Sustainable Competence in Advancing Healthcare

EUROPEAN HEALTH FORUM GASTEIN

Forum 3
The future is now – AI as a driver of sustainable healthcare?

Wednesday, 3 October 2018 | 14.45-17.15 | Kursaal C

Co-organised by COCIR and EHFG

With the kind support of Siemens Healthineers, Philips and GE Healthcare

Panel 2: How can we use AI to ensure the future sustainability of our healthcare systems? What challenges and risks do we need to be aware of and plan for?

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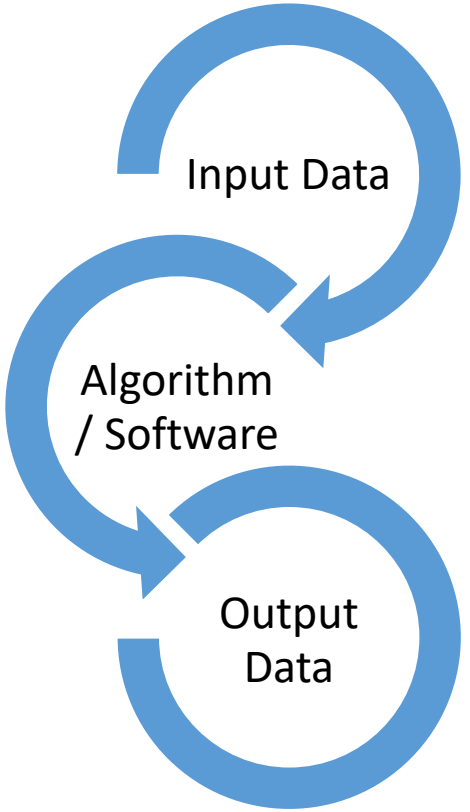
COCIR Artificial Intelligence Task Force Vice-Chair

Head of Data Strategy & AI, Philips Research

What is Artificial Intelligence?

Artificial intelligence (AI) refers to systems that display intelligent behavior by analyzing their environment and taking actions – with some degree of autonomy – to achieve specific goals.

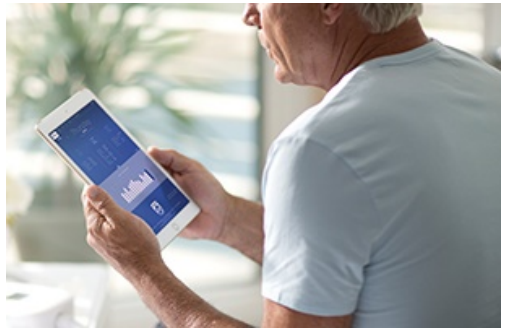
EU AI for Healthcare {SWD(2018) 137 final}



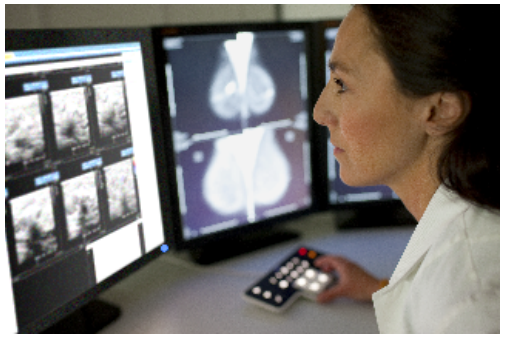
knowledge
planning
problem solving
machine intelligence
deep learning
cognitive intelligence
robotics
representation
Embodied intelligence
Not human intelligence
perception
natural language processing
reasoning
statistical learning

AI can benefit all aspects of healthcare

Healthy living | Prevention | Diagnosis | Treatment | Home care



Connected products and services for health and well-being



Integrated modalities and clinical informatics to deliver definitive diagnosis

Real-time guidance and smart devices for minimally invasive interventions

Connected products and services for chronic care

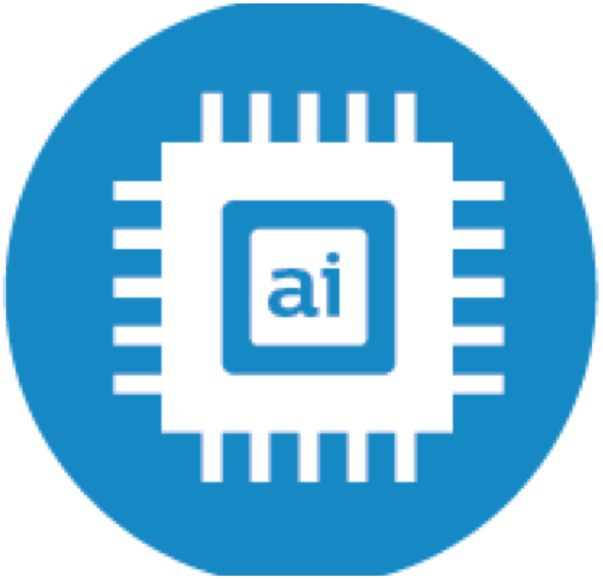
Connecting patients and providers for more effective, coordinated, personalized care
Managing population health, leveraging real-time patient data and clinical analytics

Care pathways for Cardiology, Oncology, Respiratory, etc.

Benefits of AI !

Artificial intelligence can help make healthcare

- more **predictive**, more precise
- improve the **patient experience** through ambient intelligence
- **more accessible for more people**
- AI can **support** the future care professional
- AI requires **careful co-creation**



Artificial Intelligence Challenges

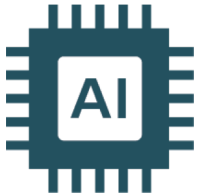
Large quantities of data with appropriate patient privacy protection

Curated clean databases

Trust & transparency

Combining data and knowledge driven learning

The last mile: understanding of the (local) clinical context

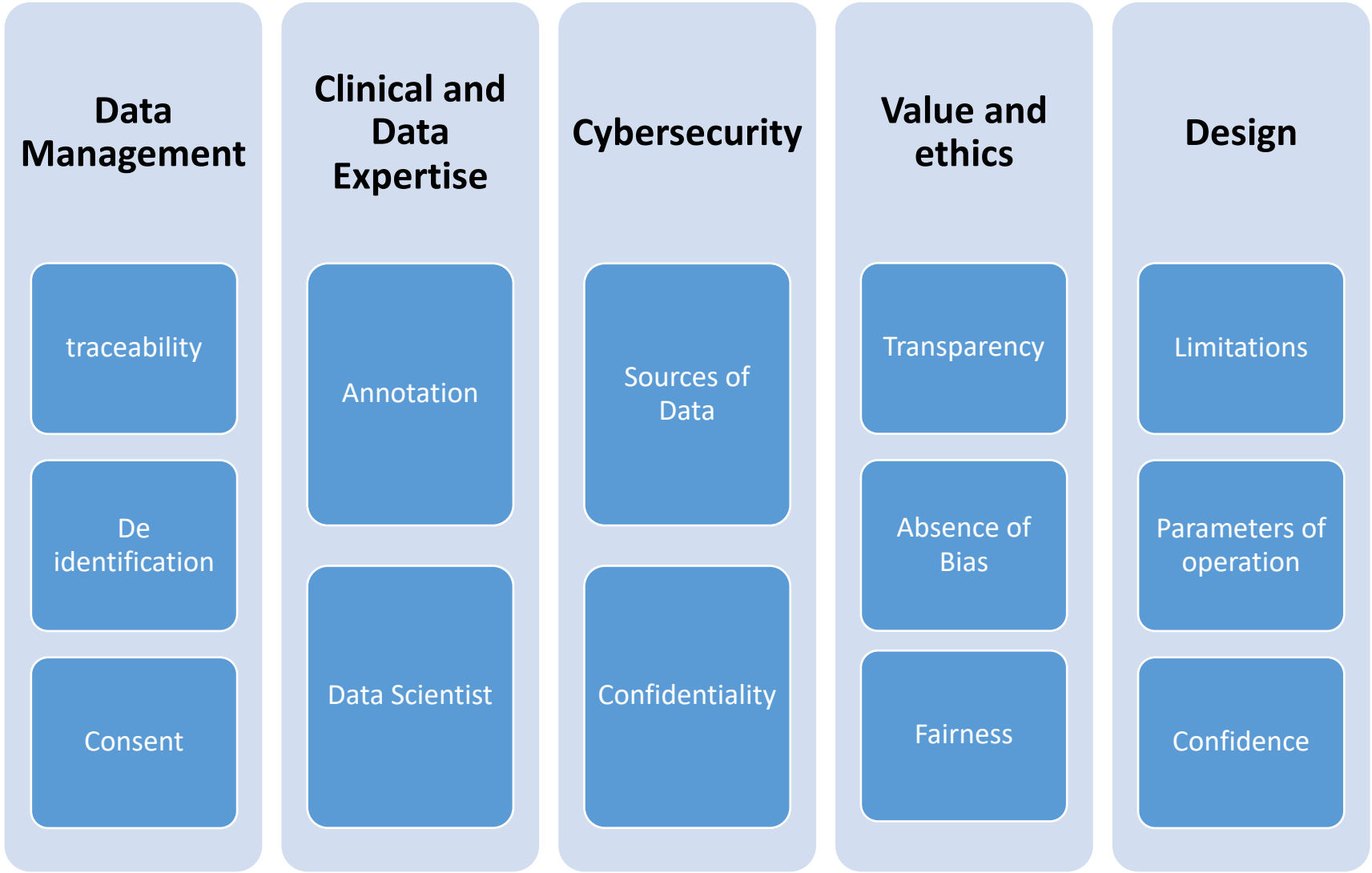


Review cycles with clinicians

New ways of working

Fragmented Healthcare IT infrastructure

Framework for explainable AI



How far can the AI be trusted?

Clinical Evaluation		
① Valid Clinical Association	② Analytical Validation	③ Clinical Validation
Is there a valid clinical association between your SaMD output and your SaMD's targeted clinical condition?	Does your SaMD correctly process input data to generate accurate, reliable, and precise output data?	Does use of your SaMD's accurate, reliable, and precise output data achieve your intended purpose in your target population in the context of clinical care?
Inclusiveness		
Reliability		
Usability		
Clinical Significance		
Ease of integration with other systems		
Precision and accuracy		

Note: Image from IMDRF N41

Industry Recommendations

- **EU AI initiatives:**
  - In order for Europe to actively engage in AI, it is of utmost importance for national AI initiatives to collaborate tightly **in an European collaboration effort** with a concerted support effort from the EU, leveraging the complementary strengths, instead of aiming to compete and fractionate.
  - We suggests **to develop specialization on a few themes** where AI does matter and which are important for the national and EU economy.
  - As Healthcare has high societal impact to benefit from AI we can expect that at least **Healthcare is one of the themes**.
  - Initiatives should **actively engage with industry** as industry is the place to translate new approaches into AI-enabled products and solutions, **validating them with clinical professionals, and deploying them at scale**.
  - COCIR supports the EU on new programmes such as **Horizon Europe, Digital Europe and Cohesion funds to boost EU economy** and support industry and other critical stakeholders in healthcare in Europe
- **Should AI be regulated?**
  - In Europe, GDPR and MDR recently becoming active in the EU, we expect that in combination with ethical frameworks for transparent explainable AI, **AI can be regulated within the existing frameworks**.
  - At International level, we still need to ensure global convergence of regulatory frameworks