AI4PeoPLe :: Ambition

… to establish an authoritative, open and national infrastructure for Dutch health research, education and care

- to accelerate **data-driven innovation** and
- to **democratise** data science & AI technologies

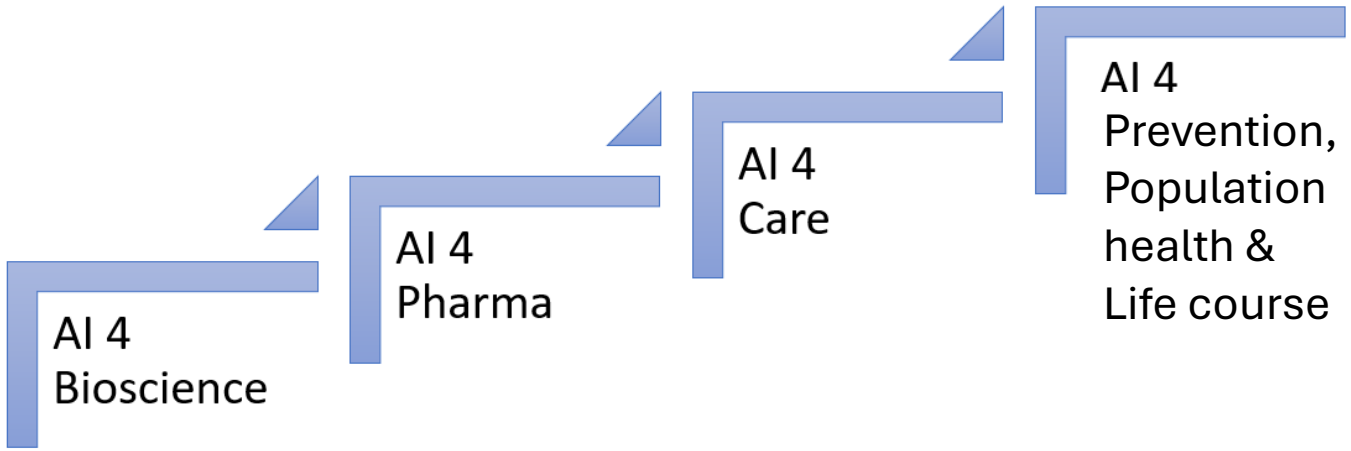
… through especially **natural language processing**, **generative AI**, and **automated machine learning** techniques

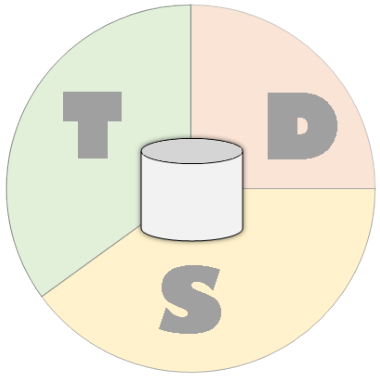
Translational Data Science & AI Lab @Leiden University

Context: AI 4 PeoPLe (Prevention, Population health & Life course)

- One of four themes in **LACE** (Leiden AI Center of Expertise for Health)
- Requested by CvB+RvB: Develop strategy for distinctive, collaborative ULEI/LUMC expertises in AI

- Theme leads
  - Boudewijn Lelieveldt (Radiologie)
  - Gerard van Westen (LACDR)
  - Mark van Buchem (Chair, RADI)
  - Marco Spruit (PHEG/LIACS)
  - Thomas Dohmen (LIACS/Luris)



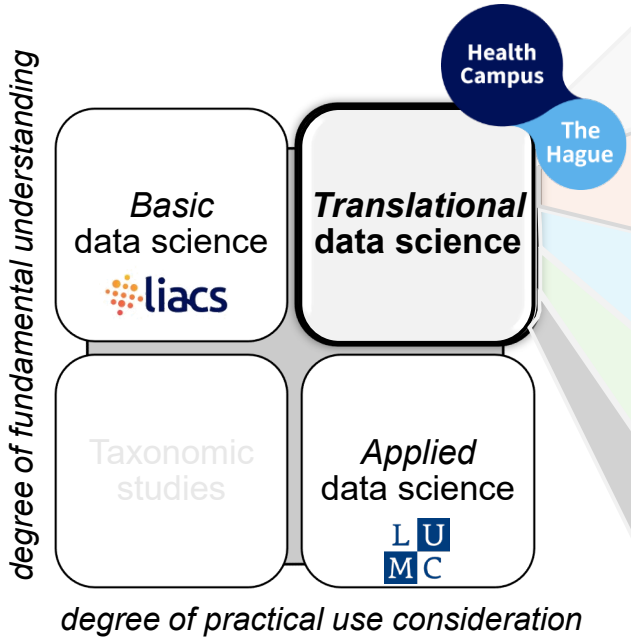


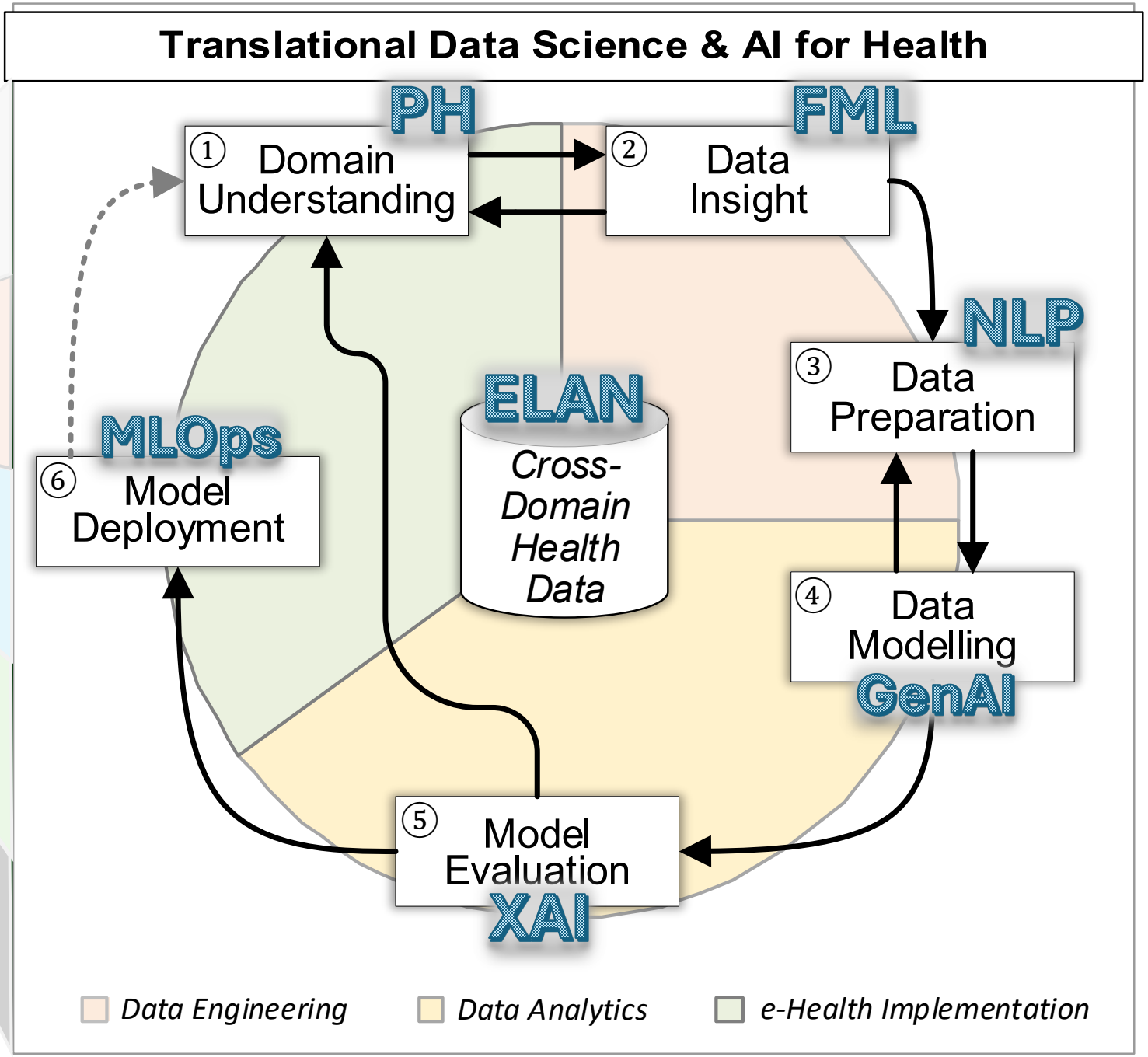
Figuur 1: de vier gerelateerde AI-thema's voor samenwerking tussen UL en LUMC

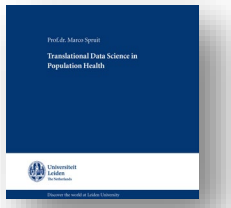
AI4PeoPLe :: Research Topics

TDS Lab

https://tdslab.nl



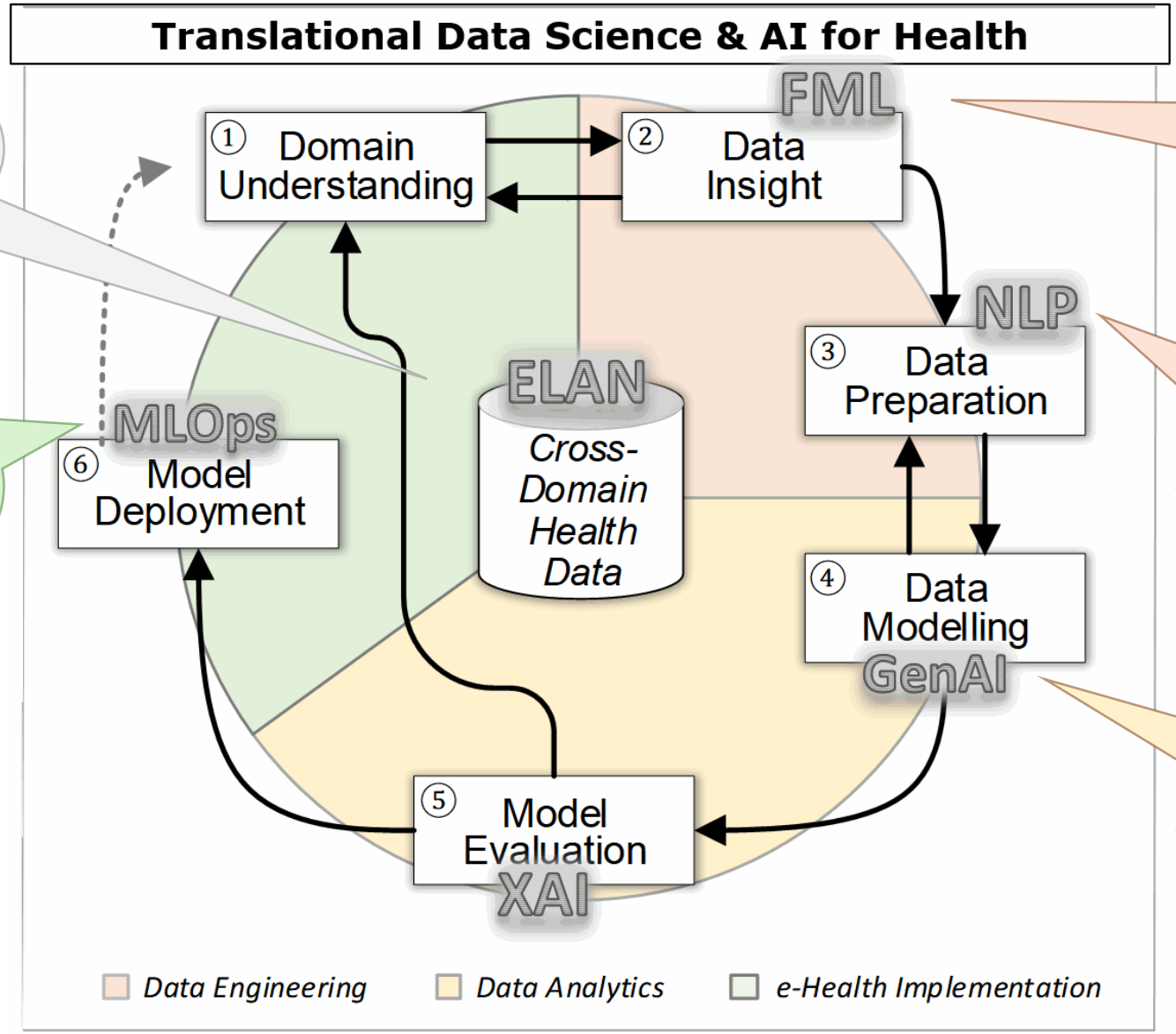




Spruit, Marco. (2022). *Translational Data Science in Population Health* (p. 20). Inaugural lecture. Leiden University. https://doi.org/10.5281/zenodo.7665858

AI4PeoPLe :: Research Aims

TOP-5 STRATEGIC OBJECTIVES @TDS LAB



Professionalisation of the ELAN infrastructure

Implementation of clinical decision support systems in healthcare practices

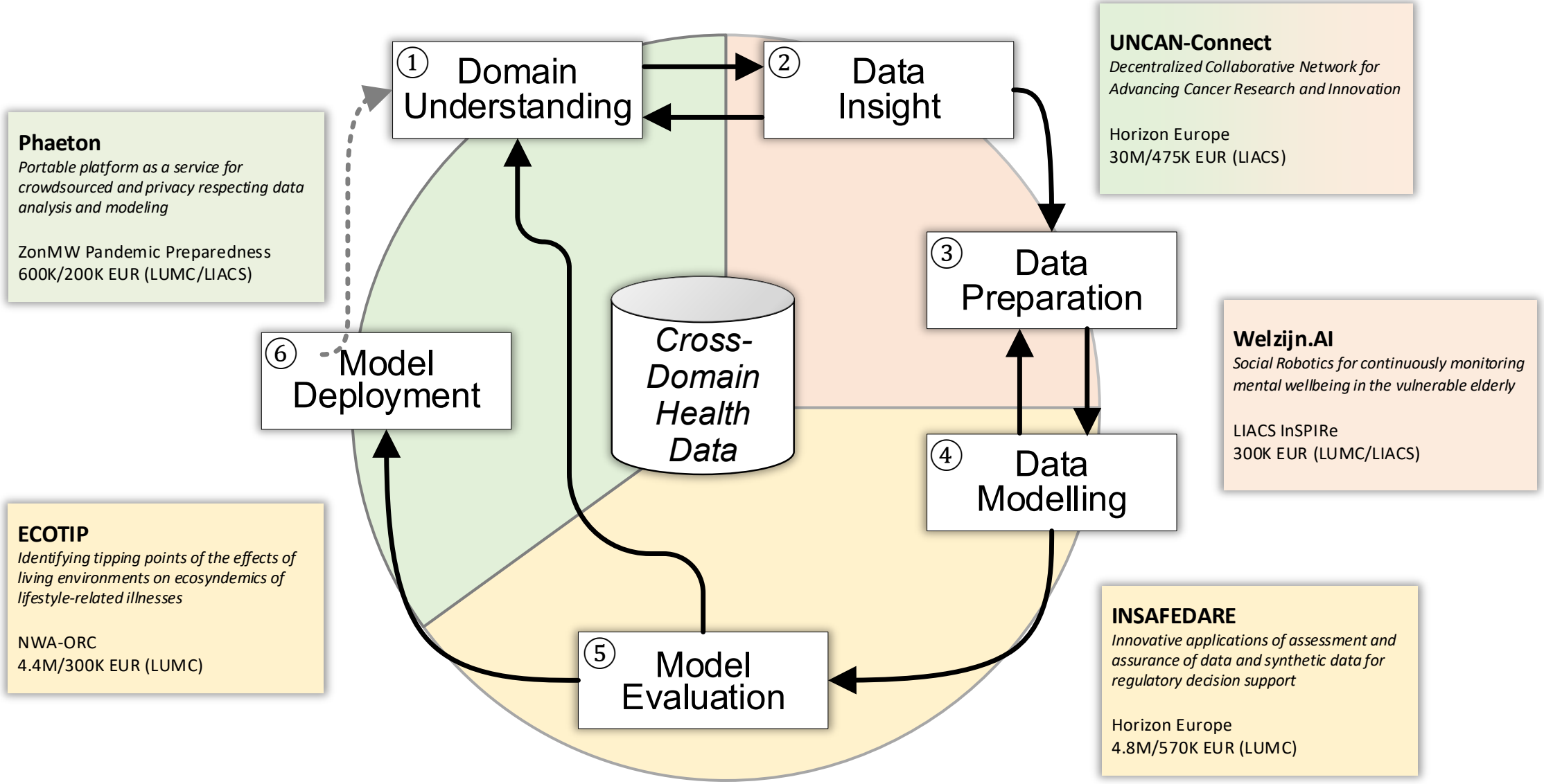
Development of decentralised health data infrastructure

Showcasing of the Welzijn.AI social bot for the vulnerable elderly

Generation of synthetic EHR data for digital twins

AI4PeoPLe :: Top-5 Projects

Translational Data Science & AI LAB : Top-5 Projects *d.d. 23-5-2025*



Phaeton
Portable platform as a service for crowdsourced and privacy respecting data analysis and modeling

ZonMW Pandemic Preparedness
600K/200K EUR (LUMC/LIACS)

UNCAN-Connect
Decentralized Collaborative Network for Advancing Cancer Research and Innovation

Horizon Europe
30M/475K EUR (LIACS)

Welzijn.AI
Social Robotics for continuously monitoring mental wellbeing in the vulnerable elderly

LIACS InSPIRe
300K EUR (LUMC/LIACS)

ECOTIP
Identifying tipping points of the effects of living environments on ecosyndemics of lifestyle-related illnesses

NWA-ORC
4.4M/300K EUR (LUMC)

INSAFEDARE
Innovative applications of assessment and assurance of data and synthetic data for regulatory decision support

Horizon Europe
4.8M/570K EUR (LUMC)

Data Engineering *Data Analytics* *e-Health Implementation*

http://tdslab.nl

AI4PeoPLe :: Current Topics

AI for health engineering

1. Federated NLP in mental health detection and promotion using multilingual, multimodal and federated techniques
2. Multi-layered federated infrastructure of interoperable research databases aligned with EHDS and Health-RI
3. Personal Health Train infrastructure of distributed EHR data for federated healthcare data analysis
4. Multimodal language markers detection from multimodal conversation data for passive wellbeing assessment
5. Open information extraction (incl. NER) from clinical notes, PubMed and other free texts for enriching health data analyses and data use harvesting
6. Methods for data linking, quality improvement and monitoring in cross-domain ELAN Real-World Data

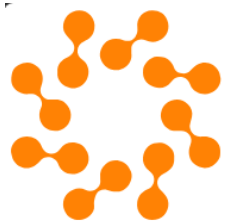
AI for health analytics

1. Speech-based social robotics for administering the EQ-5D PROM to improve adherence in elderly/youngsters
2. Synthetic EHR data generation for HTA regulatory processes using tabular, timeseries and image datatypes
3. Prediction modelling of T2D progression using cross-domain ELAN data to assess health inequity and AI Fairness
4. Ecosyndemics risk stratification of lifestyle-related illnesses by identifying tipping points of living environment effects
5. Bayesian Generative Models for predicting and monitoring the effect of interventions with Real-World Data

AI 4 health implementation

1. Population health analytics to improve evidence-based and data-driven regional healthcare
2. Data science management and incremental process improvement for Reproducible AI & Data science
3. Validity of technology-enhanced learning (TEL) systems, from design to implementation
4. Large Language Model applications for organisational cybersecurity, behavioral coaching, social media chatbots, etc
5. Software and AI model Observatory where AI models and software are published, discovered and monitored
6. Collaborative privacy-by-design data modelling environment for improving pandemic preparedness

Aim: ICAI Lab



ICAI Innovation Center for Artificial Intelligence

- *"ICAI, the Innovation Center for Artificial Intelligence, brings together knowledge institutes, industry, and governmental and societal partners in the Netherlands to develop talent and technology in the area of artificial intelligence."*
- *"The National Innovation Center for Artificial Intelligence (ICAI) has the mission to keep the Netherlands at the forefront of knowledge and talent development in AI."*
- *"Creating and nurturing a national AI knowledge and talent ecosystem is our central aim. In doing so, we as an organization want to deal sustainably with resources that arise from the activities and further activate the resources in the Netherlands."*
- https://icai.ai/

Contact: Thomas Dohmen