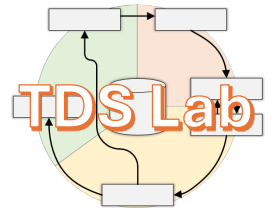


... to establish an authoritative, open and national infrastructure for Dutch health research, education and care

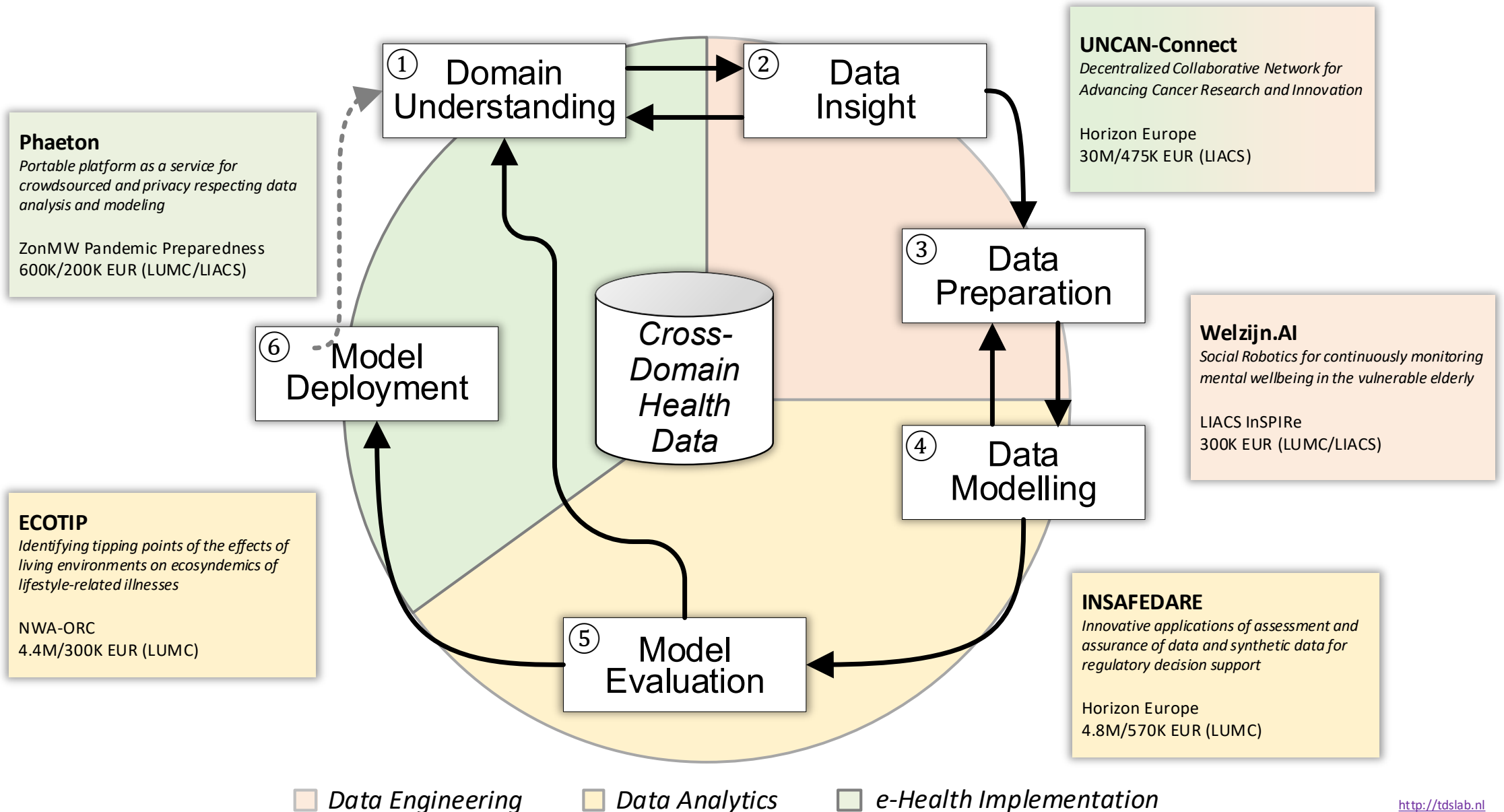
- to accelerate **innovation** and
- to **democratise** data science & AI technologies

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



*Translational Data Science & AI Lab @Leiden University*

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



## **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

## Communities

1. Translational Data Science & AI (TDS) Lab (LUMC/PHEG, FWN/LIACS) (Spruit)
2. NeLL (PHEG): National eHealth Living Lab (Chavannes)
3. ELAN (PHEG): Extramural LUMC Academic Network for regional care (Mook, Struijs); ELAN-DCC (Haas)
4. Population Health Management (PHM): Health Campus' master's programme community (Bruijnzeels)
5. HDS (LIACS, MI, LUMC): Health Data Science SIG: monthly seminars (Kraaij, Fiocco, Spruit)
6. Data Science, Human AI, Natural Computing clusters (LIACS: Leeuwen, Knobbe, Verberne, Bäck, ao)
7. CAIRELab (LUMC): Clinical AI Implementation & Research Lab
8. Data Analytics Research Facility (LUMC)

### ***External communities***

1. Medical Delta: "Healthy Society Hub" (Evers); TUD EWI (Jonker), EMC HDS (Rijnbeek)
2. Applied Sciences: HHS: Data Science (Stergioulas); HSL; HU: Innovation of exercise care (van de Hoef)
3. NAIN (TNO et al): Dutch AI for the Netherlands and Flanders (LLM, NLP)
4. Various Dutch project consortia with UMC partners and TNO: ECOTIP, Phaeton, <NeLL projects>
5. Various HEU project consortia: UNCAN-Connect, INSAFEDARE, <NeLL projects>
6. NFU Data in de Regio werkgroep
7. European Federation for Medical Informatics (EFMI): yearly conferences MIE and STC
8. UNA Europa: "One Health" & "Data Science and Artificial Intelligence" self-steering committees