,6%	Cross-border growth opportunities for suppliers Access to wider / better value for money product pool
% of tendering procedures stopped i.e. no contract awarded	0,0%	0,0%	2,1%	Degree of difficulty for procurers to setup the procurement and for companies to make offers
% of total value of contracts that is awarded directly to SMEs	61,5%	58,0%	64,6%	Facilitating direct access of SMEs to the market, not as subcontractor but for their own product strategy
% of total number of contracts that is awarded directly to SMEs	73,5%	71,6%	72,6%	Facilitating direct access of SMEs to the market, not as subcontractor but for their own product strategy
% of number of Startups < 10 years old that are awarded contracts	59,8%	58,9%	63,1%	Facilitating access of Start-ups to the market Degree of disruptive innovation involved
% of winning tenders with university / non profit research center in it	30,5%	10,2%	10,1%	Degree of upstream R&D involved Degree of stimulating new further research
% of contract activities performed in EU Member States or Associated Countries	99,7%	97,0%	97,0%	Creating growth and jobs in Europe Strategic autonomy / technological sovereignty

* The figures reflect the status of all awarded national and EU funded pre-commercial procurements up to December 2019

Comparing all types of PCPs versus innovation partnership procurements



Status December 2019 Comparing all previous breakdowns in one table	EU funded joint PCPs (TED published / EU wide promoted) 167 contracts €69M	National PCPs (TED published / EU wide promoted) 254 contracts €108M	National PCPs (not TED published or EU wide promoted) 2634 contracts €662M	Innovation Partnerships (TED published) 178 contracts €2,5Bn
Average Nr of offers received	16,6	13,9	9,0	1,5
% of procurements that receive only 1 offer	0,0%	2,4%	3,4%	38,8%
% of procurements that award contracts to single versus multiple vendors	0% to < 3 vendors 7% to 3 vendors 93% to > 3 vendors	10% to 2 vendors 14% to 3 vendors 76% to > 3 vendors	12% to 2 vendors 17% to 3 vendors 71% to > 3 vendors	88,2% to 1 vendor 10,7% to 2-3 vendors 1,1% to > 3 vendors
% of vendors winning a contract for the first time with the procurer	85%	60%	45,0%	12,0%
% of total value of contracts awarded to suppliers from another country	33,1%	12,6%	0,6%	2,2%
% of tendering procedures stopped i.e. no contract awarded	0,0%	0,0%	2,1%	9,0%
% of total value of contracts that is awarded directly to SMEs	61,5%	58,0%	64,6%	13,4%
% of total number of contracts that is awarded directly to SMEs	73,5%	71,6%	72,6%	45,5%
% of number of Startups < 10 years old that are awarded contracts	59,8%	58,9%	63,1%	16,3%
% of winning tenders with university / non profit research center in it	30,5%	10,2%	10,1%	3,4%
% of contract activities performed in EU Member States or Associated Countries	99,7%	97,0%	97,0%	65,0%

* The figures reflect the status of all awarded national and EU funded PCPs versus innovation partnerships up to December 2019

Complementarity / split between PCP and PPI and phased approach enables to...



- 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
- Can 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 large deployment contract (e.g. innovation partnerships)

(more on differences PCP-PPI/innovation partnerships: [eafip toolkit](#))

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 value for money for procurers and to optimise growth opportunities for suppliers

PCP

- **Open tendering**
- **R&D services** procurement (possibility to buy also the end-product as part of PCP or with negotiated procedure without publication after the PCP)
- **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 of R&D - and possibly also significant part of later production - done in EU Member States 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**: use existing procedure e.g. open, negotiated procedure, competitive dialogue.
- **Get better value for money and don't block further innovation**: Where possible, leave IPR ownership with suppliers alike in PCPs.

Subject to applicable provisions EU public proc. directives, WTO



LINK BETWEEN VENTURE FUNDING AND THE SUCCESS OF COMPANIES THAT PARTICIPATED IN THE FP7 FUNDED PCPs



Share of companies from FP7 funded PCPs with VC backing



- How many VC backed companies?
 - 30% of all SMEs that participated in FP7 funded PCPs are today VC backed
- Attracting first round of venture financing
 - 47,5% already their first VC backing before starting the PCP
 - 19% received first VC backing during phase 1 of the PCP
 - 9,5% received first VC backing during phase 2 of the PCP
 - 5% received first VC backing during phase 3 of the PCP
 - 19% received first VC backing after the PCP
(this number is still expected to grow in the future)
- Attracting further rounds of venture financing
 - 10% of VC backed SMEs received additional VC backing in phase 1 of the PCP
 - 35,7% of VC backed SMEs received additional VC backing in phase 2 of the PCP
 - 18,8% of VC backed SMEs received additional VC backing in phase 3 of the PCP
 - SO FAR 17,6% of VC backed SMEs received additional VC backing after the PCP
(this number is still expected to grow in the future)

Participation in the PCP helps several companies attract VC financing

Success rate of VC backed companies in PCPs



Success rate in winning PCP contracts

- Compared to all contractors (also large corporates)
 - 12,1% of all phase 1 contractors were VC backed when starting the PCP
 - 16,3% of phase 2 contractors were VC based when starting phase 2
 - 27,6% of phase 3 contractors were VC backed when they started phase 3
- Compared only to SME contractors
 - 15,6% of all phase 1 SME contractors were VC backed before the PCP
 - 22,55% of SME contractors were VC backed when they started phase 2
 - 42,1% of SME contractors were VC backed when they started phase 3

Success rate in completing the PCP

- 20% of contractors that were already VC backed at the start of the PCP was awarded both a phase 1, phase 2 and a phase 3 PCP contract

Having VC backing is not a guarantee to win PCP contracts or to successfully complete a PCP. Keeping a dual focus on developing a product that meets the customer requirements alongside growing the company is important.

Success rate of VC backed companies in commercialising their PCP solutions



- **Success rate in growing the business**
 - 38,1% of VC backed companies did not commercialise their PCP solution (yet)
 - 52,4% of VC backed companies have already commercialised their PCP solution and are already making revenue from it (slightly more than the average across all companies that participated in the FP7 funded PCPs)
 - 9,5% of VC backed companies have already commercialised their PCP solution but not made revenue from it yet (still completing, certifying, marketing solutions)
- **Link with IPR protecting solutions**
 - Across all contractors (including large companies): 33,33% of all IPRs are held by venture funded companies versus 66,66% by non-venture funded companies
 - Across the SME contractors only: 41% of all IPRs are held by venture funded SMEs versus 59% of all IPRs by non-venture funded SMEs

First signals suggest a higher growth rate of the VC backed companies compared to the non-VC backed companies that participated in the PCP.

There is no direct link observed (yet) between IPR protection and VC backing.