# START-UPS SHOWCASE

## Dr. Janis Reinelt

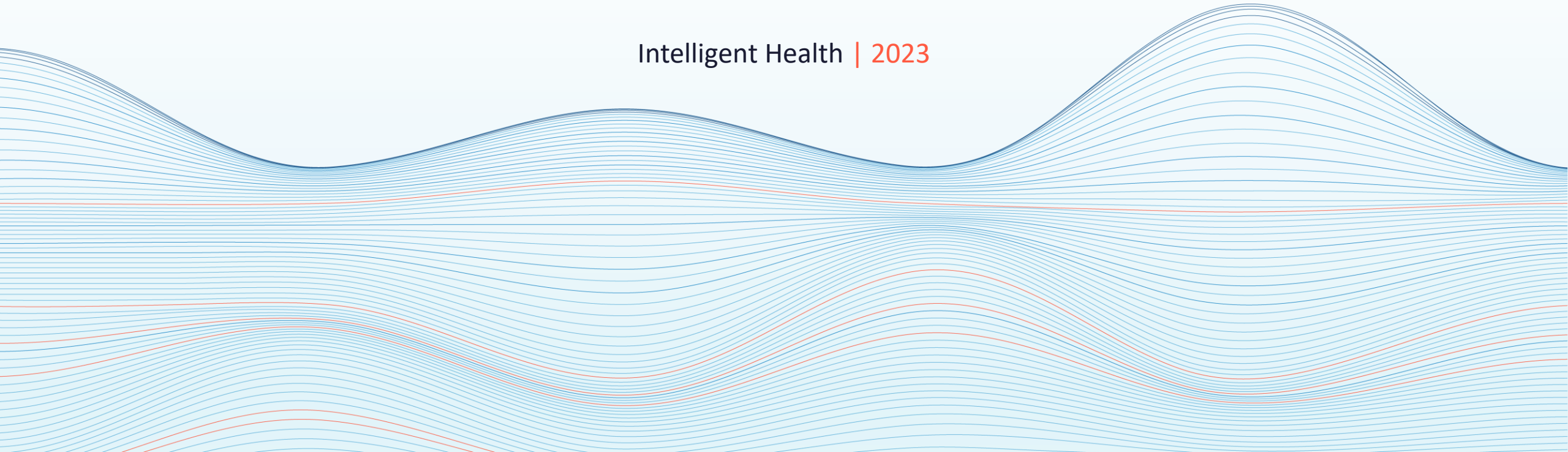
Chief Medical Officer

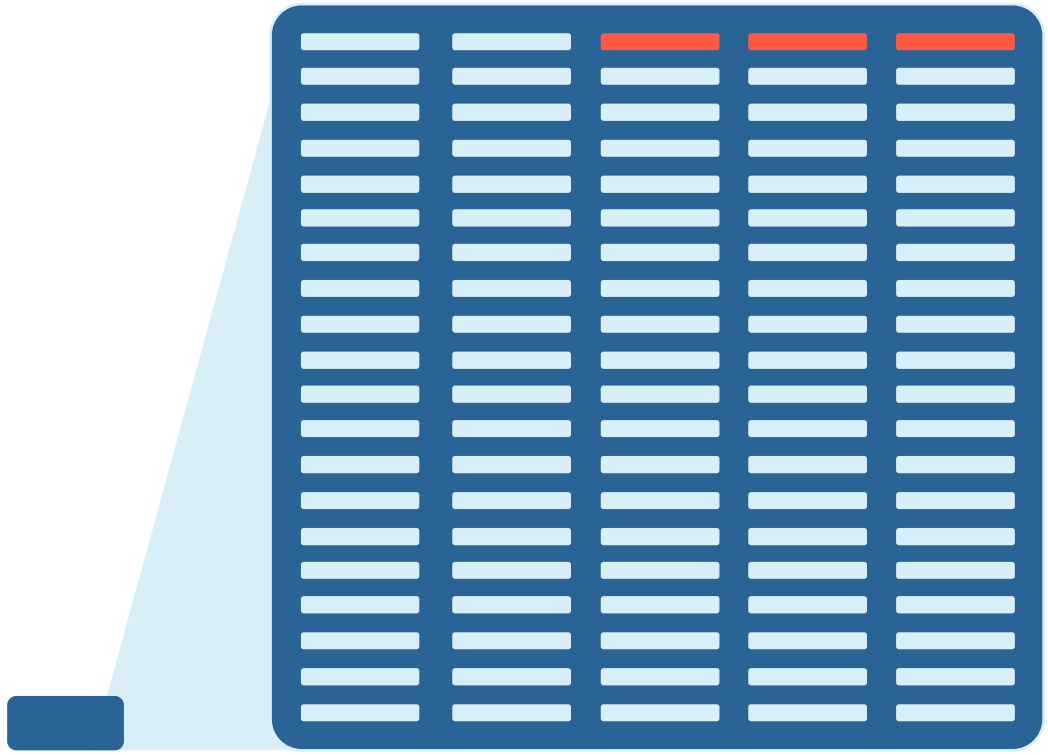
**AICURA medical**

# AICURA MEDICAL

Accelerate clinical research with data x AI

Intelligent Health | 2023





**Less than 3%** of medical data generated today is used

Medical data **has grown 15x** in the last 7 years

Sources: 1) EY(2019):"Five ways the power of data will improve health outcomes", 2)Stanford Medicine (2017):" Harnessing the power of data in health"

# Seizing this opportunity is very difficult

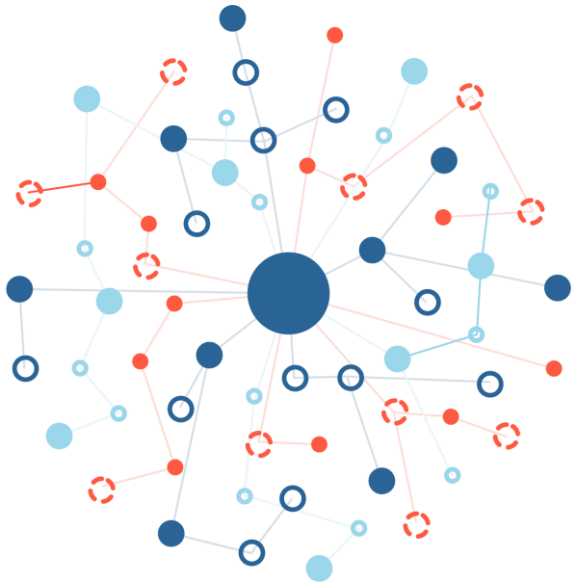
## Medical data is …

siloed, complex, strictly regulated

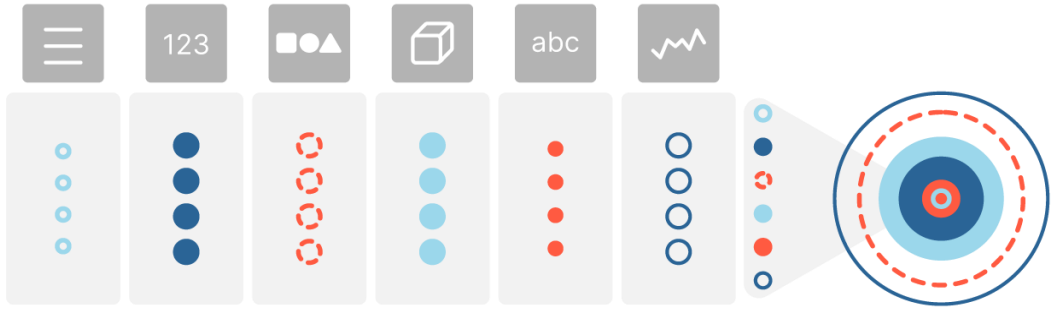
## Analytical methods need to …

handle multimodal, incomplete data, and be ‘explainable’

# Our **graph-based data model** and **modular AI engine**, leverage the information contained in ALL existing medical data

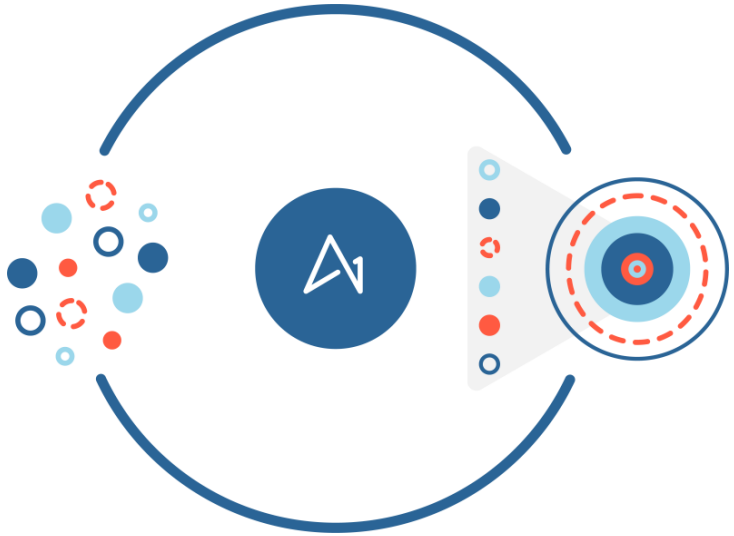


Data Model




AI Engine

# **AICURA Platform:** Data model x AI engine **de-risk clinical trials**



AICURA Platform

Biomarker Enhancement

Eligibility Assessment

Endpoint Selection

Randomization

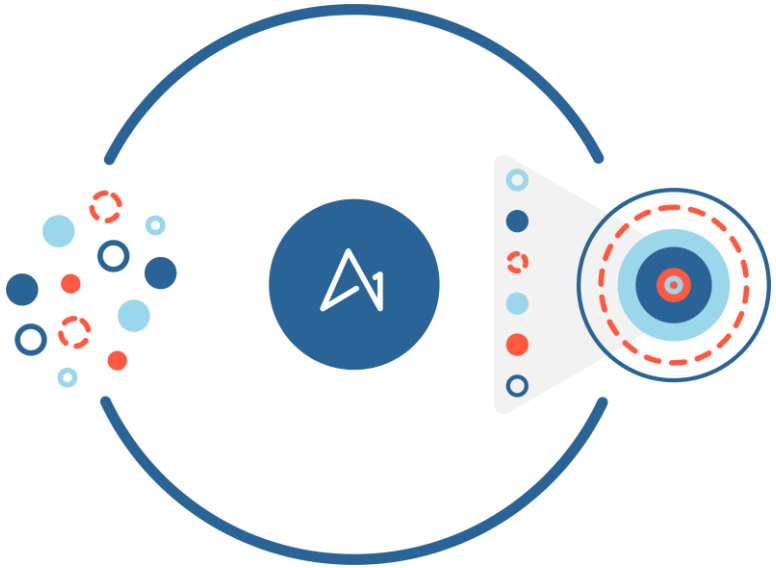
# **Case study:** How we leverage the AICURA Platform to optimize patient identification in Neuro Degenerative Disorders

## Challenge

NDD costs over $1.3T → expected to rise to $2.8T by 2030

The diagnostic workflow is complex

Over 20 types of dementia that are hard to diagnose



AICURA's Deep-learning-based Dementia Classifier

Biomarker Enhancement

Eligibility Assessment

# **We integrated, harmonized, and qualified** data from 20+ open data sets into our data model

Open datasets

- 4RTNI
- A4
- ABCDS
- ABIDE
- ADNI
- AIBL
- BIOFIND
- BRIN
- CRYO
- HCP
- ICBM
- NIFD
- PAD
- PPMI

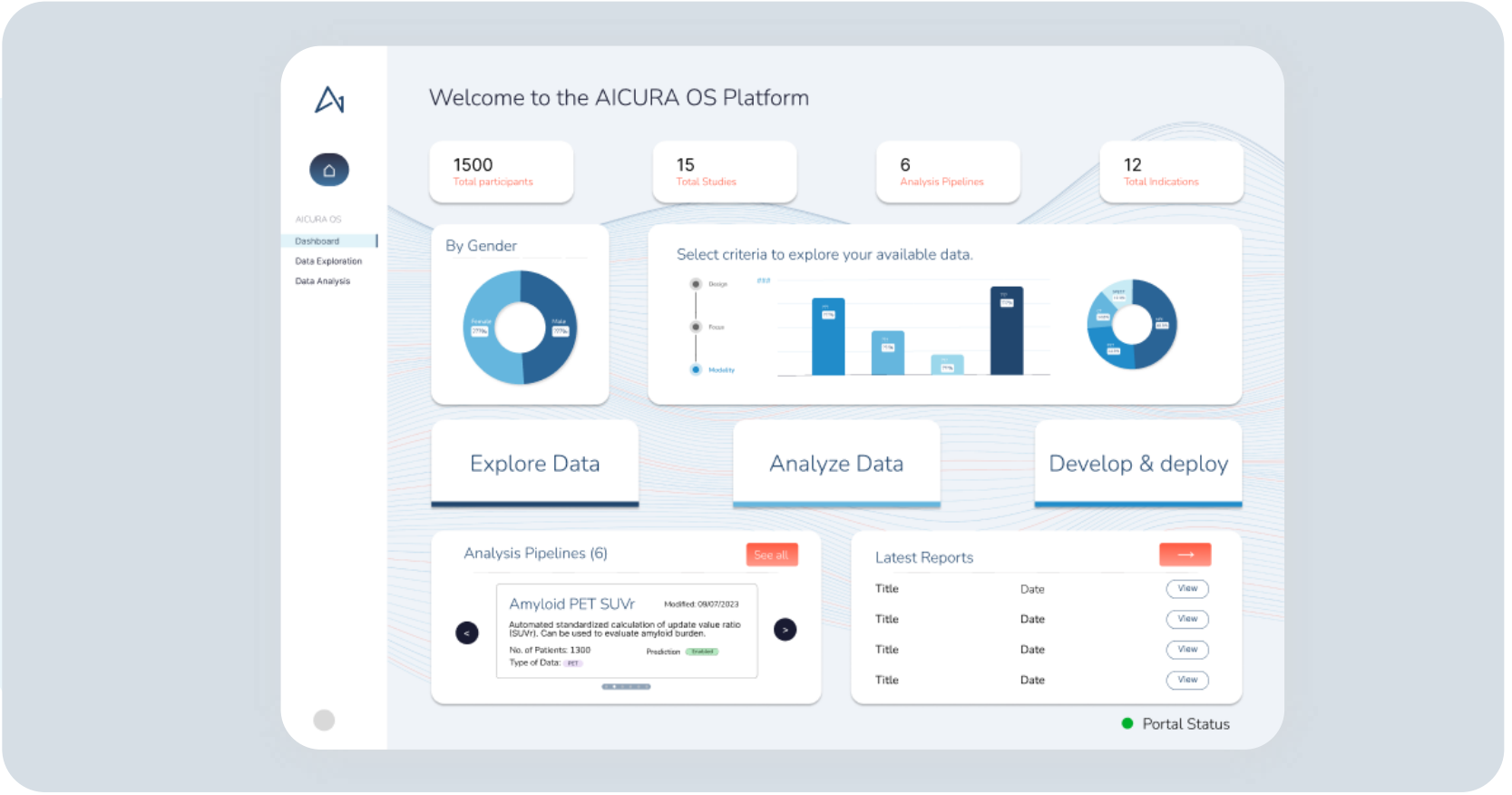
>30,000

Conditions

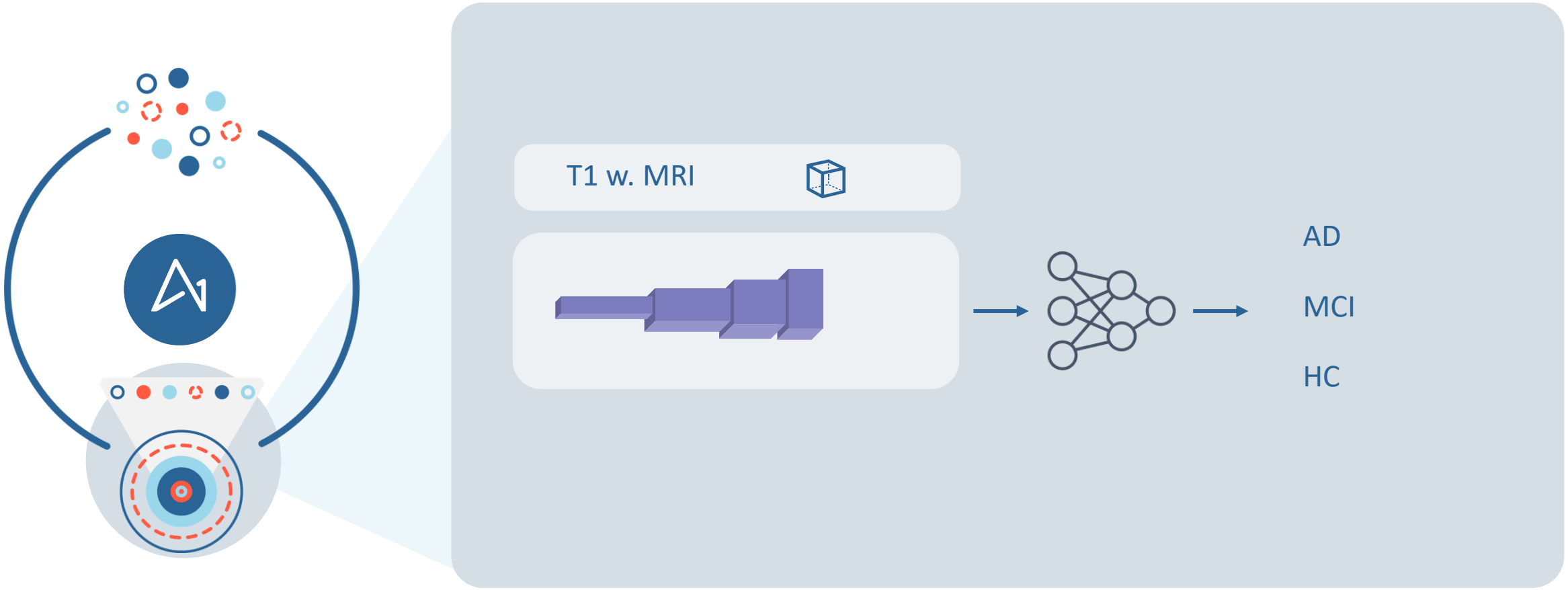
Alzheimer's
Parkinson's
FTD
LBD...

Data modalities

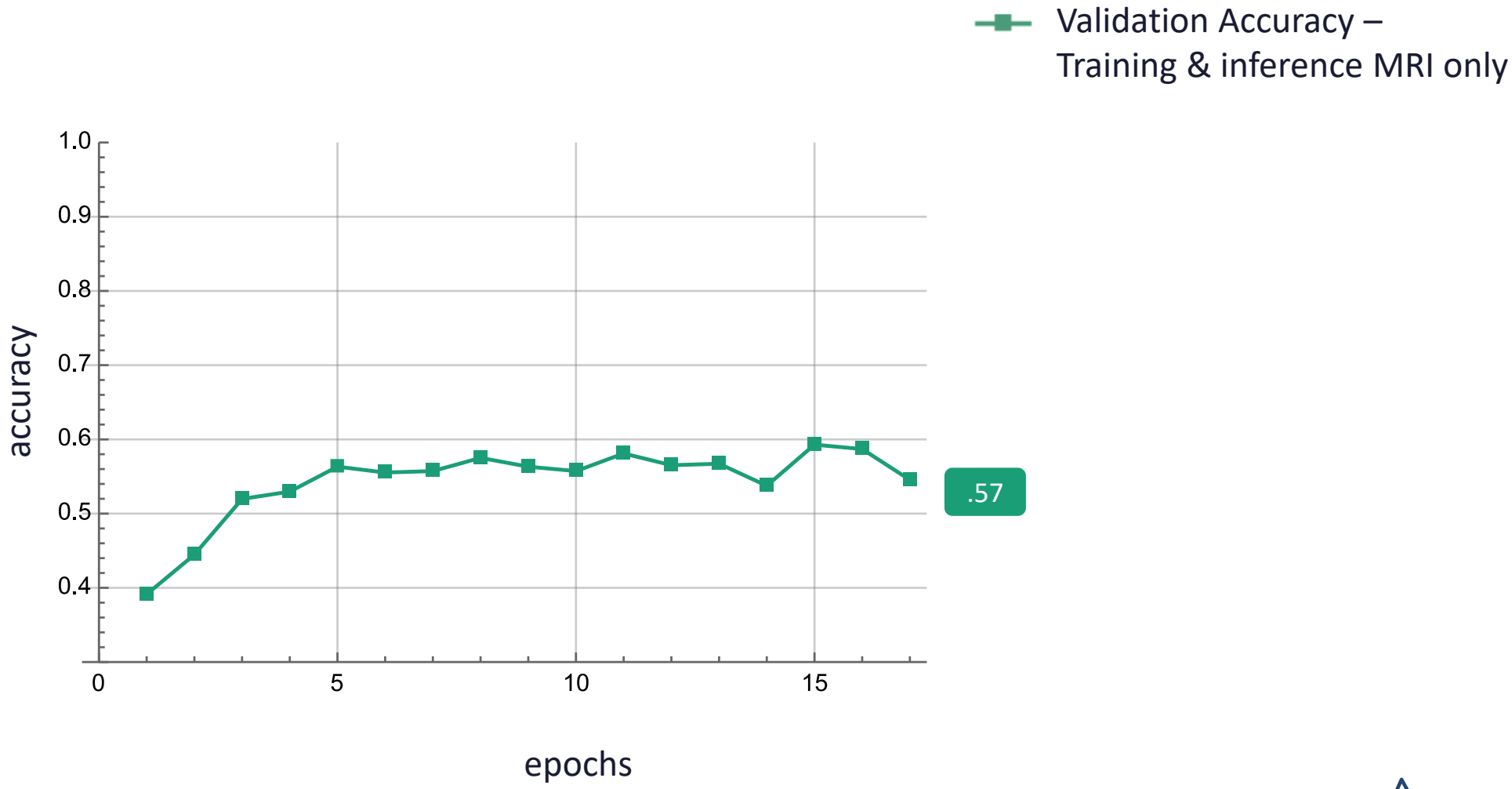
# Now this data can **easily be queried,** and **insights can be unlocked**



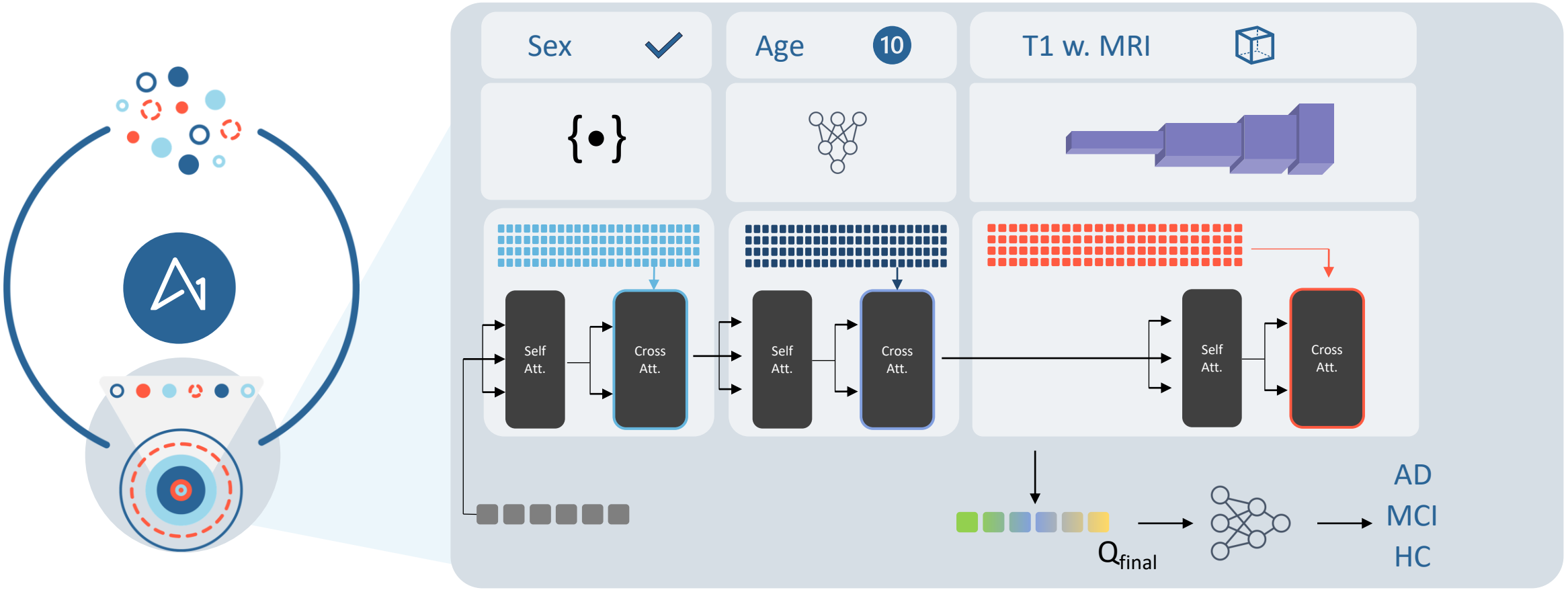
# First trained a conventional **CNN to predict 3 classes**



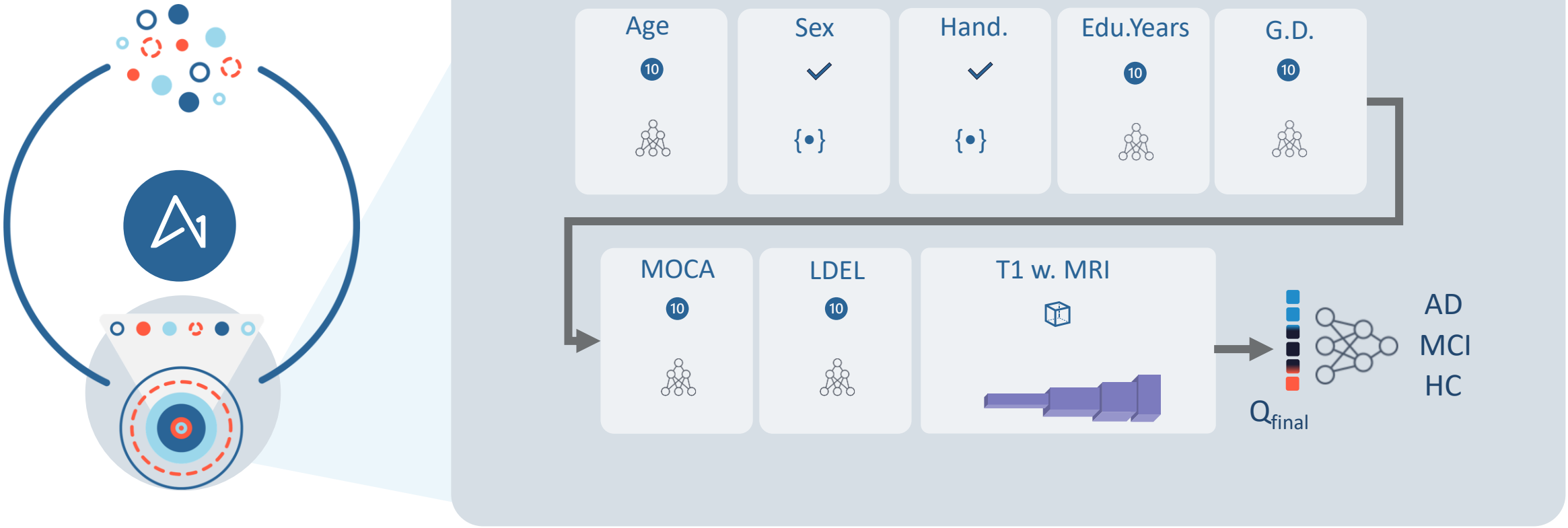
# This showed **average performance**



# Using the latest **transformer-based** modelling approaches we **extended the model by multiple modalities**



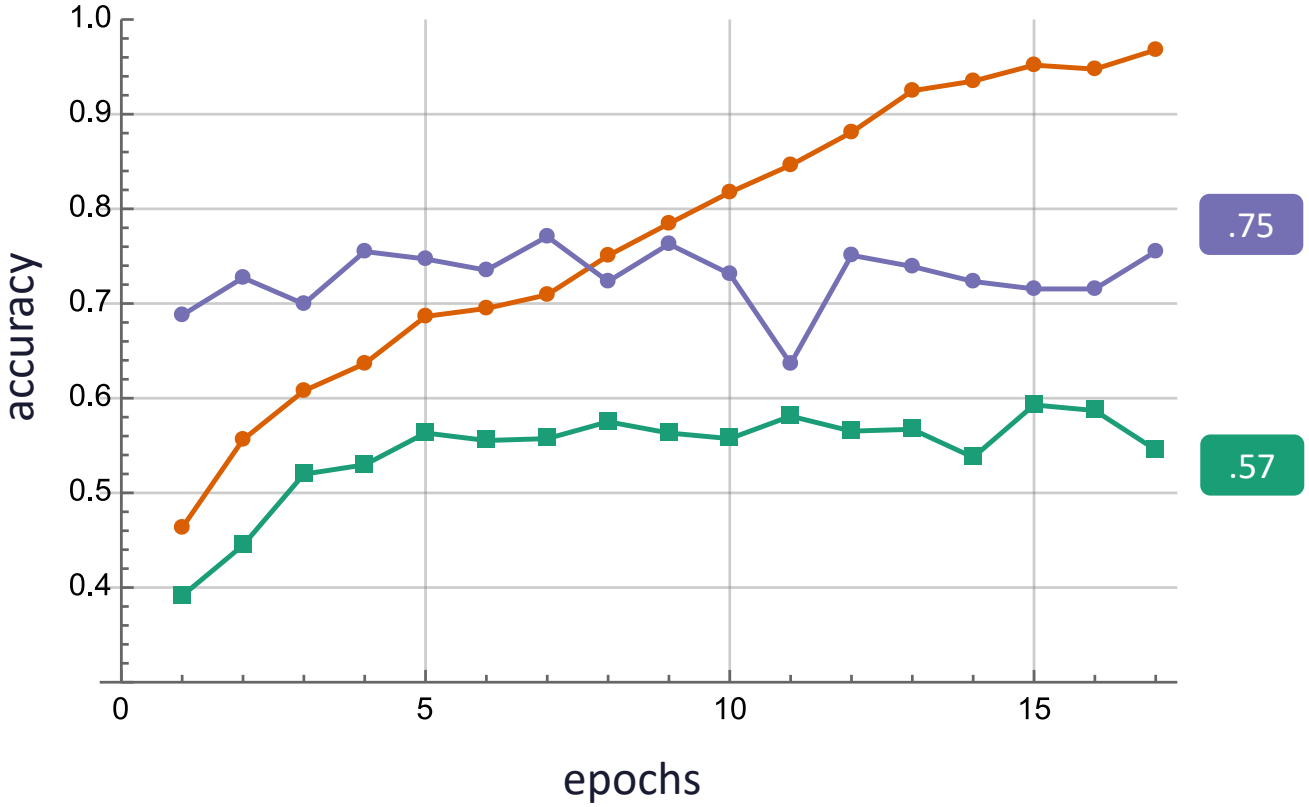
# Which can actually be **extended by any modality**



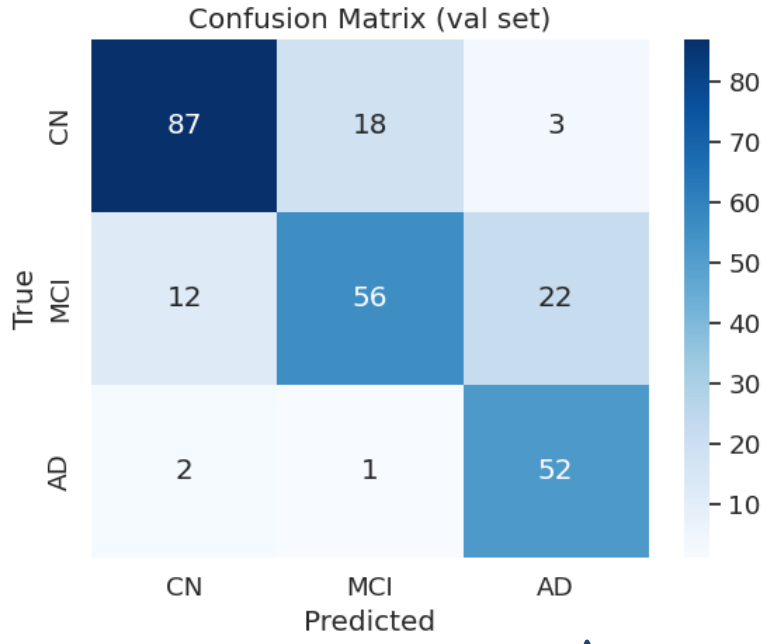
# This showed a **strongly improved performance**

Training Accuracy

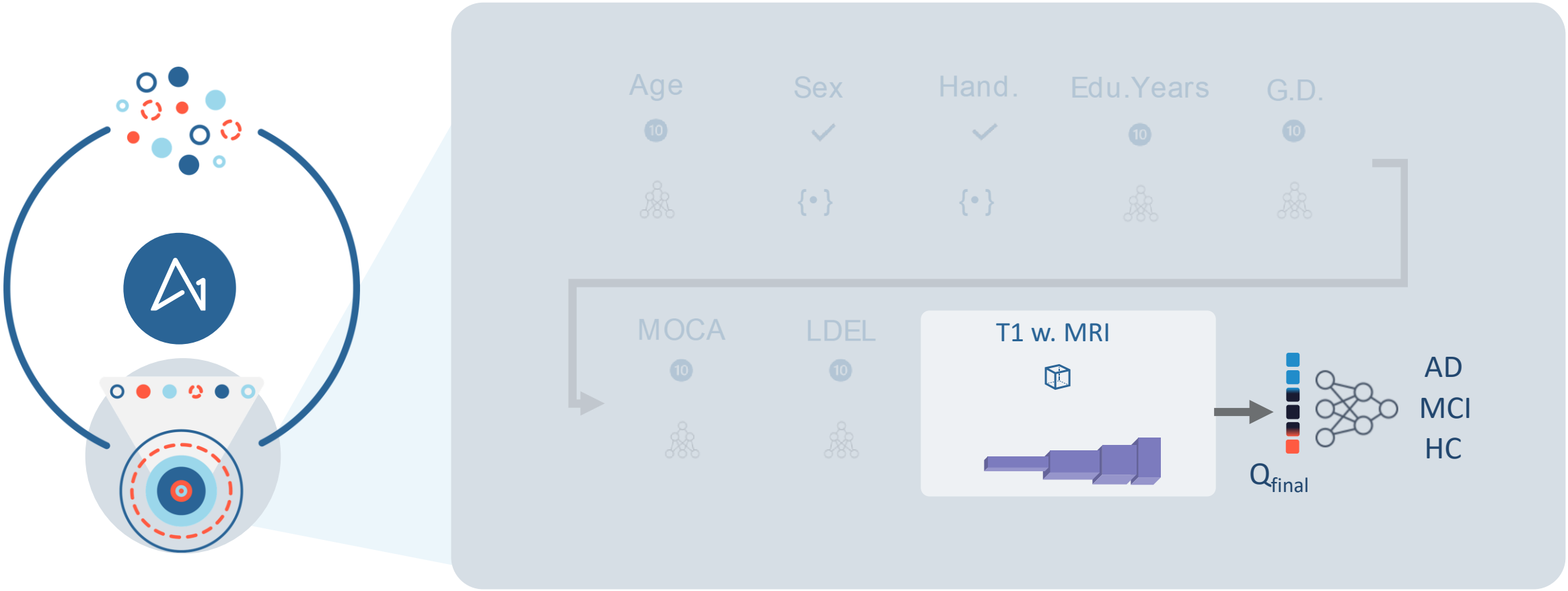
Validation Accuracy – Training & inference **MRI only**




Validation Accuracy – Training & inference **Multiple Modalities**



# Even more powerful for missing data scenarios – **at inference only one modality (e.g. MRI) can be used**



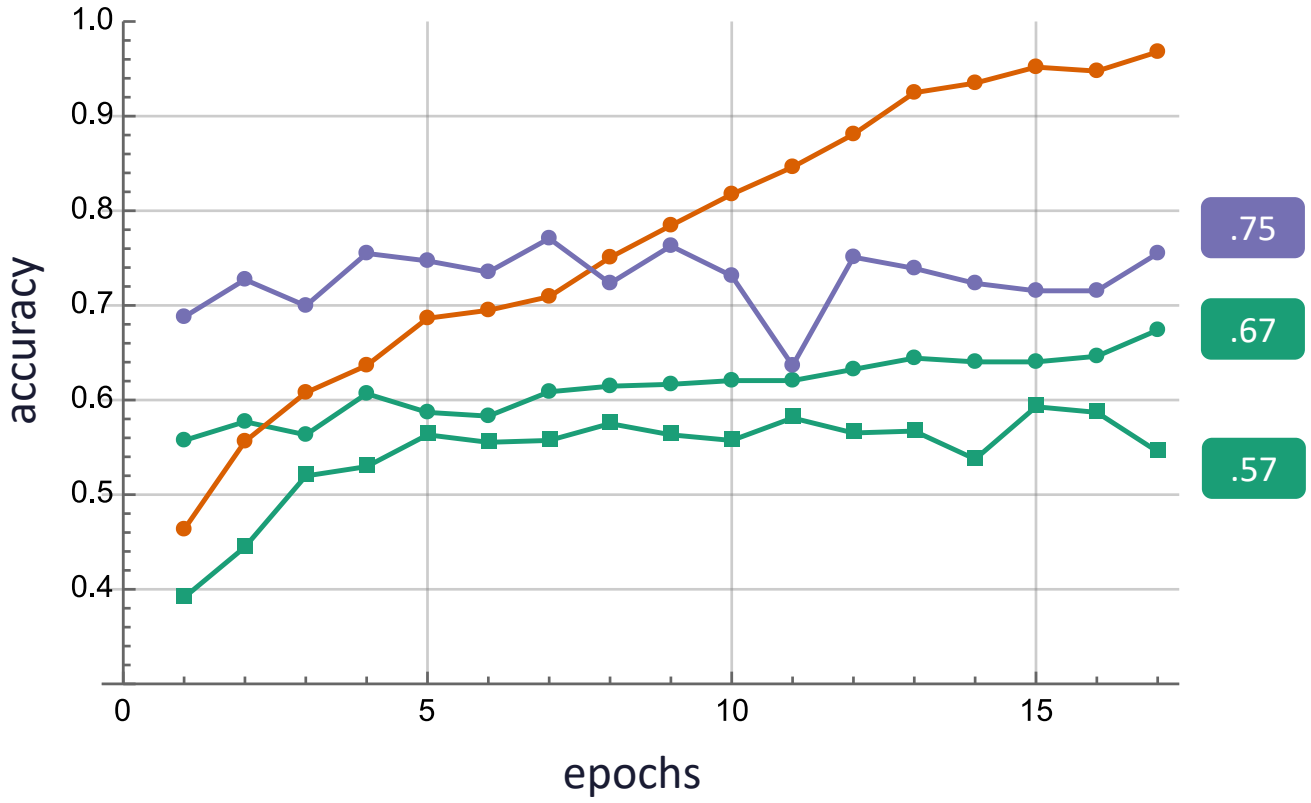
# **Training with multiple modalities increased performance** on even single-modality inference!

Training Accuracy

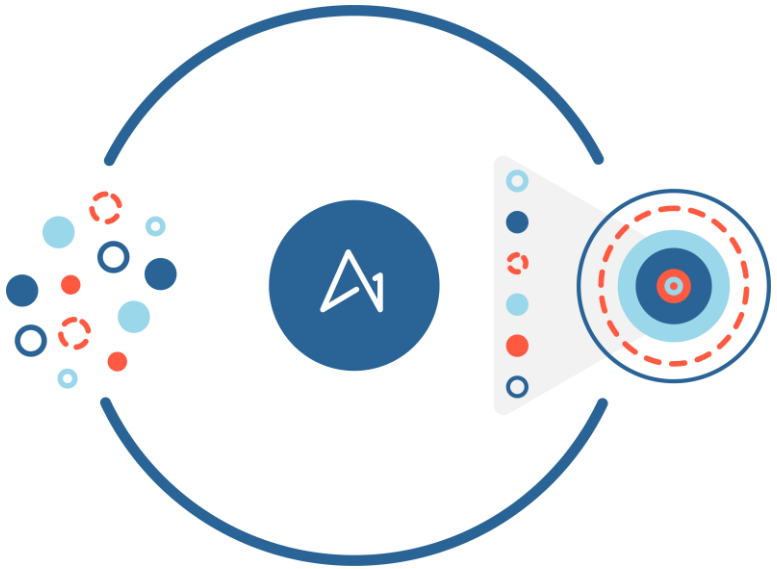
Validation Accuracy – Training & inference MRI only

Validation Accuracy – Training & inference Multiple Modalities

Validation Accuracy – **Training Multiple Modalities Inference MRI only**



# Outlook → Data model x AI engine **de-risk clinical trials in NDD**



Biomarker Enhancement ✓

Eligibility Assessment ✓

## Endpoint Selection

Evaluate them based on their added value in progression prediction

## Randomization

predict disease progression
with multimodal transformer model

# AICURA provides at least **20% cost & time savings in clinical trials**

**De-risking Strategies**

enrich patient cohorts
for clinical trials with data-driven insights

predict patient response
with AI-driven biomarkers

automate the analysis
of images and data

IMPACT:

- ✓ REDUCED TRIAL COSTS*
- ✓ IMPROVED PROBABILITY OF SUCCESS
- ✓ FASTER TIME TO MARKET

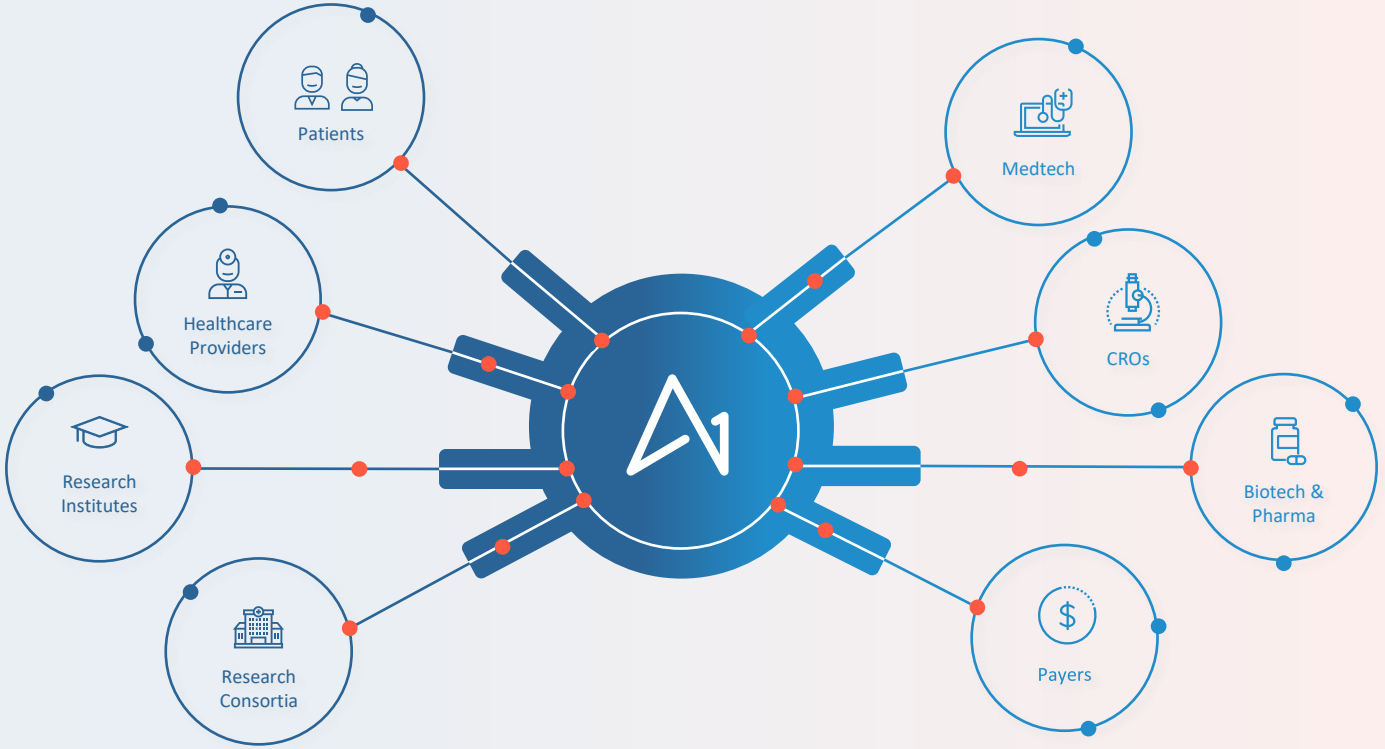
*Based on internal calculations the total cost reduction in the 3 phases of trials. Ph1, 2, 3. We save 20% of the cost of each of the phases. Avg cost of trials: Ph1 : USD 3.8M - AICURA delivers savings ~ USD 760 K, Ph2 : USD 13M - AICURA delivers savings ~ USD 2.6 M, Ph3 : USD 20M - AICURA delivers savings ~ USD 4.0 M

# AICURA's platform generates **recurring revenue** from biopharma subscriptions and promotes data sharing across partners

| | **AICURA Generates Revenue** | | **Revenue Share** Customer x AICURA |
|---|---|---|---|
| | **Subscription** | **Value-Added** | **Data-Sharing** |
| biopharma | ✓ | ✓ | ✓ |
| Health Care Providers | Free | ✓ | ✓ |
| Research Institutes | Free | ✓ | ✓ |

# Join AICURA's **data x AI ecosystem**

## Connecting all healthcare stakeholders to transform healthcare



# Accelerate your clinical research with **data x AI**

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