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

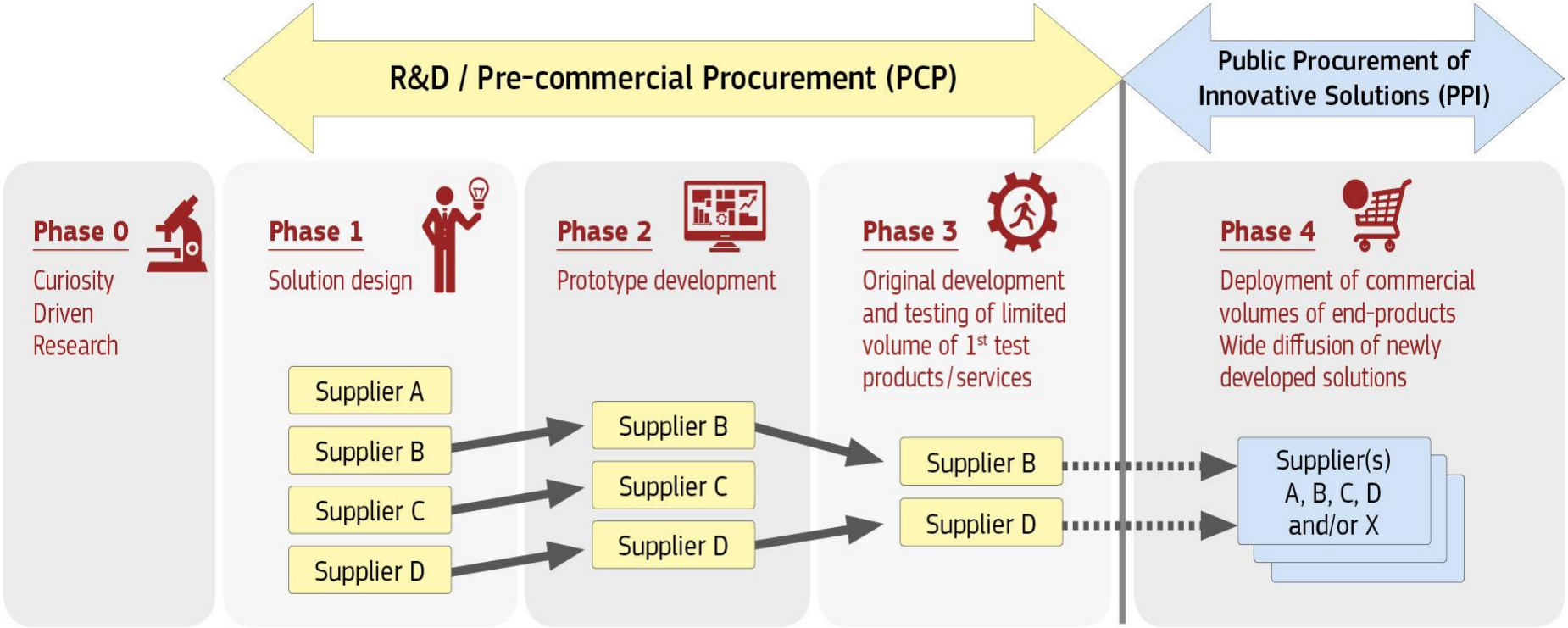
Lieve Bos

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

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

European Commission

- **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)

PCP finished

- 10 PCPs are ongoing (are procuring)
  - QUACO (Quadrupole magnets for large hadron collider)
  - MAGIC (Post stroke recovery)

PCP ongoing

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 govs) was only partially implemented (up to mid phase 2)

- 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)

PCP ongoing

- 7 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)
  - STARS (Health stress reduction)
  - POSIDON (Polluted site decontamination)
  - BROADWAY (Interoperable mobile broadband for public safety)
  - SHUTTLE (Toolkit for trace analysis by forensic laboratories)
  - CIVILnEXT (Next gen information systems for EU external policies)
  - ARCHIVER (Archiving and preservation for research environments)

PCP in Preparation

Procurers involved



SILVER
Supporting Independent Living for the Elderly through Robotics

Vantaa

CITY OF ODENSE

OULU

Region Syddanmark

VÄSTERÅS STAD

STOCKPORT
METROPOLITAN BOROUGH COUNCIL

City of Eindhoven

Thalea

UNIKLINIK RWTH AACHEN

OYS OULU UNIVERSITY HOSPITAL

Maastricht UMC+

Ziekenhuis Oost-Limburg

Parc Taulí Sabadell
Hospital Universitari
Fundació Parc Taulí

smart@fire

ibz Federal Public Service Home Affairs

GREATER MANCHESTER FIRE AND RESCUE SERVICE

SAPEURS POMPIERS BOUCHES-DU-RHÔNE

Stadt Dortmund
Feuerwehr

IFR
Institut für Feuerwehr- und Rettungstechnologie der Feuerwehr Dortmund

HP

JÜLICH
FORSCHUNGSZENTRUM

in cooperation with

BSC Barcelona Supercomputing Center
Centro Nacional de Supercomputación

KIT
Karlsruhe Institute of Technology

EPFL
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

ETH zürich

CINECA

DECIPHERPCP

TicSalut
Tecnologia, innovació i salut

ESTAR
Ente di supporto tecnico-amministrativo regionale

TRUSTECH
The North West NHS Innovation Service

Procurers involved



V-con

Rijkswaterstaat
Ministerie van Infrastructuur en Milieu

TRAFIKVERKET

CHARM

HIGHWAYS
AGENCY

Rijkswaterstaat
Ministerie van Infrastructuur en Milieu

Vlaanderen
is mobiliteit &
openbare werken

PRACE

PRACE 3IP

CINECA

JÜLICH
FORSCHUNGSZENTRUM

GENCI

epcc

CSC

IMAILE
Innovative Methods for Award Procedures of ICT learning in Europe

Halmstad

OTTO VON GUERICKE
UNIVERSITÄT
MAGDEBURG

Konnevesi
Metsien ja vesien pitäjä

AJUNTAMENT DE
VILADECANS

Alexandersoninstitutet

PREFORMA

Riksarkivet

KUNGL. BIBLIOTEKET
National Library
of Sweden

PACKED
Centre d'Expertise
pour le Patrimoine Numérique

Institut für
Museumsforschung
Staatliche Museen zu Berlin

BEELD EN GELUID

Ajuntament de Girona

REPUBLIC OF ESTONIA
MINISTRY OF CULTURE

IRPA
KIK

GREEK
FILM
CENTRE

LGMA
AN GHNÍOMHAIREACHT BAINISTÍOCHTA RIALTAIS ÁITIÚIL
LOCAL GOVERNMENT MANAGEMENT AGENCY

Procurers involved



nympha







HELIX NEBULA
THESCIENCECLOUD
HNSciCloud

















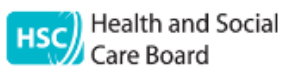




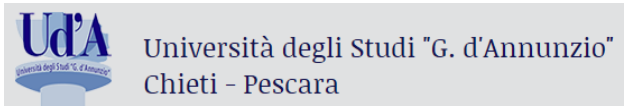




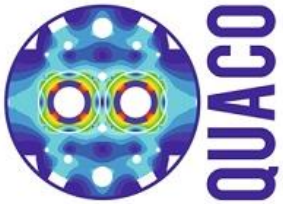




















SELECT
for Cities









Procurers involved



Relief

resah
Réseau des Acheteurs Hospitaliers

JUNTA DE ANDALUCIA
Servicio Andaluz de Salud
CONSEJERÍA DE SALUD

AKADEMISKA SJUKHUSET
UPPSALA UNIVERSITY HOSPITAL

empattics

ACIS
acis
AXENCIA DE COÑECEMENTO EN SAÚDE

salud
Servicio Aragonés De Salud

midt
regionmidtjylland

sesan
SERVICE NUMÉRIQUE DE SANTÉ

Marine-EO

dgpm
Direção-Geral de Política do Mar

FRCT
FUNDO REGIONAL DE CIÊNCIA E TECNOLOGIA

hcmr
ΕΛΚΕΘΕ

Anti-SUPERBUGS

Agència de Qualitat
i Avaluació Sanitàries de Catalunya
AGENCY FOR HEALTH QUALITY AND ASSESSMENT OF CATALONIA

PROVINCIA AUTONOMA DI TRENTO

Sheffield Teaching Hospitals NHS
NHS Foundation Trust

NHS
National Institute for
Health Research

ICO
Institut Català d'Oncologia

UNIKLINIK
RWTHAACHEN

D4D
Devices for Dignity
Healthcare Technology Co-operative

STARS

academisch ziekenhuis
Maastricht
azM

Andalusia
HEALTH

INRCA
Istituto
di Ricovero
e Cura
a Carattere
Scientifico
HEALTH
AND SCIENCE
ON AGING

SJD
Parc Taulí Sabadell
Hospital Universitari
Fundació Parc Taulí

Procurers involved



LIVE INCITE

KAROLINSKA UNIVERSITY HOSPITAL

CLÍNIC BARCELONA Hospital Universitari

REGION H Bispebjerg og Frederiksberg Hospital

Nightingale
Smart monitoring, safer care

UMC Utrecht

KAROLINSKA UNIVERSITY HOSPITAL

University College London Hospitals NHS Foundation Trust

UZ LEUVEN

PROEMPOWER

T.C. Sağlık Bakanlığı

SPMS EPE
Serviços Partilhados do Ministério da Saúde

Servicio Murciano de Salud

SORESA
Soggetto Aggregatore della Regione Campania

SMART.MET

VIVERACQUA
GESTORI IDRICI DEL VENETO

HYDROBRU

DIPUTACIÓN DE BADAJOZ

SDEA

eau de Paris

cilE

FŐVÁROSI VÍZMŰVEK

FABULOS

FORUM VIRIUM HELSINKI

ΔΗΜΟΣ ΛΑΜΙΕΩΝ

STCP

Gjesdal kommune

Gemeente Helmond

Republic of Estonia
Ministry of Economic Affairs and Communications

Procurers involved



POSIDON

AUTORITÀ PORTUALE TRIESTE

Bilbao

SPAQuE

baía do tejo

Centro de Estudios Ambientales

CEA

Ingurugiro Gaietarako Ikastegia

BroadWay

Pre-Commercial Procurement

NAKIT

GOBIERNO DE ESPAÑA

MINISTERIO DEL INTERIOR

SECRETARÍA DE ESTADO DE SEGURIDAD

POLITIE

ERILLISVERKOT

astrid

RIKS

KEMEA

MINISTERO DELL'INTERNO

Liberté • Égalité • Fraternité

RÉPUBLIQUE FRANÇAISE

MINISTERE DE L'INTERIEUR

SHUTTLE

KEMEA

Liberté • Égalité • Fraternité

RÉPUBLIQUE FRANÇAISE

MINISTERE DE L'INTERIEUR

Netherlands Forensic Institute

Ministry of Justice and Security

POLÍCIA JUDICIÁRIA

משטרת ישראל

CIVILnEXt

KEMEA

CENTRE FOR EUROPEAN PERSPECTIVE

IOM

UN MIGRATION

ARCHIVER

ARCHIVING AND PRESERVATION FOR RESEARCH ENVIRONMENTS

CERN

DESY

EMBL

IFAE

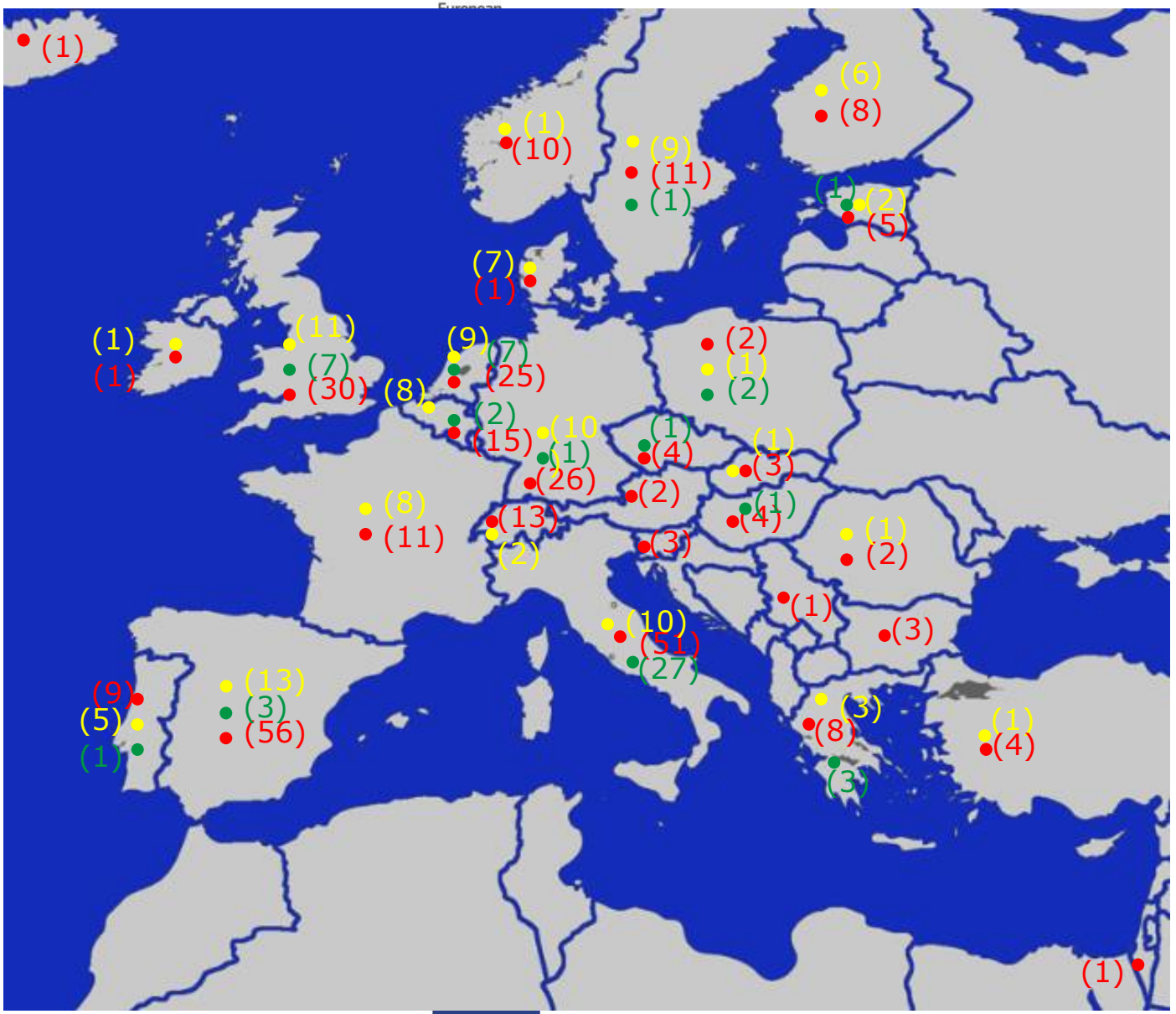
Institut de Física d'Altes Energies

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
  - 110 procurers cooperating/buying jointly across the different buyers groups
  - 151 contracts awarded in total
  - Winning bidders involving 312 companies and 56 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)

Geographic location winning bidders & procurers (completed+ongoing PCPs)

- Companies in winning bids (nr/country)
- Universities/ research centra in winning bids (nr/country)
- Procurers (nr/country)



Companies & univs / research centra involved



ICON Protect
fire & rescue experts
BHT
ELITRONIC s.r.o.
[ui!]
hop ubiquitous
Medieta Oy
PULSO ediciones
CyberLightning
IOS INTERNATIONAL
Joint Operational Solutions
APPLYCON
GESELLSCHAFT FÜR INTELLIGENTE TEXTILE PRODUKTE ITP
NEW COMPLIANCE
Università di Roma Tor Vergata
CIRSFID
Omnisense
vochoc
UNIVERSITÀ DEL SALENTO
cloud security alliance
SEYNTEX
100 YEARS HI-TECH TEXTILES
Holík international
GoodPRO
good protection
DENDRITE
CLINICAL SYSTEMS LTD
Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING
sixsq
tecnalia
Corporación Tecnológica
John von Neumann
FACULTY OF INFORMATICS
Gateway to Your Future
UNIVERSITY OF WEST BOHEMIA
prevent & deloza
PHILIPS
Healthcare
INTERWAY
NTT DATA
Global IT Innovator
TEXPORT
PROTECTING YOU.
BIOTECH KNOWLEDGECENTER
teamnet
MEGWARE
EUROTECH
Imagine. Build. Succeed.
E4
COMPUTER ENGINEERING
Bull
atos technologies
MAXELER
Technologies
Maximum Performance Computing
liberologico.com
etnahitech
UNIVERSITÀ DEGLI STUDI DI BARI ALDO MORO
SIELTE
IBM
Hewlett Packard Enterprise
UNIVERSITÀ degli STUDI di CATANIA
TRACCIA
LAB
EUCENTRE
European Centre for Training and Research in Earthquake Engineering
CRAY
DELL
PARTEC
CLUSTER COMPETENCE CENTER
KIT
Karlsruhe Institute of Technology
NVIDIA
EXTOLL
latency matters.
UNIVERSITÀ DEGLI STUDI FIRENZE
etventure
Bosonit
Nearshoring Excellence

Companies & univs / research centra involved



Companies & univs / research centra involved



ViVO™ Smart Medical Devices
Bringing Innovation to Lives

NE neuroelectrics®

indra

INSPIRO

CAMLIN

ENGINEERING

made for movement

Tech4Care
Nuove tecnologie per l'assistenza

Corehab
empower your training

FONDAZIONE BRUNO KESSLER

ReboundPhysio
helping you bounce back

Starlab®
Living Science

AppAttic

PDF association

DigitalPreservationCoalition

dualab

Preservica
Digital Preservation

Open Preservation Foundation

BLUE ROOM

KEEPSOLUTIONS
University of Minho SPIN-OFF

LIBIS
INTO INFO

KU LEUVEN

AWARE [SYSTEMS]

UCL
Université catholique de Louvain

skemmi

intoPIX
secure image technology

schoolpoort
POWERED BY DIGILOKET

grupo edebé

imc

finpeda
Innovations in education

Almerin ky

Linfre Education AB

SUNSTONE

IK4 TEKNIKER
Research Alliance

Bilbomática

trilogis

T-Systems

HUAWEI

exoscale

divia

indra

CYFRONET

RHEA GROUP

advania
Welcome to IT

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

WINGS
ICT SOLUTIONS

Companies & univs / research centra involved



miThings
idieikon
RAMEM
Your Engineering and Manufacturing Partner
HealthCareCoCreation
gp
GRUPO PULSO
Knowledge in Health
Ulster University
LARZEP
HYDRAULIC
COGNUSE
ventus | consult
Hospital Universitario de La Princesa
SaludMadrid
Comunidad de Madrid
umio
Value Design in Service Ecosystems
FORTH
INSTITUTE OF COMPUTER SCIENCE
ARISTOTLE UNIVERSITY of THESSALONIKI
HOSPITAL UNIVERSITARIO de LA RIBERA
Departamento de salud La Ribera
ARTICA
telemedicina
salumedia
ESTEVE
ICZ
PrYv
an NTT DATA Company
everis
CHECKPOINT
CARDIO
KOMEK
Health Insight Solutions
mindray
INNOMEDIC
YOUR PATIENT WILL BENEFIT
CRONOS
GROEP
FAESNOR
EMFIT
Sensing What Matters
SMARTLIFE
X10X
aparito
TU/e
Technische Universiteit Eindhoven University of Technology
Alot
TicSalut
Tecnologia, innovació i salut
RICOH
imagine. change.
Germans Trias i Pujol Hospital
patientrack
biovotion
gnosis
DATA ANALYSIS
Fundación
cidaut
Investigación y Desarrollo en Transporte y Energía
WelchAllyn
SenLab
FONDAZIONE BRUNO KESSLER
virtask
Comfort Software met Menselijke Trekjes!
TRUST
medical systems
DataLong 16
The Cloud Dragon
mecanitzatsPUJOLAR
ubiwhere
SUITING THE FUTURE
PlayBenefit
ATC
international
EMERGYA
Tech Lovers. Focused on you
Secmotic
POWERFUL INNOVATION
therapæntis
eit Digital
JIG
Advancedsolutions
Servicios Internet Mobile
Effective Knowledge s.r.l.
SUPRASYS
TEAMDEV
SOFTWARE & WEB ENGINEERING
UNIVERSITÀ DEGLI STUDI DI MILANO
B2M
SOFTWARE
GREENAPES
YOU ARE NOT ALONE IN THE JUNGLE
UrbanDNA
innovate incubate accelerate

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

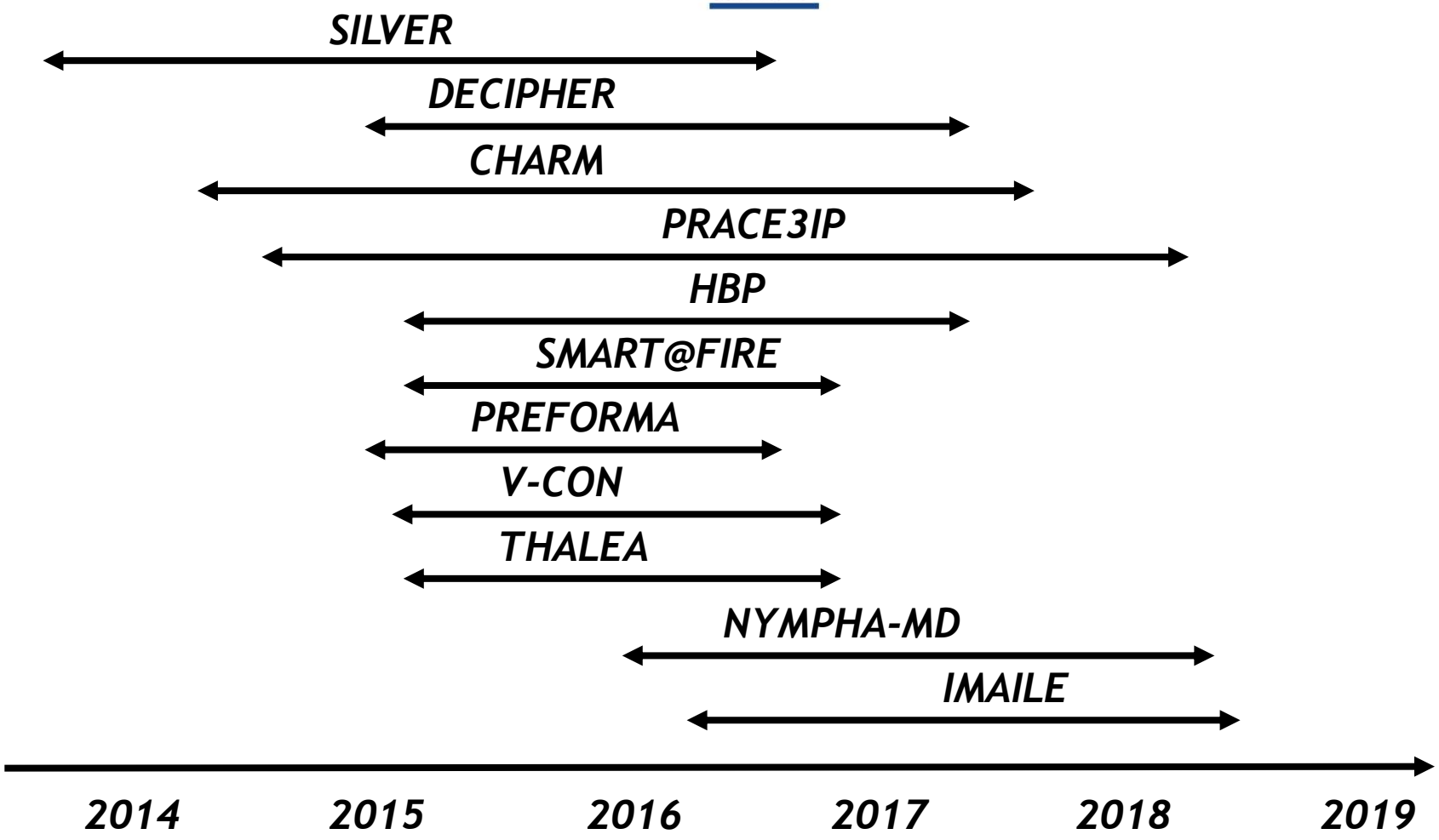
Results of survey with companies and procurers of all completed FP7 funded PCPs

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



HORIZON 2020

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)

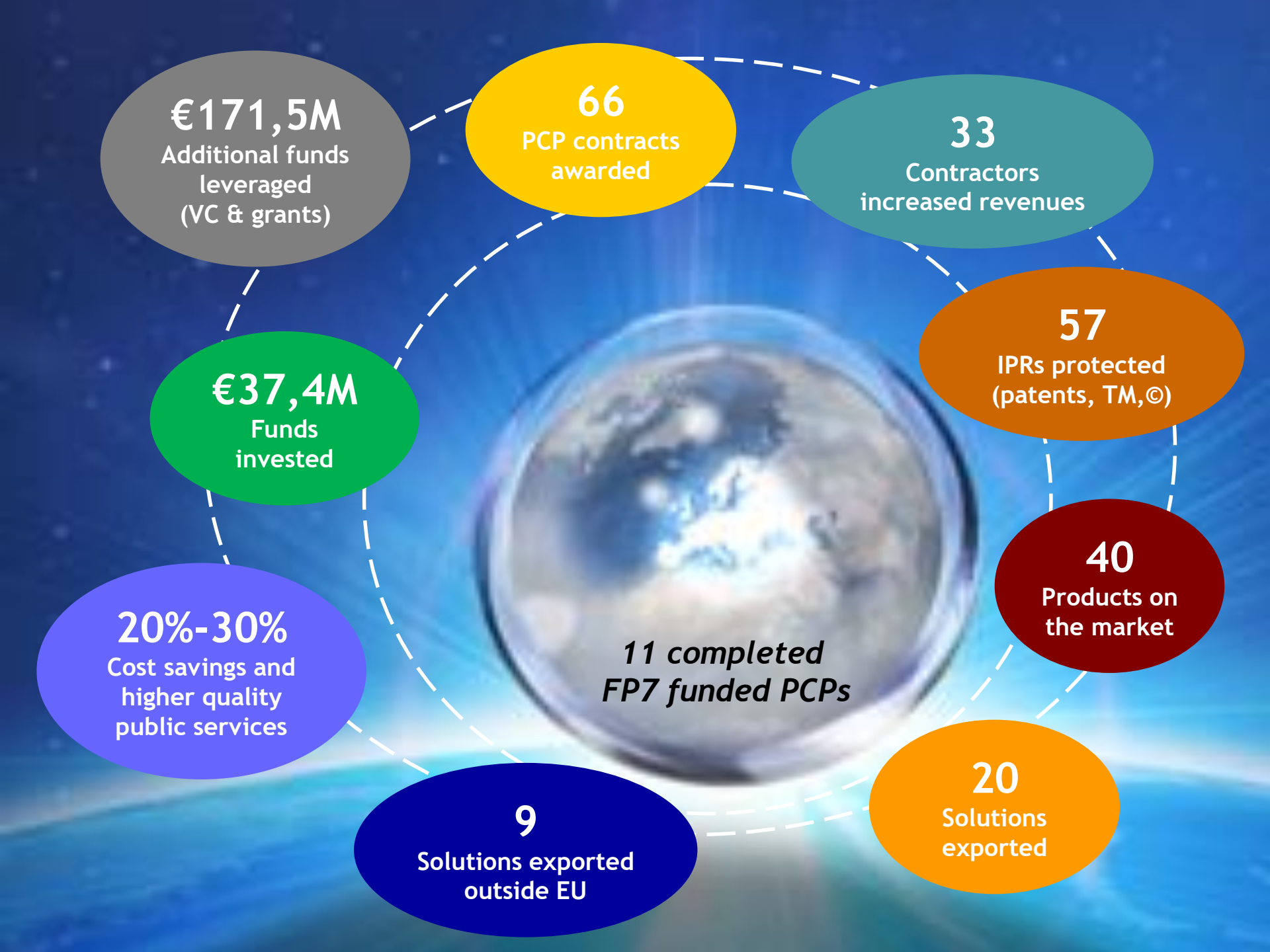
Typical hurdles to scale up further in some areas: slow standardisation, certification, regulation, unclear health insurance/reimbursement rules, fragmented market in EU

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,©)
20%-30%
Cost savings and higher quality public services
11 completed FP7 funded PCPs
40
Products on the market
9
Solutions exported outside EU
20
Solutions exported

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

NEW COMPLIANCE

SME, NL

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*

DENDRITE CLINICAL SYSTEMS LTD

SME, UK

CLINICAL ICView

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*

PHILIPS Healthcare

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

SILVER
Supporting Independent Living for the Elderly through Robotics



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)	Certifications as medical device (2017-18)	Today
ROBOT CARE SYSTEMS *SME, NL*	*SME ph1 grant (2012) setup the SME* *Lerovis merged into RCS (2014)* *Raised equity investment (2016)*	*~32 LEA robots (walking and other assistance) sold in NL, UK, DE, Scandinavia*
BIOSERVO *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*
robosoft Services Robots *SME, FR* KOMPAÏ robotics *SME, FR*	*Equity investment round (2013)* *Spun out Kompaï robotics company (2016)* *Partnering with AGFA healthcare*	*~ 50 Kompaï robots (walking+other assistance) installed in several nursing homes + hospitals*
Bestic AB *SME, SE* CC *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*
marsi-bionics *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 *DPF license* *SME, ES*	*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***

Personalised e-learning IMAILE: benefits for procurers

IMAILE
Innovative Methods for Award Procedures of ICT learning in Europe



LEA
LEARNTECH ACCELERATOR

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 aproach)
- **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
grupo edebé, mydocumenta *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***
Almerin *SME, FI*	*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***
Digiloket *SME, NL*	*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***
ADMINOTECH, finpeda Innovations in education *SME, FI*	*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



PRACE 3IP PCP

PPI4HPC

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

European Commission

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

	February 2018 (end of PCP)	Today
Bull atos technologies *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***
E4 COMPUTER ENGINEERING *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***
MAXELER Technologies Maximum Performance Computing *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

FENIX RESEARCH INFRASTRUCTURE

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

European Commission

- 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**

CH IBM

DE NVIDIA

→ *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

CRAY

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

European Commission

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

European Commission

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



HORIZON 2020

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

European Commission

Status May 2019 of EU wide/TED published procs, incl. national & EU funded ones	Pre-Commercial Procurements (national + EU funded joint PCPs)	Average across all public procurements in Europe	Innovation Partnership Procedures	Indicator for
Average Nr of offers received	14,6	3,0	1,2	Level of interest of suppliers to participate Degree of competition in bidding
% of procurements that receive only 1 offer	3,0%	30,0%	34,0%	Level of interest of suppliers to participate Degree of competition in bidding
% of procurements that award contracts to single versus multiple vendors	5% to < 3 vendors 13% to 3 vendors 82% to > 3 vendors	no data	75% to 1 vendor 16% to 2-3 vendors 9% 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	75,6%	no data	14,0%	Opportunities for suppliers to find new customers Ability to mitigate integrity risks in procedure
% of contracts awarded to suppliers from another country than the procurer	27,1%	1,7%	2,5%	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	13,0%	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	55,6%	29,0%	6,7%	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	71,4%	56,0%	17,5%	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	58,8%	no data	6,0%	Facilitating access of Start-ups to the market Degree of disruptive innovation involved
% of winning tenders with university / non profit research center in it	19,8%	no data	1,5%	Degree of upstream R&D involved Degree of stimulating new further research

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

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

European Commission

Status May 2019 of EU wide/TED published procs, including national & EU funded ones	Pre-Commercial Procurements (EU funded joint PCPs)	Pre-Commercial Procurements (national)	Pre-Commercial Procurements (nat + EU funded)	Indicator for
Average Nr of offers received	16,6	13,5	14,6	Level of interest of suppliers to participate
% of procurements that receive only 1 offer	0,0%	5,0%	3,0%	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 8% to 3 vendors 92% to > 3 vendors	7% to 2 vendors 16% to 3 vendors 77% to > 3 vendors	5% to < 3 vendors 13% to 3 vendors 82% 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	77%	75%	75,6%	Opportunities for suppliers to find new customers Ability to mitigate integrity risks in procedure
% of contracts awarded to suppliers from another country than the procurer	33,1%	22,4%	27,1%	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%	2,3%	0,0%	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	61,6%	53,5%	55,6%	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%	69,8%	71,4%	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%	57,4%	58,8%	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%	11,5%	19,8%	Degree of upstream R&D involved Degree of stimulating new further research

* The figures reflect the status of all awarded national and EU funded procurements published EU wide / in the TED database up to May 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