

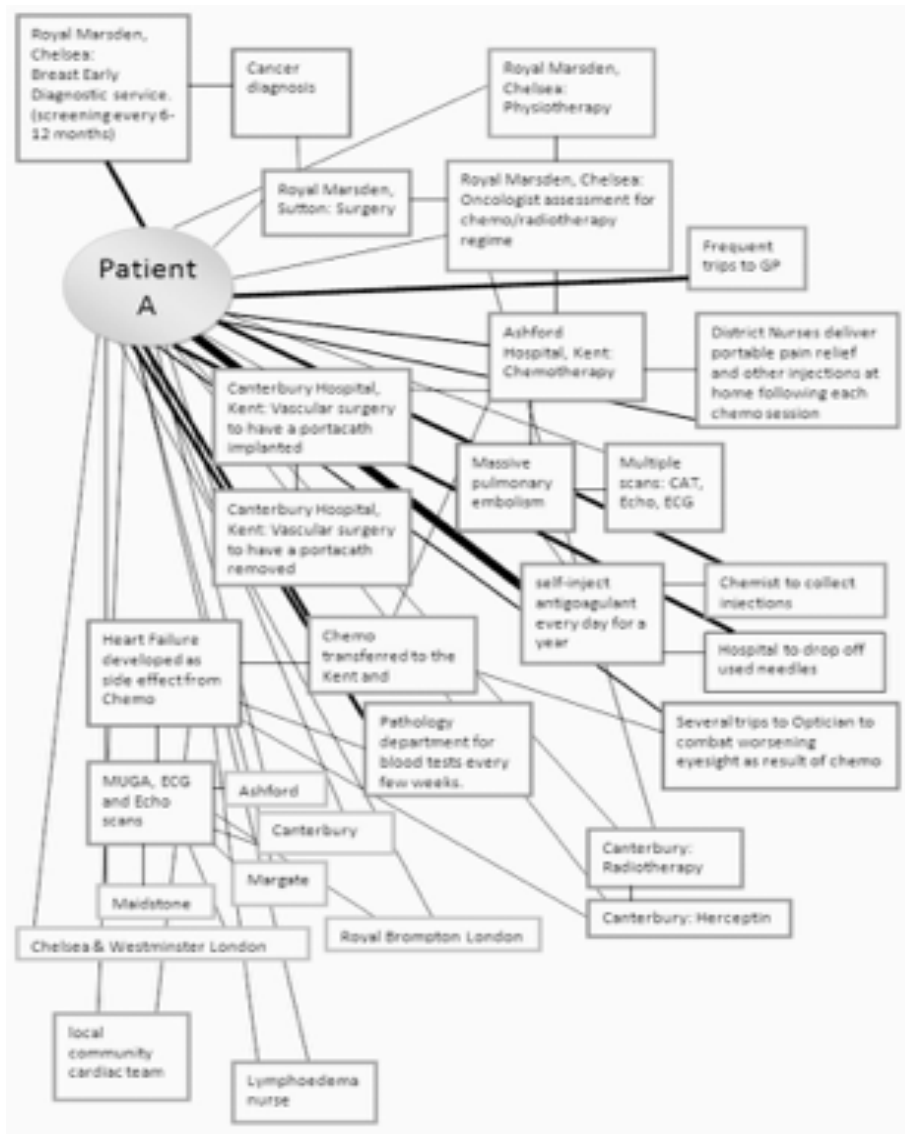


Bringing innovation into healthcare

Transforming Consumer and Health-Oriented
Society through Science & Innovation

Brussels, June 20, 2018

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European Commission
DG Research and Innovation
Directorate



multi morbidity at younger ages increases

health care is built around acute, episodic model of care

patients are required to navigate through complex health systems

health care needs innovative solutions

Healthcare innovation

Healthcare innovation can be defined as the introduction of a new concept, idea, service, process, or product aimed at improving treatment, diagnosis, education, outreach, prevention and research, and with the long term goals of improving quality, safety, outcomes, efficiency and costs.

Healthcare innovation

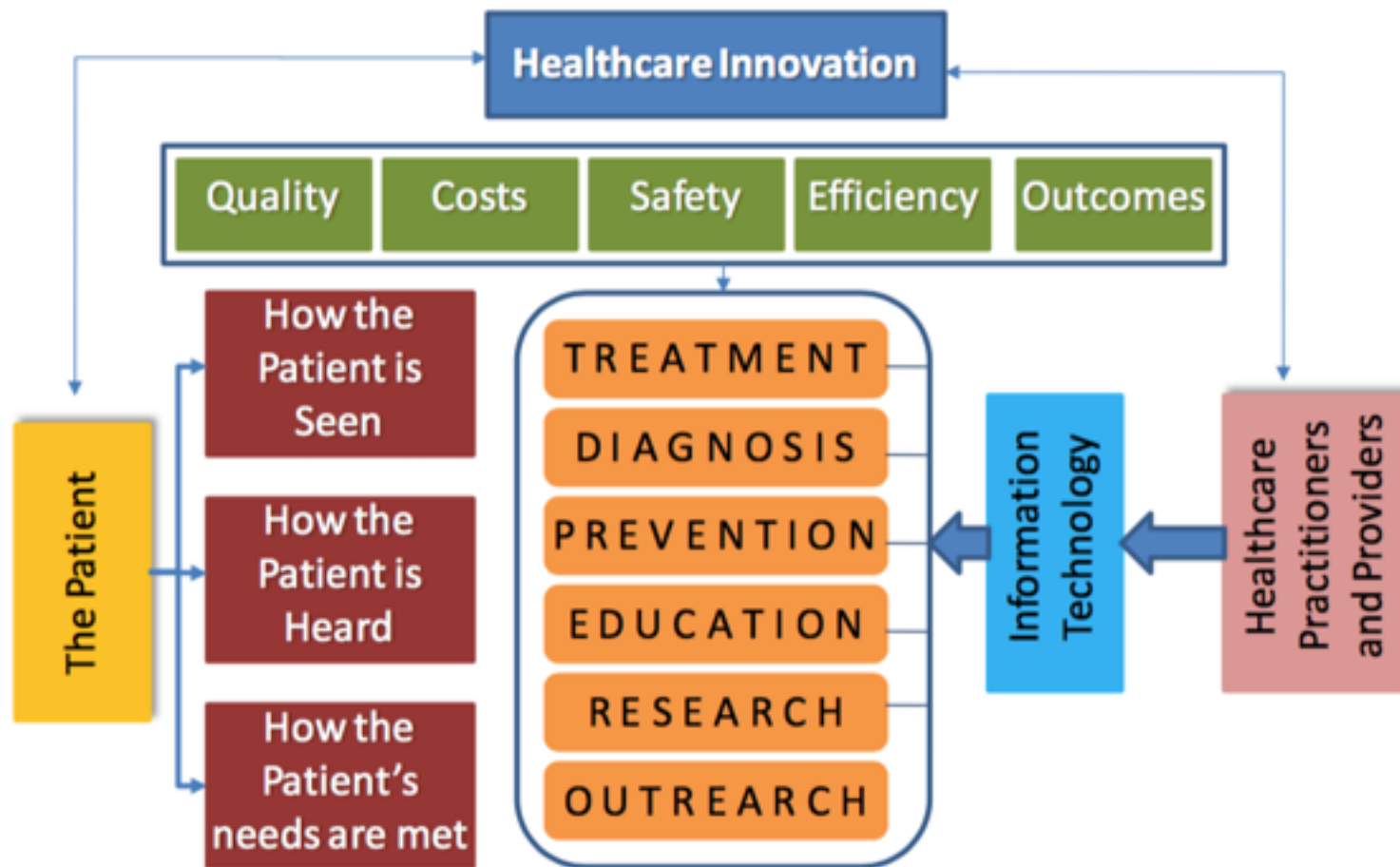
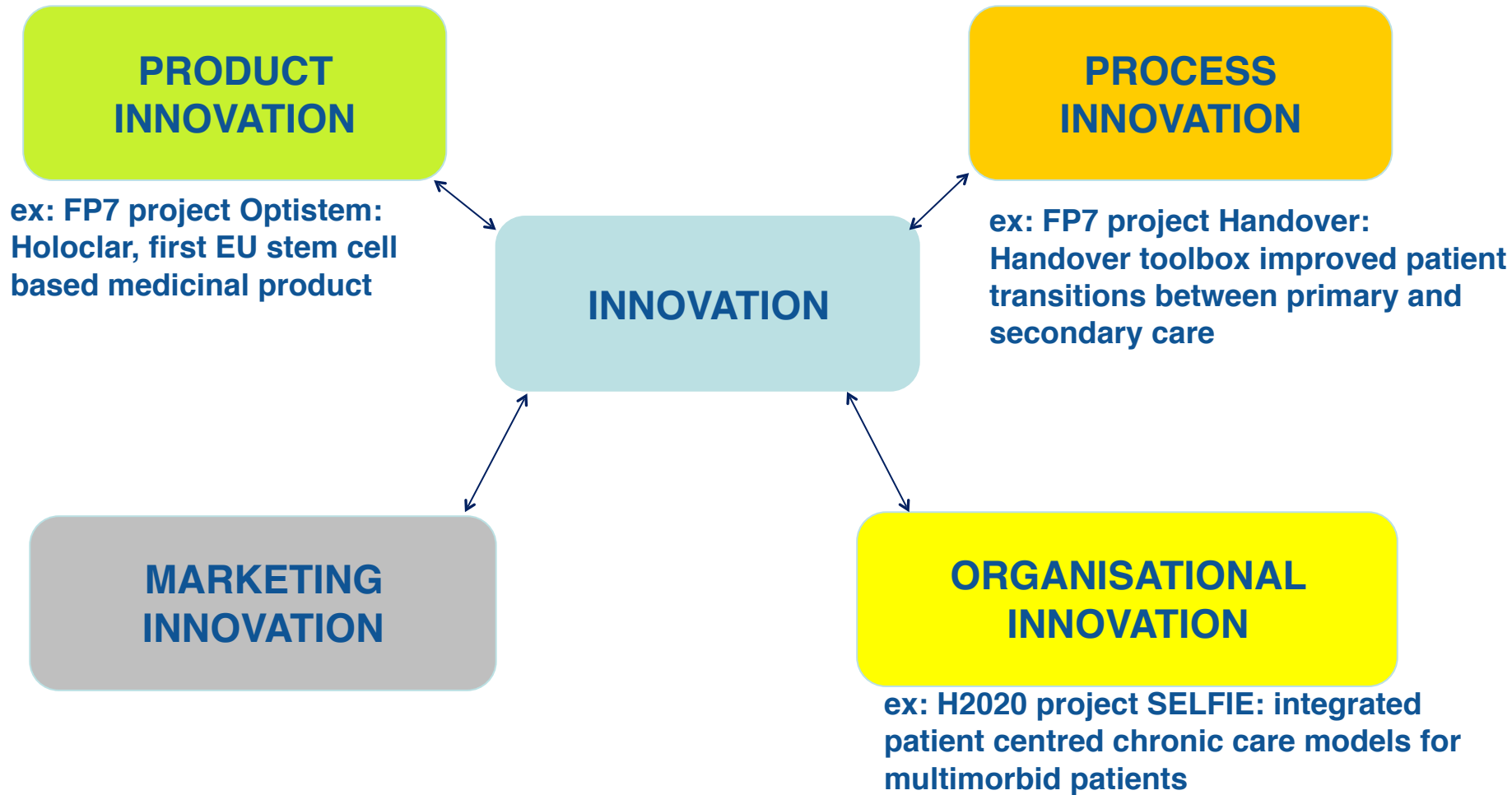
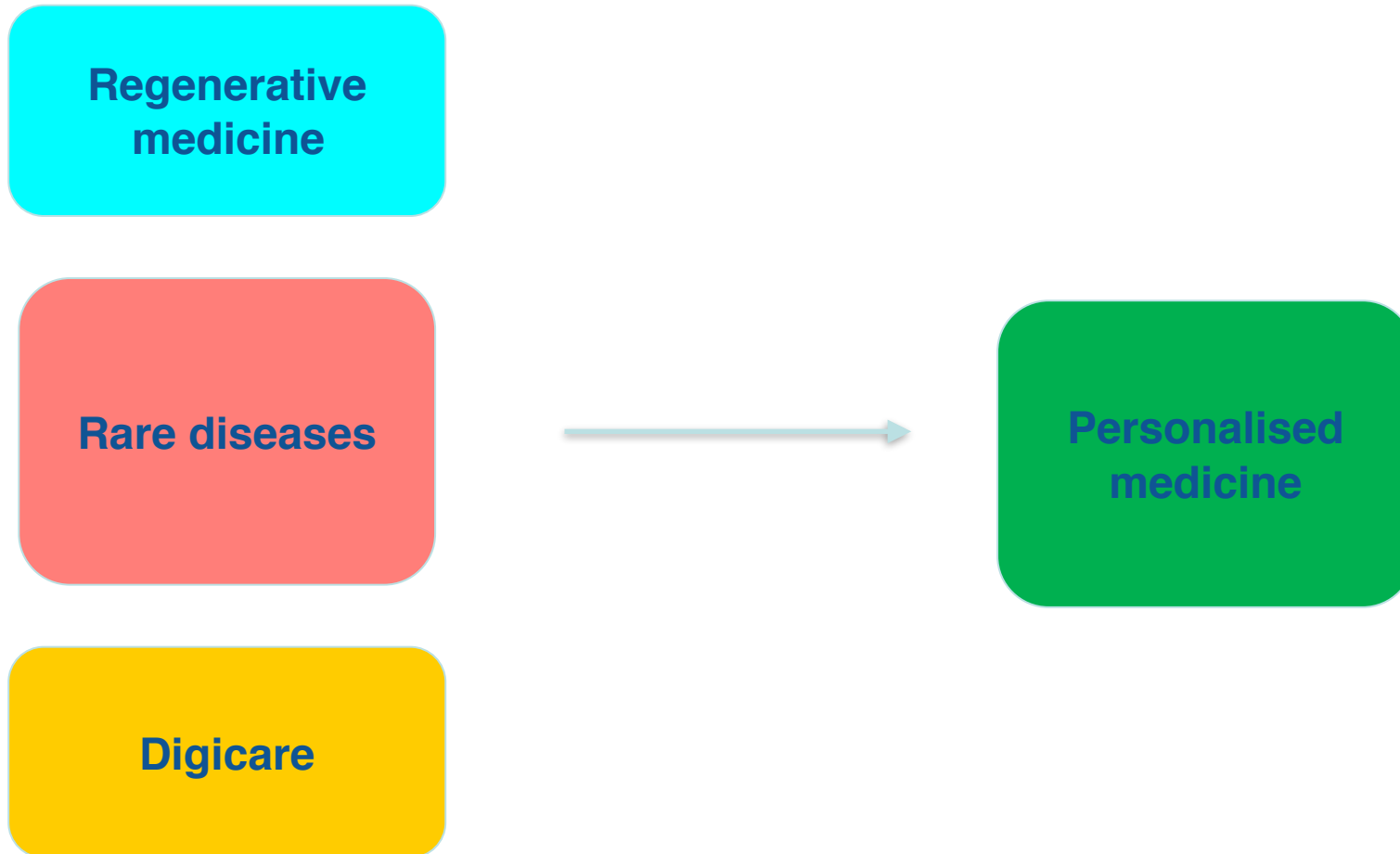


Figure 1: A Conceptual Framework for Innovation in Healthcare

Types of innovation



Disrupting traditional thinking



Disrupting traditional thinking: Personalised medicine

PERSONALISED MEDICINE

tailor-made prevention, diagnosis and treatment
for individuals or groups of individuals

Enabling

HEALTHIER, MORE PRODUCTIVE LIVES



Significant EU investments in research on
personalised medicine to

TREAT PATIENTS WITH THE THERAPIES THAT WORK BEST FOR THEM

many common medicines are not effective
for many patients

CUT HEALTHCARE COSTS

as Europe's population ages
and chronic diseases become
more prevalent



DRIVE HEALTHCARE INNOVATION

Establish Europe as a global leader in
healthcare industry and innovation,
and create jobs and economic growth



AVOID ADVERSE REACTIONS TO MEDICINES

6% of acute hospital admissions are
due to serious adverse reactions to
medicines

SI - observer



Statement concerning the 1 Million Genomes Declaration

On 10 April 2018 13 Member States signed a declaration, initiated by the European Commission, to establish access to 1 Million Genomes in the EU by 2022. ICPerMed has followed with interest the process of developing the declaration. Recognising the great potential of personalised medicine to improve the prevention and diagnosis of disease and the treatment of patients, ICPerMed aims to coordinate and foster research to develop and evaluate personalised medicine approaches.

[>> read more](#)



First ICPerMed Conference 2018

Personalised Medicine in Action



Personalised medicine refers to a **medical model** using characterisation of individuals' phenotypes and genotypes (e.g. **molecular profiling, medical imaging, lifestyle data**) for tailoring the right **therapeutic strategy** for the right person at the right time, and/or to determine the **predisposition to disease** and/or to deliver timely and targeted prevention.

[European Council Conclusion on personalised medicine for patients \(2015/C 421/03\)](#)

Piloting Personalised Medicine through pharmacogenomic testing

individual's
response
to drugs

pre-emptive
genotyping of
PGx markers

implementing it
in routine
patient care in
NL, GR, AT, IT,
ES, SI



SHARED EUROPEAN GUIDELINES

Maintenance and dissemination of
pharmacogenomics guidelines in the
European Union



IMPLEMENTATION AND EVALUATION

Clinical implementation and outcome
evaluation of pre-emptive
pharmacogenomics in a multitude of
European countries



ENABLING TECHNOLOGIES

Development of powerful and barrier-
free clinical decision support systems and
novel pharmacogenomics methodologies



COMMUNICATION AND EDUCATION

Development of a program to reach out to
patients, health care professionals,
regulatory agencies, politics and health
insurance organisations

U-PGx | Ubiquitous Pharmacogenomics



European
Commission

Regenerative medicine



- Offers hope for untreatable disease or needs of aging population
- cure vs treat or mask symptoms
- could reduce healthcare costs in long term

Produced with support from:



Rebuilding
the body

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Piloting Personalised Medicine in Rare diseases

Patients with an unknown rare disease have to wait on average 5.6 years for correct diagnosis

Current Roadblocks

Few patients in each Member State

Limited research resources

Limited medical expertise

Needs

Sharing of patient data

Sharing of medical knowledge and know-how

Capacity building through trainings

Enablers

- Common European digital infrastructures
- Common data standards



EUROPEAN REFERENCE NETWORKS
FOR RARE, LOW PREVALENCE AND COMPLEX DISEASES
Share. Care. Cure.



orphanet

RDConnect



**EU joint
program Cofund
for rare
diseases**

**rapid translation of
research into
clinical application
and uptake in
healthcare**



Digital Health and Care



TRANSFORMATION OF HEALTH AND CARE IN THE DIGITAL SINGLE MARKET - Harnessing the potential of data to empower citizens and build a healthier society

European health challenges

- ⊗ Ageing population and chronic diseases putting pressure on health budgets
- ⊗ Unequal access to and quality of healthcare services
- ⊗ Shortage of health professionals

Potential of digital applications and data to improve health

- ⊗ Efficient and integrated healthcare systems
- ⊗ Personalised health research, diagnosis and treatment
- ⊗ Prevention and citizen-centred health services

What EU citizens expect...

90% agree

To access their own health data (requiring interoperable and quality health data)

80% agree

To share their health data (if privacy and security are ensured)

80% agree

To provide feedback on quality of treatments

Support European Commission:

1

Secure access and exchange of health data

Ambition:

Citizens securely access their health data and health providers (doctors, pharmacies...) can exchange them across the EU.

Actions:

- eHealth Digital Service Infrastructure will deliver initial cross-border services (patient summaries and ePrescriptions) and cooperation between participating countries will be strengthened.
- Proposals for extending the cross-border services to additional cases, including full electronic health records.
- Recommendation on the interoperability of existing electronic health records in Europe.



DECLARATION OF COOPERATION
Towards access to at least 1 million sequenced genomes in the European Union by 2022
CZ, UK, PT, SI, MT, ES, GR, IT, LU, FI, SE



3

Digital tools and data for citizen empowerment and person-centred healthcare

Ambition:

Citizens can monitor their health, adapt their lifestyle and interact with their doctors and carers (receiving and providing feedback).

Actions:

- Facilitate supply of innovative digital-based solutions for health, notably by SMEs, through common principles and certification.
- Support demand uptake of innovative digital-based solutions for health, notably from healthcare authorities and providers, through exchange of practices and technical assistance.
- Mobilise more efficiently public funding for innovative digital-based solutions for health, including EU funding.



Implementing in healthcare

Regenerative
medicine

Rare diseases

Personalised
medicine

Digicare

marketing
authorization
CE marketing

Health technology
assessment

Is it safe and of good quality?
How can we use it effectively?
Do we really need it?
What is the health impact at population level?
What is the impact on health system?
Can it work in my country?

inclusion of social costs -
impact of the intervention on the whole society
+ detection of a cost shifting between sectors
H2020 PECUNIA project (2018-2020)

reimbursement
pricing

Healthcare

Implementing innovation in healthcare

20 countries: SI member

to-reach

*agenda for health services
and systems research*

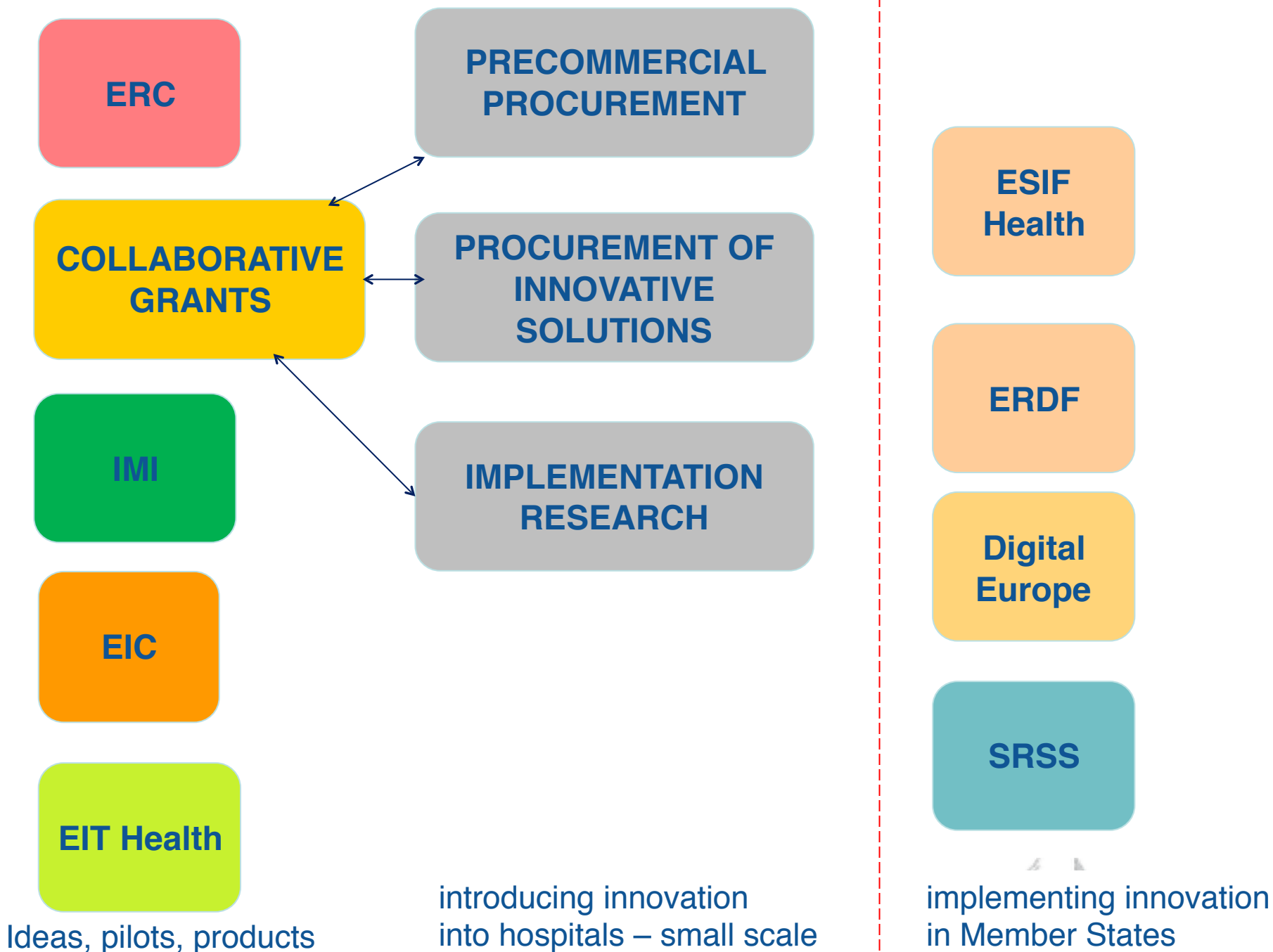
<https://to-reach.eu>

identifying new solutions able to respond to rising challenges

understanding and predicting whether such solutions can be **implemented and transferred effectively** in other settings.

- Countries are experimenting with ways to addressing complex challenges
- Need to identify and understand the key factors that contribute to 'success' and requirements for scaling-up and possible transfer to other settings within and across countries







€ 2.0 billion

Health collaborative research: Open calls in 2019 and 2020



Personalised medicine



Infectious diseases and improving global health



Decoding the role of the environment for health and well-being



Innovative health and care industry



Innovative health, and care systems – Integration of care



Digital transformation in Health and Care



Trusted Big Data solutions and Cybersecurity for Health and Care



European
Commission

From Horizon 2020 to Horizon Europe

Lessons learnt in H2020



well-performing programme

highly relevant for societal needs

strong EU added value through unique opportunities, competition and access to new knowledge



strategic challenges and objectives not always clearly translated in specific calls and topics

low involvement of civil society

need to bring closer to the citizen

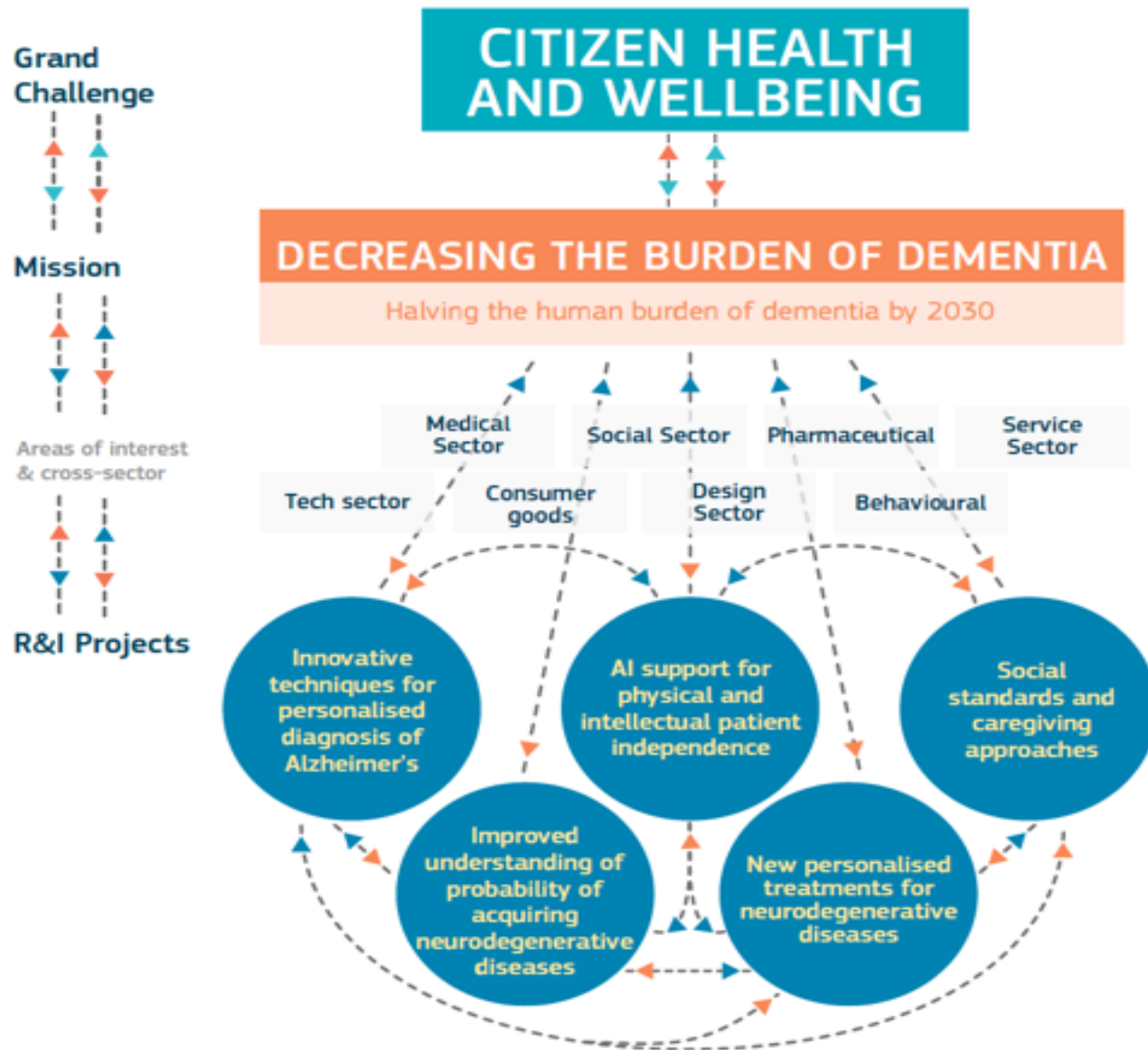


need for an impact-focused mission-oriented approach

Mission example:

BLOG POST | By Carlos Moedas | 2 May 2018

From Horizon 2020 to Horizon Europe



From Horizon 2020 to Horizon Europe

An evolution, not a revolution

Open Science

Global challenges

Open Innovation



**HORIZON
EUROPE**






The key novelties:

- The mission approach to enhance the impact of European R&I funding
- simplified partnership instruments
- European Innovation Council

Horizon Europe

Everyone has the right to timely access to affordable healthcare of good quality*

Challenges driving the new program

<p>1. Unsustainable health and care costs</p>  <p>Increasing prevalence of chronic diseases and an ageing population</p>	<p>2. Role of environment on health</p>  <p>Lifestyle, pollutants, climate change</p>	<p>3. Increasing risks of infectious diseases</p>  <p>Resistance to antibiotics, (re)-emerging diseases</p>	<p>4. Health inequalities and access to health and care</p>  <p>Access to health promotion, prevention, treatment</p>	<p>5. Keeping a competitive European health and care industry</p>  <p>Keep Europe as the best innovator in healthcare area</p>
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Horizon Europe

Six main areas of intervention



Health throughout
the Life Course



Environmental and Social
Health Determinants



Non-communicable
and Rare Diseases



Infectious diseases



Tools, Technologies
and Digital Solutions
for Health and Care



Health Care Systems

From Horizon 2020 to Horizon Europe

Find out more about H2020:

<http://ec.europa.eu/programmes/horizon2020/>

<http://ec.europa.eu/research/health/index.cfm?pg=home>

Funding opportunities 2019-2020:

<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>

Information about financial instruments: :

<http://www.eib.org/products/blending/innovfin/>

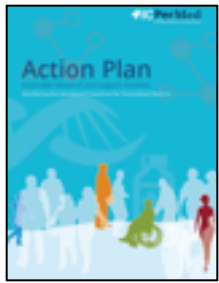
Pre commercial procurement:

<http://ec.europa.eu/digital-agenda/en/innovation-procurement>

<http://ec.europa.eu/digital-agenda/news/calls-eu-funding-opportunities-pre-commercial-procurement-and-public-procurement-innovative>

Horizon Europe:

<http://ec.europa.eu/horizon-europe>



H2020 2019 calls deadline: 2 October 2018

Personalised medicine



- BHC-01-2019: Understanding causative mechanisms in co- and multimorbidities
- BHC-02-2019: Systems approaches for the discovery of combinatorial therapies for complex disorders
- BHC-06-2020: Digital diagnostics – developing tools for clinical decisions integrating in vitro and in vivo diagnostics



Innovative health and care industry

- BHC-07-2019: Regenerative medicine: from new insights to new applications
- BHC-10-2019: Innovation Procurement: Next generation sequencing (NGS) for routine diagnosis
- BHC-08-2020: New therapies for Non Communicable Diseases
- BHC-12-2020: Boosting the translation of results of health research into validated, innovative applications



Innovative health, and care systems – Integration of care

- BHC-19-2019: Implementation research for maternal and child health
- BHC-20-2020: Using pre-commercial procurements and public procurement of innovative solutions in health care systems to: - reduce the risk of hospital-acquired infections and/or - improve integrated care
- BHC-22-2019: Mental health in the workplace
- BHC-25-2019: Demonstration pilots for implementation of personalised medicine in healthcare
- BHC-24-2020: Healthcare interventions for the management of the elderly multimorbid patient



Digital transformation in Health and Care



- DTH-10-2019-2020: Digital health and care services
- DTH-01-2019: Big data and Artificial Intelligence for monitoring health status and quality of life after cancer treatment
- DTH-05-2019: Large scale implementation of digital innovation for health and care in an ageing society
- DTH-09-2019: Scaling up the univocal identification of medicinal products
- DTH-10-2019-2020: Digital health and care services
- DTH-11-2019: Large scale pilots of personalised and outcome-based integrated care
- DTH-02-2020: Personalised early risk prediction, prevention and intervention
- DTH-04-2020: International cooperation in digital solutions and robotics for independent living
- DTH-06-2020: Accelerating the uptake of in-silico methods for testing medicines with dermatological use
- HCC-02-2019: Support for the large scale uptake of open service platforms in the Active and Health Ageing domain



Digital transformation in Health and Care



- HCC-06-2020: Support to eHealth Innovation ecosystems in Europe
- HCC-07-2020: Support for European eHealth interoperability roadmap deployment
- HCC-08-2020: Scaling up innovation for active and health ageing
- HCC-09-2020: Supporting deployment of eHealth in developing countries for better outcomes



Trusted Big Data solutions and Cybersecurity for Health and Care

- DT-TDS-01-2019 Smart and healthy living at home
- DT-TDS-12-2020: The smart hospital of the future
- DT-TDS-04-2020: Demonstrating the potential and benefits of a European Digital Health Infrastructure for Personalised Medicine