Digitising European Industry Working Group 2

Digital Transformation of Health and Care

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

Second Workshop - Brussels 8/12/2016
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

Collaborative projects

Public-private partnership with pharma, open to other partners

Grants for small businesses

Loans for small and big R&I companies

Public-public partnerships with EU Member States & beyond

Blue sky research

Knowledge triangle: Higher education, business, R&I

HORIZON 2020

European Innovation Partnership on Active and Healthy Ageing

European Strategy Forum on Research Infrastructures

ESFRI

Innovative Medicines Initiative (IMI)

InnoFin

JPND

iLife

iLife Health

iLife Health

Innovative Medicines Initiative

Innovative Medicines Initiative
<table>
<thead>
<tr>
<th></th>
<th>Connected Smart Factory</th>
<th>Digital health &amp; care</th>
<th>Smart agriculture</th>
<th>Connected &amp; autom. driving</th>
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<td>Factories of the Future</td>
<td><strong>FoF-11</strong></td>
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<td>- automation</td>
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<td>Internet of Things</td>
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<td><strong>ACTIVAGE</strong></td>
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<td><strong>AUTOPilot</strong></td>
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<td>- cloud serv.</td>
<td>- cloud serv. AGRI cofinanc.</td>
<td>- services for connected cars</td>
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<td>SC cofinanc.</td>
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<td>CONNECT SC</td>
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<td><strong>UNIVERSAAL</strong></td>
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<td><strong>SCOUT</strong></td>
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<td>- medical serv.</td>
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<td>- 4G connectivity</td>
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<td>Big Data</td>
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<td><strong>DATABIO</strong></td>
<td><strong>AUTOMAT</strong></td>
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<td>- personalized services</td>
<td>- satellite data in agriculture</td>
<td>- Vehicle Data Services</td>
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<td>ECSEL JU</td>
<td><strong>ARROWHEAD</strong></td>
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<td><strong>ENABLE-S3</strong></td>
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<td>- automation</td>
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<td>- ADAS systems</td>
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<td><strong>Productive40</strong>*</td>
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<td><strong>CRYSTAL</strong></td>
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<td>- supply chain</td>
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<td>Future Internet</td>
<td><strong>FITMAN</strong></td>
<td><strong>FISTAR</strong></td>
<td><strong>FI-Space</strong></td>
<td><strong>CARTRE</strong></td>
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<td>- cloud serv.</td>
<td>- cloud serv.</td>
<td>- WIFI connectivity</td>
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<td>RTD/MOVE SC</td>
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* smart city pilot SYNCHRONICITY
### Digital health & care major platform projects

<table>
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<tr>
<th>Projects</th>
<th>Objective</th>
<th>Type of stakeholders</th>
<th>Public funding</th>
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<tbody>
<tr>
<td><strong>Internet of Things</strong></td>
<td><strong>ACTIVAGE</strong> - cloud serv. SC cofinanc.</td>
<td>Telco and IT services, electronics, system integrators</td>
<td>20 M€</td>
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<td><strong>CONNECT SC</strong></td>
<td><strong>UNIVERSAAL</strong> - development tool for medical serv.</td>
<td>IT services, system integrators</td>
<td>10 M€</td>
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<td><strong>Big data</strong></td>
<td><strong>AEGLE</strong> - personalized services</td>
<td>System integrators, health industry, IT systems</td>
<td>5 M€</td>
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<td><strong>Future Internet</strong></td>
<td><strong>FISTAR</strong> - cloud serv.</td>
<td>Predecessor of ACTIVAGE</td>
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Urgent Need For Technologies, Networks and Service Platforms for Connecting Patient-R&D and Production on Demand

- Data generation (connected medTech at the Point of Need) and acquisition, collection, visualisation, integration and analysis for disease prevention, personalised medicine and health status monitoring
- Production, testing and demonstration on demand
- Large scale piloting for user-acceptance, cost-effectiveness and compliance (interoperability, regulation, etc)
- Business creation and large scale deployment
DEI – WG2   Digital transformation of health and care

Setup of the scene

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

Smart & Healthy living

Large Scale Pilots

Personalised Health

Prevention BigData/Analytics
EU HEALTH AND CARE POLICY LANDSCAPE

Health policy

Long term Care Strategy

Ageing policy

eHealth 2020, mHealth, Silver Economy Strategy

Horizon 2020 Societal Challenge 1 Health, Demographic Change and Wellbeing

Active Assisted Living Joint Programme (AAL)

European Innovation Partnership on Active and Healthy Ageing EIP-AHA

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

- Innovation Reference Framework, Standards
- A high level policy innovation vision
- Repository of Proven Practices/guidelines
- A European map of Scaling up
- Stakeholder Commitment + Existing initiatives
- DSM + Regulatory and Legal Actions
- Mobilising Investments, Silver Economy
- Training & New Skills
- Technology Roadmaps, Research & Innovation
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
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

<table>
<thead>
<tr>
<th>European Innovation Partnership on Active and Healthy Ageing (EIP on AHA)</th>
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<tbody>
<tr>
<td>Reference Sites Collaborative Network of the EIP on AHA (72 EIP Reference Sites)</td>
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<tr>
<td>European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry (COCIR)</td>
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<td>European Health Telematics Association (EHTEL)</td>
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<td>Personal Connected Health Alliance (PCHA)</td>
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<td>European Connected Health Alliance (ECHAlliance)</td>
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<td>EUROCARERS – European Association Working for Carers</td>
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<td>AGFA HealthCare</td>
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<td>Orange HealthCare</td>
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<td>Philips</td>
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<td>Alliance of Internet of Things Innovation (AIOTI)</td>
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<td>Tunstall Healthcare</td>
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Further Information

- European Innovation Partnership on Active and Healthy Ageing [https://ec.europa.eu/eip/ageing/](https://ec.europa.eu/eip/ageing/)
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
- 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

DE1 – WG2 Digital transformation of health and care
Robotics, AI, and autonomous systems in healthcare

1. 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:


DE1 – WG2 Digital transformation of health and care
Robotics, AI, and autonomous systems in healthcare

SPARC LIGHTHOUSE

DEI – WG 2

H2020 – WP18-20

DEI – WG2 Digital transformation of health and care
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
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 ?

DEI – WG2   Digital transformation of health and care
Proposed directions

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