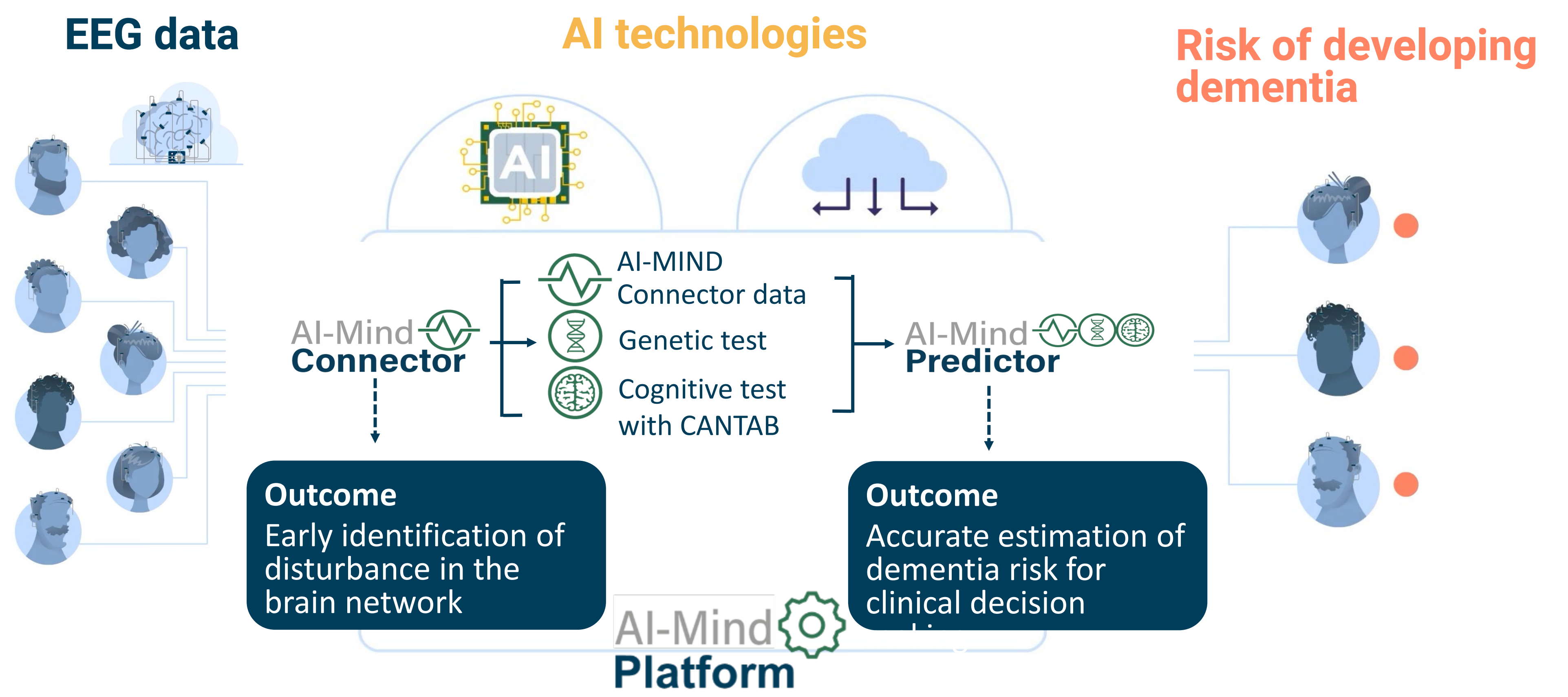# AI-Mind

The AI-Mind Concept

At the heart of AI-Mind are **two AI-based digital tools** that will be integrated into a cloud-based diagnostic support platform.
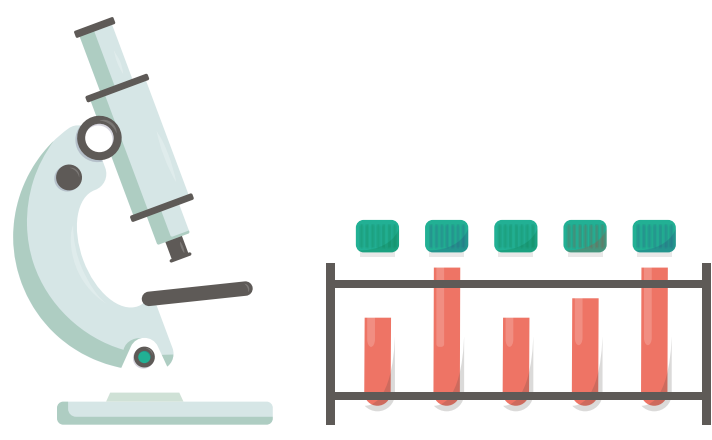
These two tools will process routinely collected data in an innovative way.

EEG data

AI technologies

Risk of developing dementia

AI-Mind **Connector**

- AI-MIND Connector data
- Genetic test
- Cognitive test with CANTAB

AI-Mind **Predictor**

Outcome
Early identification of disturbance in the brain network

Outcome
Accurate estimation of dementia risk for clinical decision

AI-Mind **Platform**

Data collection

Blood Samples

- P-tau 217
- P-tau 181
- Genetic biomarkers
- Monocytes

2000 samples

Digital Neuropsychological Testing

- Memory
- Attention
- Visual recognition
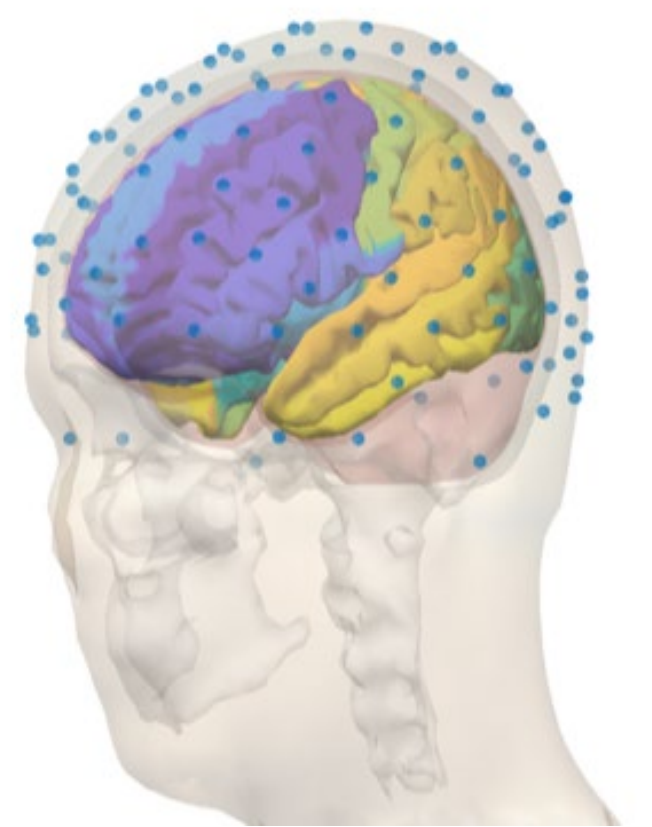- Non-verbal patterns
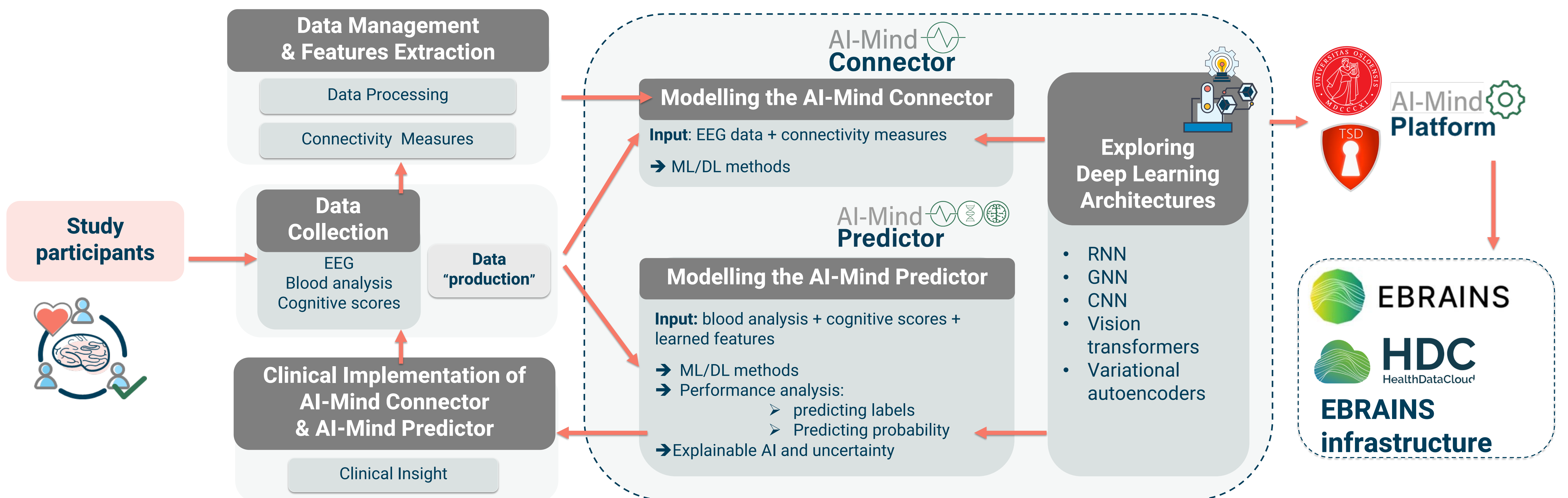
PAL, RVP, SWM, DMS, PRM, MTS

4000 measurements

EEG & MEG

- 128-channel EEG
- 306-channel MEG
- 4x5' resting state
- Spectral characteristics
- Functional connectivity
- Graph theory
- Signal complexity

4000 measurements

The AI-Mind Platform

Data Management & Features Extraction
- Data Processing
- Connectivity Measures

Study participants

Data Collection
EEG
Blood analysis
Cognitive scores

Data "production"

Clinical Implementation of AI-Mind Connector & AI-Mind Predictor
- Clinical Insight

AI-Mind **Connector**

Modelling the AI-Mind Connector
- **Input**: EEG data + connectivity measures
- → ML/DL methods

AI-Mind **Predictor**

Modelling the AI-Mind Predictor
- **Input:** blood analysis + cognitive scores + learned features
- → ML/DL methods
- → Performance analysis:
  - ➤ predicting labels
  - ➤ Predicting probability
- → Explainable AI and uncertainty

Exploring Deep Learning Architectures
- RNN
- GNN
- CNN
- Vision transformers
- Variational autoencoders

AI-Mind **Platform**

EBRAINS

HDC HealthDataCloud

EBRAINS infrastructure

The AI-Mind Consortium

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