



Digitising European Industry Working Group 2

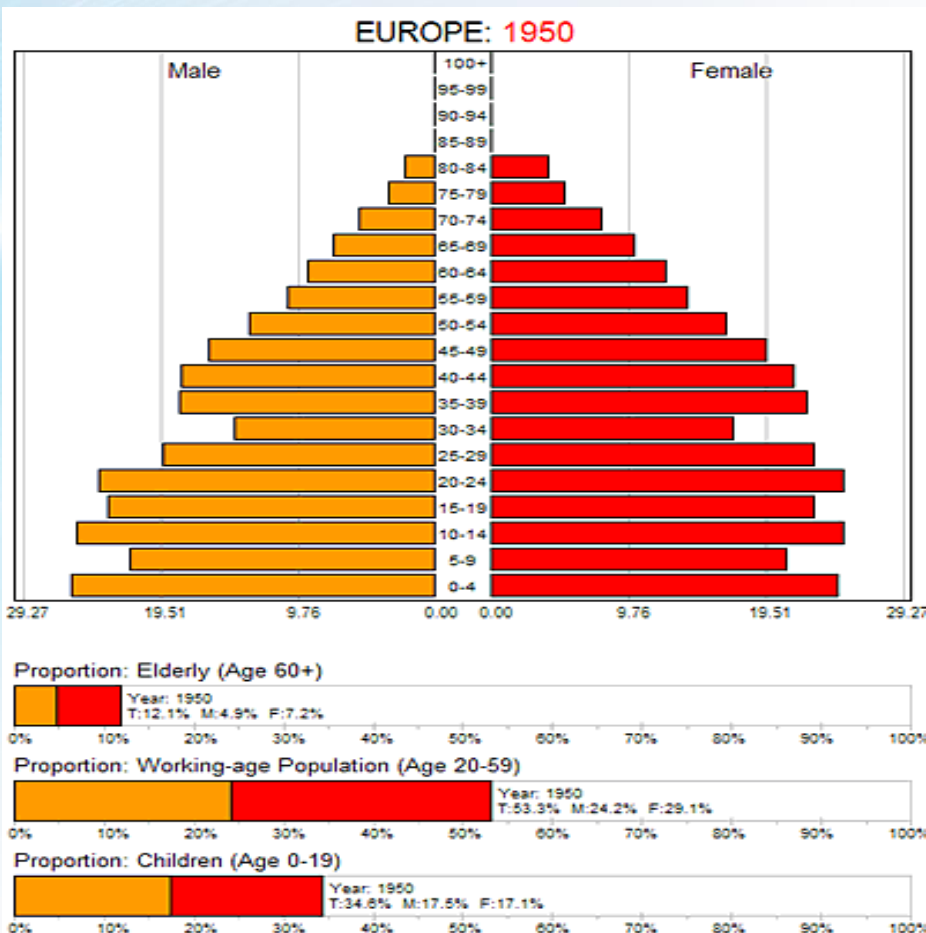
Digital Transformation of Health and Care

*Michel Brochard
European Commission
DG Connect – Unit Robotics & Artificial Intelligence*

Protocol for this session

- *Setup of the scene*
- *Reactions*
- *Proposed directions*

Demographic Ageing: the challenge



Chronic conditions

Lack of health professionals

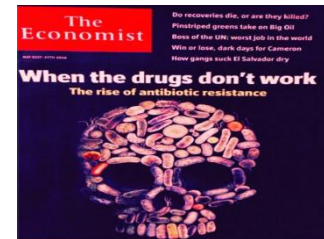
Financial unsustainability

HLY vs. LE

Health inequalities

Other Major Challenges

- Pharmaceutical treatments are often inefficient and risky (Drugs help only 40% of people and kill in USA over 100.000 a year).
- Outbreak of infections by new viruses & antibiotics-resistant bacteria (expected grave consequences)
- The quality of food is steadily deteriorating (soils depleted of essential nutrients and increasing pesticides & herbicides).
- Polluted environment (2.5 tonnes of chemicals per year accumulated in the soil)



Increase Incidence of new diseases



Technology in Healthcare is developing fast

Diagnostics

- Faster, accurate imaging
- Molecular imaging
- Minaturisation/portability
- Point of Care diagnostics
- Therapy selection/monitor

Biotech & Genomics

- Targeted therapy
- Proteomics/DNA
- Biomarkers
- Rapid screening tools
- Vaccine development

IT & bioengineering

- eHealth/Telemedicine
- Mobile solutions
- BioSensors
- Computer Aided Diagnostics
- Patient monitoring





Health research: different programmes serving different communities & purposes



Platform building in running major projects related to sectorial DEI subgroups

	Connected Smart Factory	Digital health & care	Smart agriculture	Connected & autom. driving
Factories of the Future	FoF-11 - automation - supply chain			
Internet of Things		ACTIVAGE - cloud serv. SC cofinanc.	IOF2020 - cloud serv. AGRI cofinanc.	AUTOPILOT - services for connected cars
CONNECT SC		UNIVERSAAL - medical serv.		SCOUT - 4G connectivity
Big Data		AEGLE - personalized services	DATABIO* - satellite data in agriculture	AUTOMAT - Vehicle Data Services
ECSEL JU	ARROWHEAD - automation Productive40* - supply chain			ENABLE-S3 - ADAS systems CRYSTAL -Autosar
Future Internet	FITMAN - optimization	FISTAR - cloud serv.	FI-Space - cloud serv.	
RTD/MOVE SC	minor	minor	minor	CARTRE - WIFI connectivity

* smart city pilot SYNCHRONICITY

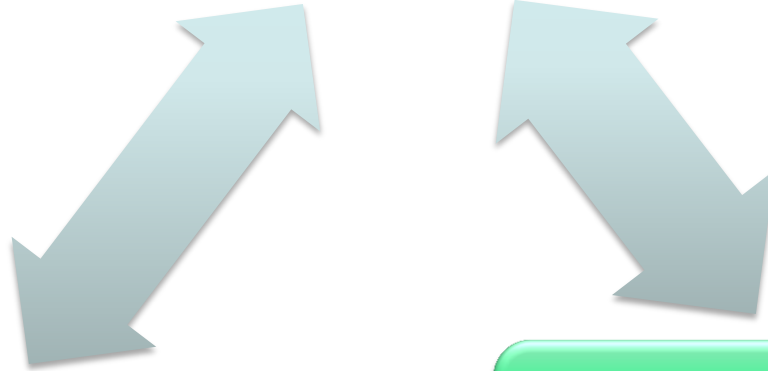
Digital health & care major platform projects

	Projects	Objective	Type of stakeholders	Public funding
Internet of Things	ACTIVAGE - cloud serv. SC cofinanc.	Activate smart living environments for ageing well	Telco and IT services, electronics, system integrators	20 M€
CONNECT SC	UNIVERSAAL - development tool for medical serv.	open platform for Ambient Assisted Living	IT services, system integrators	10 M€
Big data	AEGLE - personalized services	Multi-parametric platform for data analytics on biological data	System integrators, health industry, IT systems	5 M€
Future Internet	FISTAR - cloud serv.	Predecessor of ACTIVAGE		



3 First Ideas for Potential Areas

Trusted **big data** solutions and **cybersecurity** for health & care



Robotics, AI, and autonomous systems in healthcare



Accelerating the translation of **advanced x-cutting KETs** to address healthcare at the **point of need**

Setup of the scene



Trusted **big data** solutions and **cybersecurity** for health & care

Focus on interconnectivity, interoperability, mobility, x-sector

Universal Platform, ...

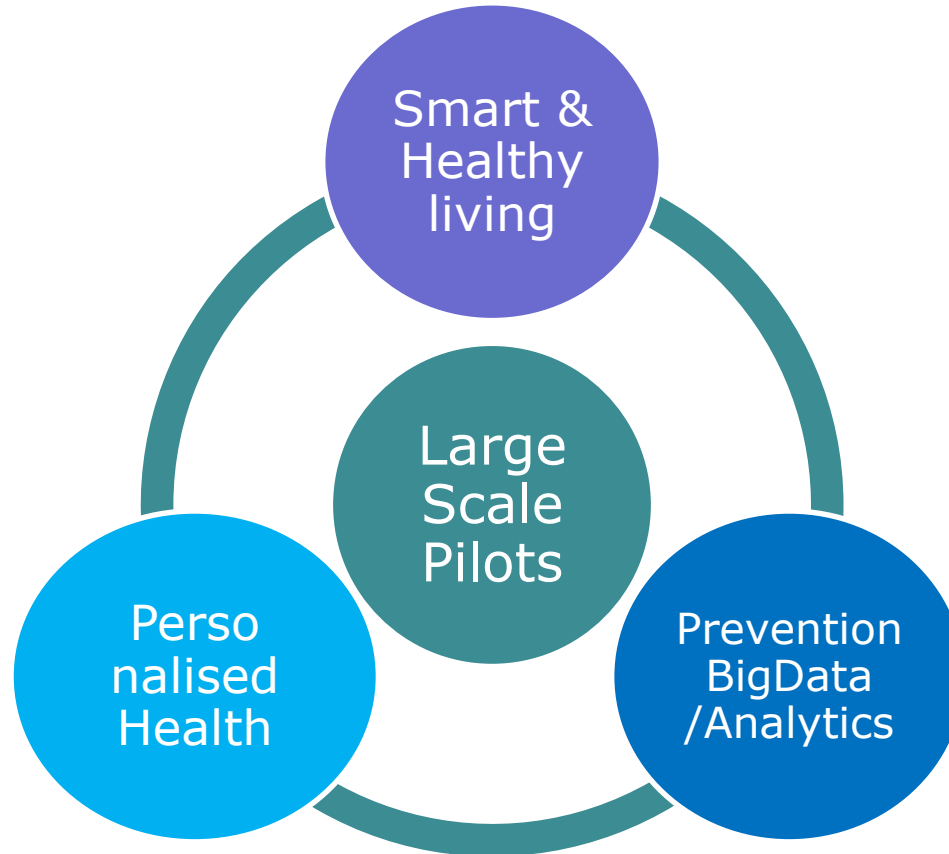
Strong link to regulatory and legislative aspects

Health Societal Challenge, AAL, EIP AHA, IoT pilot
ACTIVAGE, ECSEL

Setup of the scene



Trusted **big data** solutions and **cybersecurity** for health & care



EU HEALTH AND CARE POLICY LANDSCAPE



1. Boosting Jobs, Growth and Investment

Health policy

Long term Care Strategy

Ageing policy



2. A Connected Digital Single Market

eHealth 2020, mHealth, Silver Economy Strategy

European Innovation Partnership on Active and Healthy Ageing EIP-AHA

Horizon 2020 Societal Challenge 1 Health, Demographic Change and Wellbeing

Active Assisted Living Joint Programme (AAL)

European Institute of Technology- KIC Health



Health & wellbeing

Integrated care

Cross-border care

Independent living & Active Ageing

Sustainable care

Legal & market conditions

A European "Blueprint" for Digital Transformation of Health and Care



What is the Blueprint?

- A stakeholder initiative to help scale up digital transformation of Health and Care
- Bringing together demand and supply sides under a common vision
- With commitments to address barriers and mobilise investments
- Reaching concrete targets by 2018
- Supported by the European Commission



BLUEPRINT

DIGITAL TRANSFORMATION OF HEALTH AND CARE FOR THE AGEING SOCIETY

DEPLOYMENT OF INNOVATION

50 + REGIONS
DEPLOYING LARGE-SCALE, SUSTAINABLE, DIGITALLY-ENABLED INNOVATIVE SOLUTIONS FOR ACTIVE AND HEALTHY AGEING

INVESTMENT

REACHING AT LEAST € 500 MILLION INVESTMENT IN DIGITAL INNOVATION FOR HEALTH & CARE. €250 MILLION PUBLIC INVESTMENT – MATCHED BY €250 MILLION FROM PRIVATE SOURCES

PEOPLE

REACH ADDITIONAL 4 MILLION PEOPLE IN EUROPE BENEFITING FROM DIGITAL INNOVATION ACTIVE & HEALTHY AGEING.

ROAD TO 2018

Initial Champions of the Blueprint

[European Innovation Partnership on Active and Healthy Ageing \(EIP on AHA\)](#)

[Reference Sites Collaborative Network of the EIP on AHA \(72 EIP Reference Sites\)](#)

[European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry \(COCIR\)](#)

[European Health Telematics Association \(EHTEL\)](#)

[Personal Connected Health Alliance \(PCHA\)](#)

[European Connected Health Alliance \(ECHAlliance\)](#)

[EUROCARERS – European Association Working for Carers](#)

[AGFA HealthCare](#)

[Orange HealthCare](#)

[Philips](#)

[Alliance of Internet of Things Innovation \(AIOTI\)](#)

[Tunstall Healthcare](#)

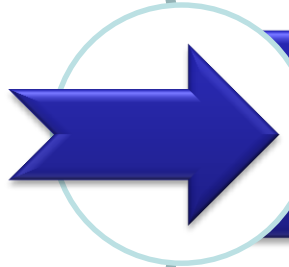
Further Information

- European Blueprint for Digital Transformation of Health and Care <http://ec.europa.eu/research/conferences/2016/aha-summit/index.cfm?pg=blueprint>
- European Innovation Summit on Active and Healthy Ageing http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=2015-summit
- ICT for Active and Healthy Ageing <http://ec.europa.eu/digital-agenda/en/policies-ageing-well-ict>
- European Innovation Partnership on Active and Healthy Ageing <https://ec.europa.eu/eip/ageing/>
- Active and Assisted Living Joint Programme <http://www.aal-europe.eu/>
- EU Silver Economy Strategy http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=silvereconomy
- Joint Programming Initiative More Years – Better Lives <http://www.jp-demographic.eu/>

Robotics, AI, and autonomous systems in healthcare



AI empowered robotics solutions in the health systems



Towards more robust, highly autonomous personalised and collaborative healthcare – at high quality and cost-efficient



?

Currently technology push by Robotics PPP.
But health stakeholders?



Robotics, AI, and autonomous systems in healthcare

Providing better delivery of care, diagnosis and treatment

1

Lower risk and improved information and monitoring

the right treatment to the right person at the right time in a minimally invasive and focused way



Robotics, AI, and autonomous systems in healthcare

Improving the operation of the health systems through robots and autonomous intelligent systems that support hospital personnel

2

Improving the quality of working life/environment for hospital staff:

Addressing health care current and future challenges by developing innovative solutions, technologies and processes.

Setup of the scene



Robotics, AI, and autonomous systems in healthcare



Setup of the scene



Accelerating the translation of **advanced x-cutting KETs** to address healthcare at the **point of need**



Translation of lab-proven bio-electronics, photonics and nano-medicine systems in the healthcare market



From macro to micro to nanoscale (wearables, catheters, PoC testing, ...)

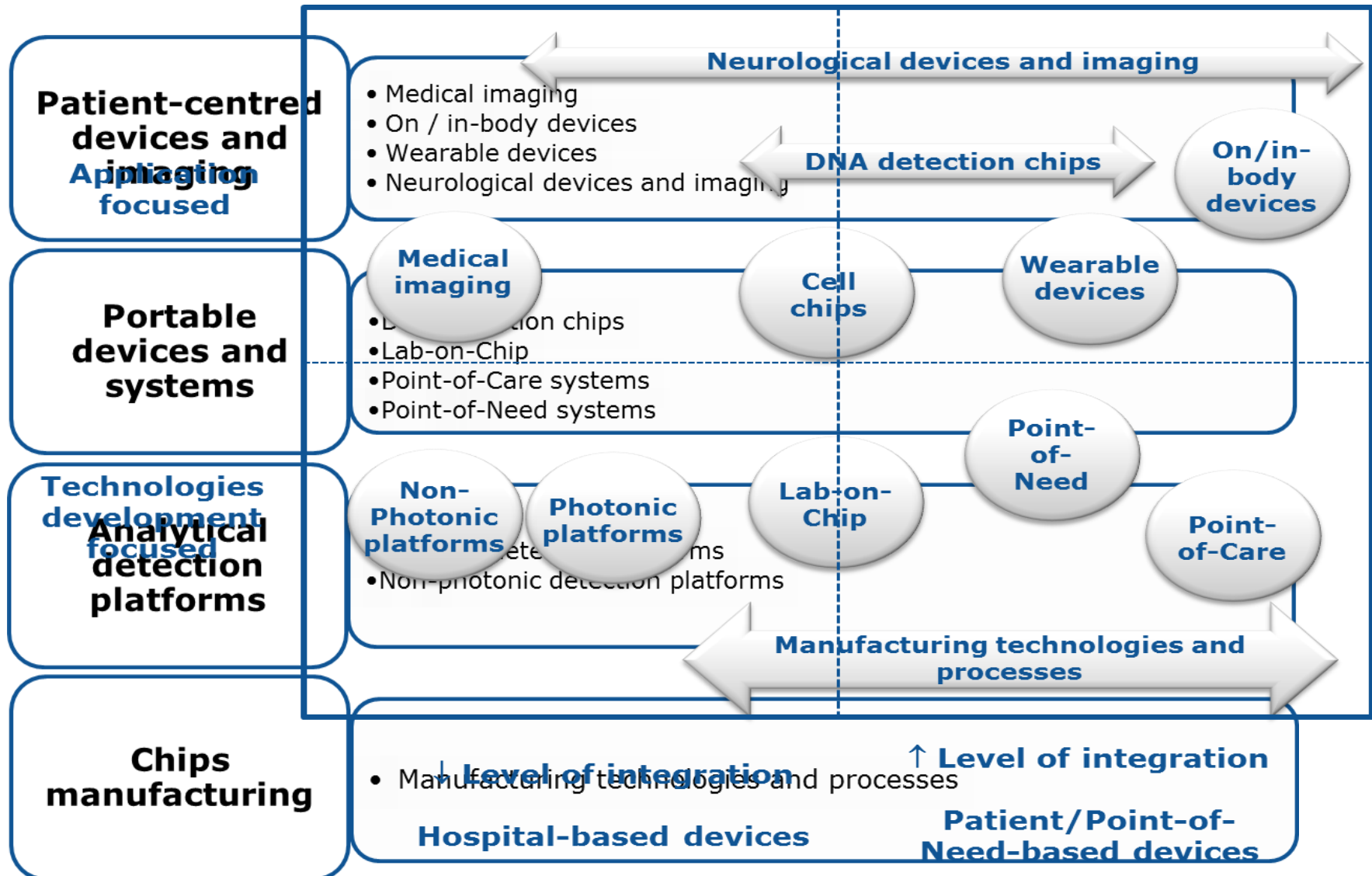


Hydra platform, ...



Currently technology push by ECSEL, Photonics PPP, Smart Systems Integration, (IoT Pilot Monica); health stakeholders?

x-cutting KETs-SOTA: 154 Projects, 600 M€, 1063 participants, 37 countries, 70 end-users

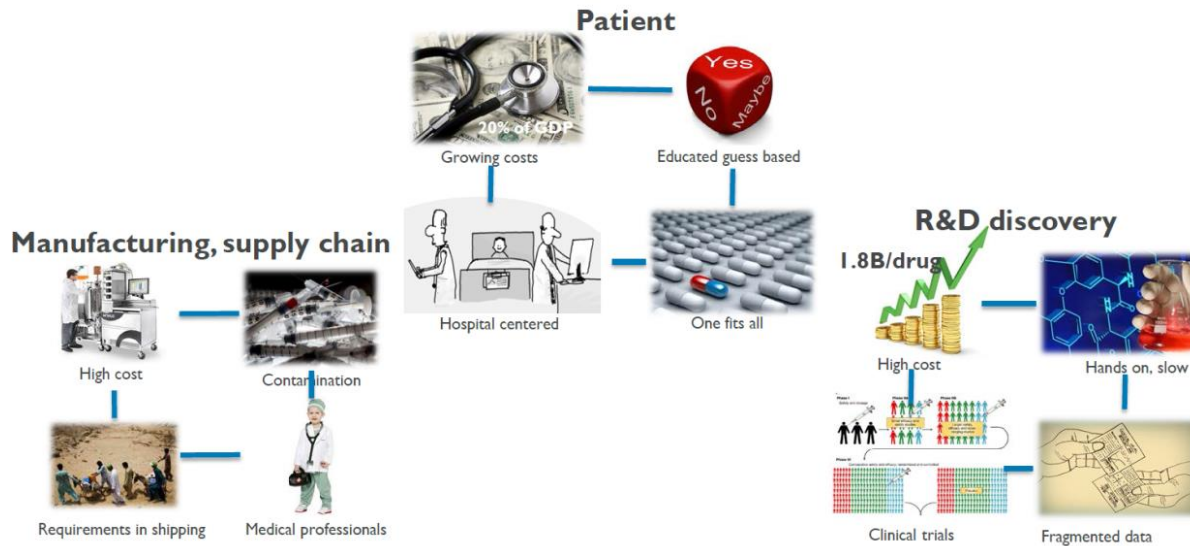


Setup of the scene



European

Accelerating the translation of **advanced x-cutting KETs** to address healthcare at the **point of need: Reducing Inefficiencies of Healthcare Systems**



- ✓ *Validation and testing in a real application environment*
- ✓ *Pre-clinical and clinical testing, prototyping*
- ✓ *Pilot manufacturing (in appropriate volume for clinical testing)*
- ✓ *HTA, business development, market intelligence, access to finance*
- ✓ *Regulation, certification, ethics and data protection and reimbursement issues*

Reactions



Trusted **big data** solutions and **cybersecurity** for health & care

Robotics, AI, and autonomous systems in healthcare

Accelerating the translation of **advanced x-cutting KETs** to address healthcare at the **point of need**



Others ?

Proposed directions



- *Direction 1*
- *Direction 2*
- *Direction 3*
- *Direction z*
- *Direction y*
- *Direction x*