Digital Transformation of Health and Care

EU Policy and Research Activities

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Digital Transformation of Health and Care

Challenges and Opportunities

➢ **Access to health data (across borders)**
  ▪ **Interoperability of data / systems / technologies**
  ▪ **Cybersecurity and Data Protection**

➢ **Innovative solutions for prevention, diagnosis, treatment, care**
  ▪ **Artificial Intelligence, clinical decision support systems**
  ▪ **HPC, Blockchain, Big data analytics, IoT, cloud computing**

➢ **Efficiency of health and care systems, better outcomes, personalised medicine, integrated care, well-being, citizen empowerment, …**

1 Citizens' secure access to and sharing of health data across borders

2 Better data to advance research, disease prevention and personalised health and care

3 Digital tools and data for citizen empowerment and person-centred care

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Towards access to at least one million genomes in the EU by 2022

EU COUNTRIES AGREED TO COOPERATE IN LINKING GENOMIC DATA ACROSS BORDERS

Austria
Bulgaria
Croatia
Cyprus
Czech Republic
Estonia
Finland
Greece
Hungary
Italy
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Portugal
Slovenia
Spain
Sweden
UK

1MGenomes

3 Use cases:

✓ - Rare diseases

✓ - Cancer

✓ - Common and Complex Diseases

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- **Horizon 2020:**
  - More than 1 Billion EUR of investments in Research & Innovation under Societal Challenge 1 (Health, demographic change and wellbeing)
    - ICT solutions for prevention, diagnosis, treatment, care
  - Almost a similar amount in ICT LEIT
    - Big Data, AI and robotics, Smart systems and wearables, biophotonics etc.

- **Connecting Europe Facility (CEF) - eHealth Digital Service Infrastructure:**
  - Around 80 M€ for eHealth deployment and interoperability
    - Cross-border health services: patient summary, ePrescription, patient access etc.

Examples of ongoing H2020 projects

Decision support, predictive/ precision medicine

Secure data sharing, cybersecurity

Interoperability

Large-scale pilots: Big Data, AI, HPC, IoT...

Currently open/upcoming H2020 topics (I)

- SC1-DTH-02-2020 Personalised early risk prediction, prevention and intervention based on Artificial Intelligence and Big Data technologies (32 MIO)
- SC1-DTH-04-2020 International cooperation in smart living environments for ageing people (8 MIO)
- DT-TDS-04-2020 AI for Genomics and Personalised Medicine (35 MIO)
- SC1-DTH-12-2020: Use of Real-World Data to advance research on the management of complex chronic conditions (41 MIO)
- SC1-BHC-06-2020: Digital diagnostics – developing tools for supporting clinical decisions by integrating various diagnostic data (40 MIO)

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Currently open/upcoming H2020 topics (II)

- DT-ICT-12-2020 AI for the smart hospital of the future (40 MIO)
- ICT-47-2020: Research and Innovation boosting promising robotics applications (20 MIO)

- SC1-DTH-14-2020: Pre-commercial Procurement for Digital Health and Care Solutions (9 MIO)
- SC1-BHC-20A-2020: Pre-commercial procurement (PCP) for integrated care solutions
- SC1-BHC-20B-2020: Public procurement of innovative solutions (PPI) for diagnostics for infectious diseases (25 MIO 20 for 20A and 20 B)

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SC1-DTH-02-2020: Personalised early risk prediction, prevention and intervention based on AI and Big Data technologies

Scope

- Introduce **innovative ICT solutions**: data, data analytics, novel digital technologies, services, products, organisational changes

- Develop **personalised early risk** prediction, prevention and intervention approaches

- Support better **understanding** of disease symptoms and effects and behavioural changes

- Solutions that meet the **needs of individuals**

- Active **stakeholder engagement** in the design and **validation** of models, technologies & scenarios

Expected impact

- Adequate **information** on personalised risk prediction, prevention and intervention

- Clear improvements of **outcomes** for individuals, care systems and wider society and contribution to new health and care pathways

- Large-scale collection of **user-generated data** in compliance with data protection, privacy and security rules and principles

- Integration with European Open science Cloud

RIA, 32 M€, 4-6 M€/proposal

European Commission

Call opens on 19/11/2019, deadline 22/04/2020

SC1-DTH-04-2020: International cooperation in smart living environments for ageing people

Scope

- Develop and validate new solutions for **smart living** environments for ageing people, supporting independent active and healthy lifestyles and fostering **social inclusion**
- Provide **personalised** advice, guidance and follow up in daily life based on active user **engagement**
- **Validation** in realistic test sites (e.g. home or care centres)
- Collaboration with **Japan**: interoperability, standards
- Collaboration with **Canada**: support care transitions

Expected impact

- Improve **independent living**, and quality of life of older persons;
- Usefulness and effectiveness of personalised recomm. and follow-up
- Evidence of **user-centred** design and innovation and user acceptance
- Fostering **social participation** and reducing social exclusion's risks
- Validation of non-obtrusive technology for physical, cognitive, social and mental wellbeing
- Strengthened international cooperation in R&I on ICT for AHA

RIA, 8 M€ - 2-4 M€/proposal

European Commission

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Call opens on 19/11/2019, deadline 22/04/2020

Scope

- Demonstrate the potential and **benefits of AI** for research and personalised medicine through linking relevant genomics data

- Develop and test **AI solutions** for linking genomics repositories across the EU (+"-omics" and related data)

- Support clinical research, decision making, diagnostic capacity

- Potential to build a large-scale distributed **repository** of relevant genomic data (+omics) for AI solutions

- Ensure **compliance** with the relevant privacy, cybersecurity, ethical and legal rules (cross-border data exchange)

Expected impact

- Development and **testing** of AI on genomics and other linked –omics

- Promoting the **sharing of data** and infrastructure for prevention and personalised medicine research

- Measuring patient-based value healthcare **outcomes**

- Contributing to **standards** for genomic data generation, analysis, privacy and interoperability

- Providing **open, reusable data** for prevention, genomics and PM research

- Increasing users' **trust** in AI solutions

RIA, 35 M€, up to 10M€/proposal

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Call opens on 19/11/2019, deadline 22/04/2020

Scope

- Clinical research integrating Real World Data (RWD), either newly acquired or from existing sources, and linking them with data collected with a research purpose if relevant.
- Use of RWD to improve the clinical management of adults with complex chronic conditions (CCC).

RIA, 41 M€, 4-6 M€/proposal

Expected impact

- Demonstrate the potential of the use of Real World Data to advance clinical research on complex chronic conditions;
- Demonstrate potential and use of RWD by health authorities to understand safety, quality and effectiveness of therapies;
- Improve the clinical outcomes as well as quality of life of CCC patients;
- Advance the understanding of management of complex diseases;
- Contribution to the cross-border health data exchange and to the DSM.

Call open until 07/04/2020

SC1-BHC-06-2020: Digital diagnostics – developing tools for supporting clinical decisions by integrating various diagnostic data

Scope

- Tools, platforms or services resulting in an accurate, detailed, structured, systemic and prioritised assessment of the health status in a patient;

- Integration of various data sources such as medical records, *in vitro* and/or *in vivo* diagnostics, medical imaging, -omics data, functional tests (lab-on-a-chip) etc.;

- Taking into account the actual needs of healthcare practitioners;

- Tested and validated in real-life settings in pilot centres, facilitating future Health Technology Assessment;

- Solutions towards concrete patient and public sector needs, having the citizen and healthcare providers at the centre.

RIA, 40 M€, 8-15 M€/proposal

Expected impact

- Increase EU's capacity to innovate in the area of medical instruments technologies through the development of new diagnostic tools, platforms or services integrating various diagnostic data and providing quick, detailed, accurate and highly personalised diagnostics for optimal decision in clinical practice.
- Improve the quality and sustainability of healthcare systems through quicker and more encompassing diagnosis of medical conditions, leading to quicker and better clinical decisions and timely delivery of effective personalised treatments, with reduction of errors and delays (and costs associated to them).
- Contribute to the growth of the European diagnostics sector, in particular for SMEs.
- Reinforce EU's role among world leaders in the production of medical diagnostic devices.

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Call open until 07/04/2020

Healthcare and AI – relevant topics in H2020 ICT-2018-2020

Call H2020-DT-2018-2020: Digitising and transforming European industry and services: digital innovation hubs and platforms

Topic DT-ICT-12-2020: AI for smart Hospital of the future (IA)

Call H2020-ICT-2018-2020 Artificial Intelligence and Technologies for Digitising European Industry and Economy

Topic ICT-47-2020: Research and Innovation boosting promising robotics applications

Opening date: 19 November 2019

Closing date: 22 April 2020

DT-ICT-12-2020: AI for smart Hospital of the future

- In-facility pilot demonstrators: European-led AI based pilots for the smart hospital of the future, enabled by open system platforms

- In health and care settings (hospital, primary care facility or care home)

- Enable or support clinical, diagnosis and treatment, etc. carried out with clinical outcomes comparable to human delivered procedures and with comparable results

- Address any aspect of health facility operations across their range of functions, such as diagnostics, treatments, logistical aspects, measured against health and care metrics

- Engagement of healthcare policy makers, investors, stakeholders

- Trust and acceptance building in the AI technology among all stakeholders (including patients, their formal and informal caregivers, decision makers, etc.)

  ➔ Link to DIH in robotics healthcare - https://dih-hero.eu/

IA, 40 M€, up to 7-10M€/proposal

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ICT-47-2020: Research and Innovation boosting promising robotics applications
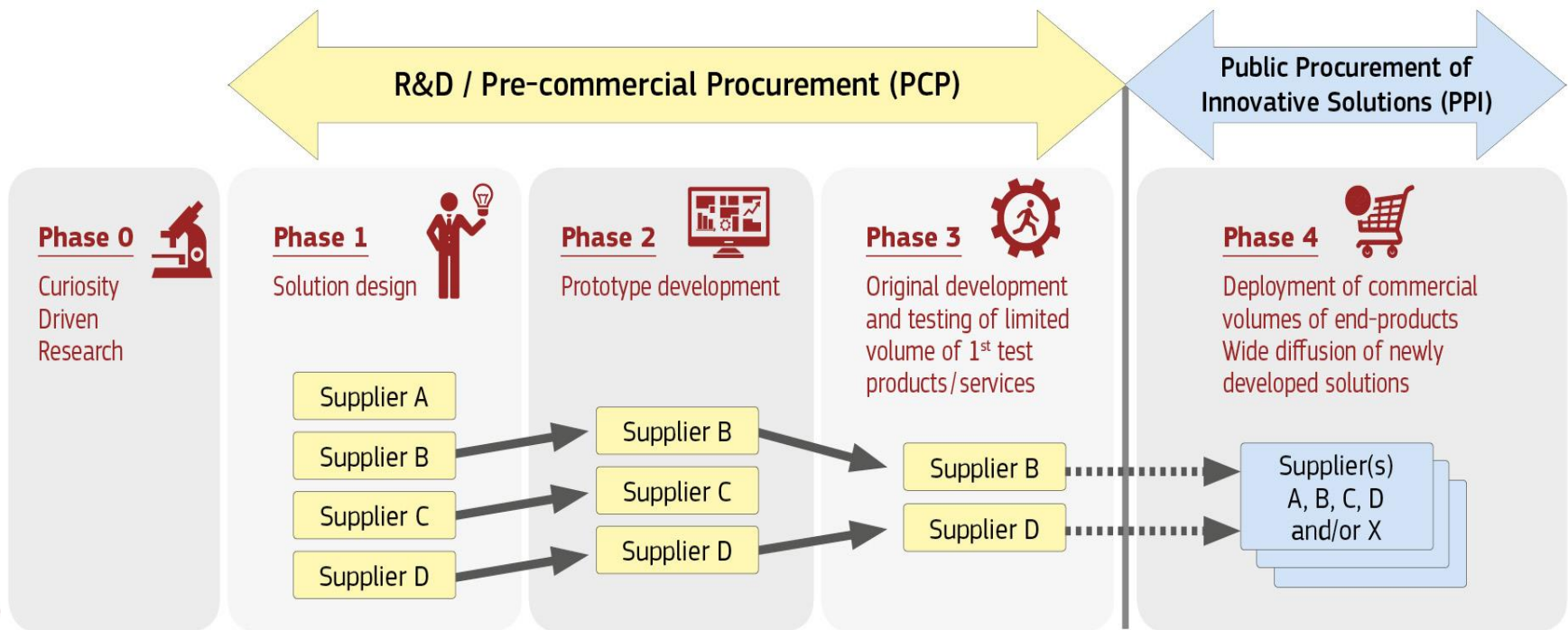
- Specific Challenge: Physical Intelligence (in defined research areas)

- Applications with high socio-economic impact and low environmental footprint – in all application areas

- Demonstrate the potential for take-up in the selected application(s)

- Step change improvements in technical performance arising from novel approaches (driven by a clear understanding of the current state of the art).

- Technical developments that open new market or application opportunities.

- Well established demonstrators of the improved performance within sufficiently realistic operating environments.

- Engagement with excellence centres in multiple technical disciplines so that novelty from cross-fertilization of capability can be exploited

RIA, 20 M€, 2-3 M€/proposal

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✓ **PCP** to steer the development of solutions towards concrete public sector needs, whilst comparing/validating alternative solution approaches from various vendors

✓ **PPI** to act as launching customer / early adopter / first buyer of innovative commercial end-solutions newly arriving on the market

R&D / Pre-commercial Procurement (PCP)

Public Procurement of Innovative Solutions (PPI)

Phase 0
Curiosity Driven Research

Phase 1
Solution design

Supplier A
Supplier B
Supplier C
Supplier D

Phase 2
Prototype development

Supplier B
Supplier C
Supplier D

Phase 3
Original development and testing of limited volume of 1st test products / services

Supplier B
Supplier D

Phase 4
Deployment of commercial volumes of end-products Wide diffusion of newly developed solutions

Supplier(s)
A, B, C, D
and/or X

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Roles

Beneficiaries

➢ **Minimum of 3 independent participants from 3 different MS or AC: undertake the PCP or PPI procurement, the buyers group & the lead procurer + possibly other beneficiaries that assist the procurers in coordination/networking activities**

Buyers group (subset of beneficiaries)

➢ **Minimum 2 public procurers from 2 different MS or AC: provide the financial commitments to buy the R&D (PCP) or the innovative solutions (PPI)**
➢ **Public procurers are contracting authorities or contracting entities as defined in the EU public procurement directives**
➢ **They can be complemented by other types of procurers that are providing services of public interest and share the same procurement need e.g. NGOs or private procurers**

Lead procurer (subset of beneficiaries)

➢ **Public Procurer appointed by the buyers group to lead and coordinate the PCP or PPI procurement.**

*A consortium can include third parties (e.g. end-users such as Patient Associations) putting resources (e.g. test sites, testers) at the disposal of the beneficiaries (e.g. ministry of health that is the procurer) to carry out the action

*Sub-contractors/suppliers: Successful tenderers, selected by the buyers group & lead procurer as result of the PCP or PPI call for tender, to provide the R&D services (PCP) or innovative solutions (PPI). They do 'NOT' become partners in the MGA.

CURRENT PROJECT PORTFOLIO

Ongoing PCP and PPI projects, Coordination & Support Actions:
https://ec.europa.eu/digital-single-market/en/eu-funded-projects

ADDITIONAL INFORMATION

The general FAQs for PCP actions
http://ec.europa.eu/information_society/newsroom/image/document/2016-37/questionsandanswers_pcp_actions_16995.pdf

The proposal template for PCP actions
https://ec.europa.eu/research/participants/data/ref/h2020/call_ptef/pt/2018-2020/h2020-call-pt-pcp-2018-20_en.pdf

What is a PCP – Objectives & Design – Assistance & complementary funding opportunities
https://ec.europa.eu/digital-single-market/en/pre-commercial-procurement

Advice & Toolkit from the European innovation Partnership on Active & Healthy Ageing
https://ec.europa.eu/eip/ageing/public-procurement-platform/resources-pcp-and-ppi_en

SC1-DTH-14-2020: Pre-commercial Procurement for Digital Health and Care Solutions

Scope

- Support health and care service provider to **procure** the development of digital services, facilitating the transition to integrated care models across services and country-specific cross-institutional set-ups

- Address key **challenges** (patient empowerment, self-management, patient safety, involvement, disease management, hospital logistics, skills, telemedicine, mHealth..)

- Driven by clearly identified **user needs** and public and/or private procurers

- **Interoperable** solutions based on open platforms and standardisation

- Facilitate the **early adoption,** scale-up and and transferability

- Compliance with **ethical standards**, patients' **rights** and privacy protection

Expected impact

- Established **path to innovation**, evidence of benefits of disruptive technologies - support the development of sustainable business models

- Improved **user and market engagement**, strengthened procurement community, evidence of healthy innovation ecosystems

- Evidence in key **performance** areas i.e. quality in health and care, sustainability of the delivery system and economic value

- **Increased opportunities** for solution uptake across wider international procurement markets - interoperable solutions validated through field testing

PPP, 9 M€ - 4-5M€/proposal

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Call opens on 19/11/2019, deadline 22/04/2020

Scope

- Innovative **integrated care solutions to modernise public services** whilst creating growth opportunities for industry and researchers;
- For example, formal or informal **organisational** solutions, **personal-health and self-care** solutions, **professional care** solutions and **ICT-based** solutions;
- Open to **all areas of public sector interest** requiring innovative integrated care solutions;
- Should demonstrate **sustainability** of the action beyond the life of the project;
- Should include **cooperation** with policy makers to reinforce the national policy frameworks and mobilise substantial additional national budgets for PCP and PPI
- **Collaborating** with respective EU funded projects in the area, as well as awareness raising, technical assistance and/or capacity building to other procurers

Expected impact

- **Reduced fragmentation** of demand for innovative solutions in the area of integrated care;
- Increased opportunities for **wide market uptake** and **economies of scale** for the supply side through the use of **joint specifications** and wide publication of results;
- Where relevant, contribution to standardisation, regulation or certification.

25 M€ (20A and 20B) - 5-6 M€/proposal

Call open until 07/04/2020

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SC1-BHC-20B-2020: Public procurement of innovative solutions (PPI) for diagnostics for infectious diseases

Scope

- Implementation of rapid diagnostic tools for infectious diseases in clinical practice;

- Specifications that are applicable for EU-wide deployment of the innovative diagnostics;

- Driven by public and/or private procurers (at national, regional or local level) that have responsibilities and budget control in the relevant area of supply of health and care services;

- Clear communication and outreach strategies aiming to actively promote and support public health procurement organisations and health care providers across regions and borders of the EU in adopting relevant innovation procurement approaches;

- Ensure the sustainability of solutions beyond the lifespan of the proposed project.

Expected impact

- Innovative procurement practices for diagnostics for infectious diseases in the EU, involving newly acquired rapid diagnostic tests in hospital and ambulatory settings.
- Contribute to the EU One Health Action Plan on Antimicrobial Resistance, in particular in relation to 'Better Prevention and Control of AMR' and the goal to address patient safety in hospital environments by supporting good practices in infection prevention and control.
- New opportunities for market uptake and economies of scale for the supply side of rapid diagnostics in the area of respiratory tract infections across the EU.
- Reduced fragmentation of demand for innovative solutions.

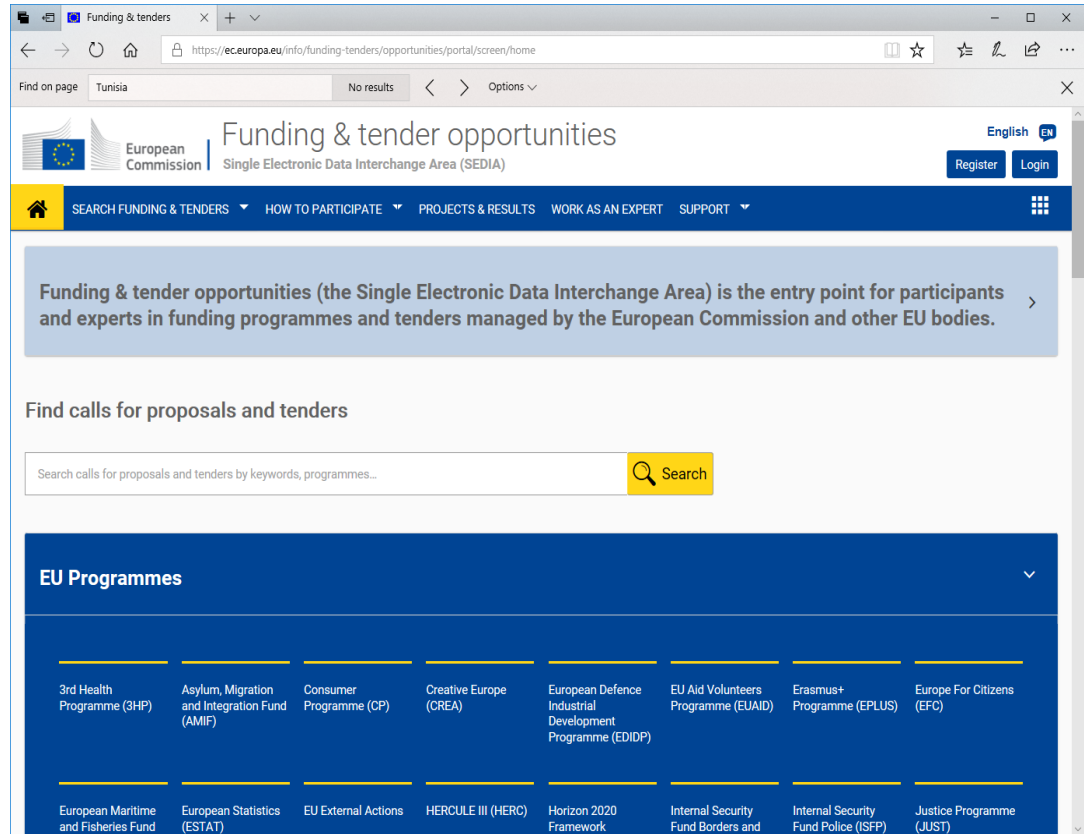**25 M€ (20A and 20B) - 3-5 M€/proposal**

Call open until 07/04/2020

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Funding & tender opportunities

- Call topics

- NCPs

- Expert registration

- Documents

- FAQs

- Rules for participation

- Project reports

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home

THANK YOU!

QUESTIONS?

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