

Future of AI

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FCAI

Funded by:



Generative AI



Foundation model ~ 100 t CO₂

**All K combinations of the
'expertise' of N foundation
models ~ $\binom{N}{K}$ t CO₂**

Machine learning does not work

Machine learning does not work

- how to take into account the different conditions after deployment?

How can the N+1th domain improve its R&D design process, given earlier developments in N other domains?

**Challenge 1: Combinations of
foundation models**

Challenge 2: Robust deployment

Challenge 3: Improve the R&D process itself

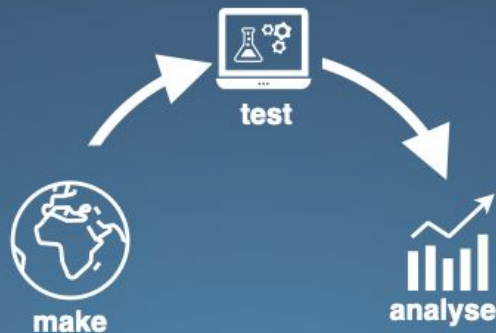
Research and design: Design-make-test-analyze loop



drug design in virtual laboratory

drug target

starting molecule



candidate drug

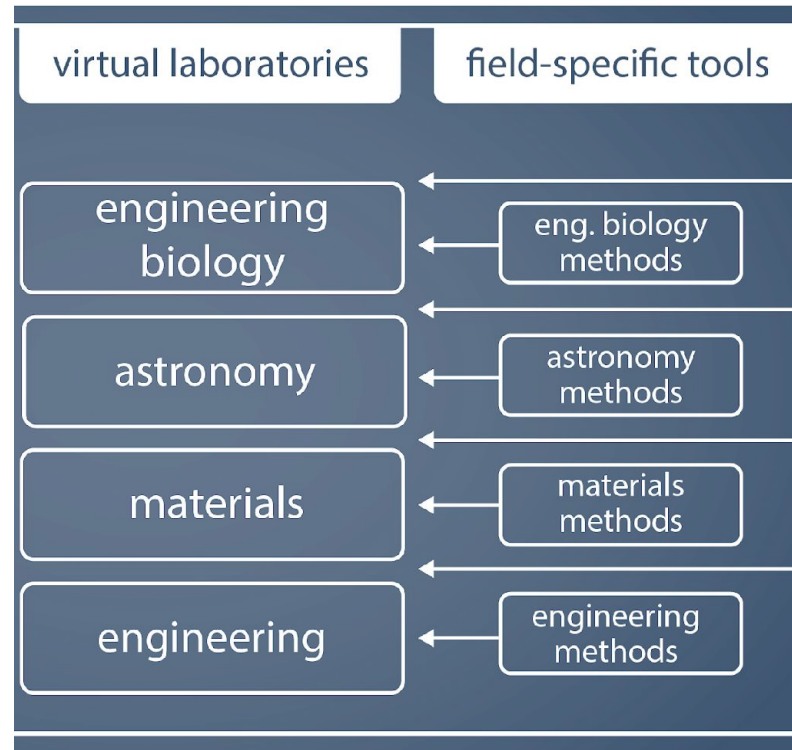
operation

iterative DMTA cycle
multiple virtual rounds
per each real round

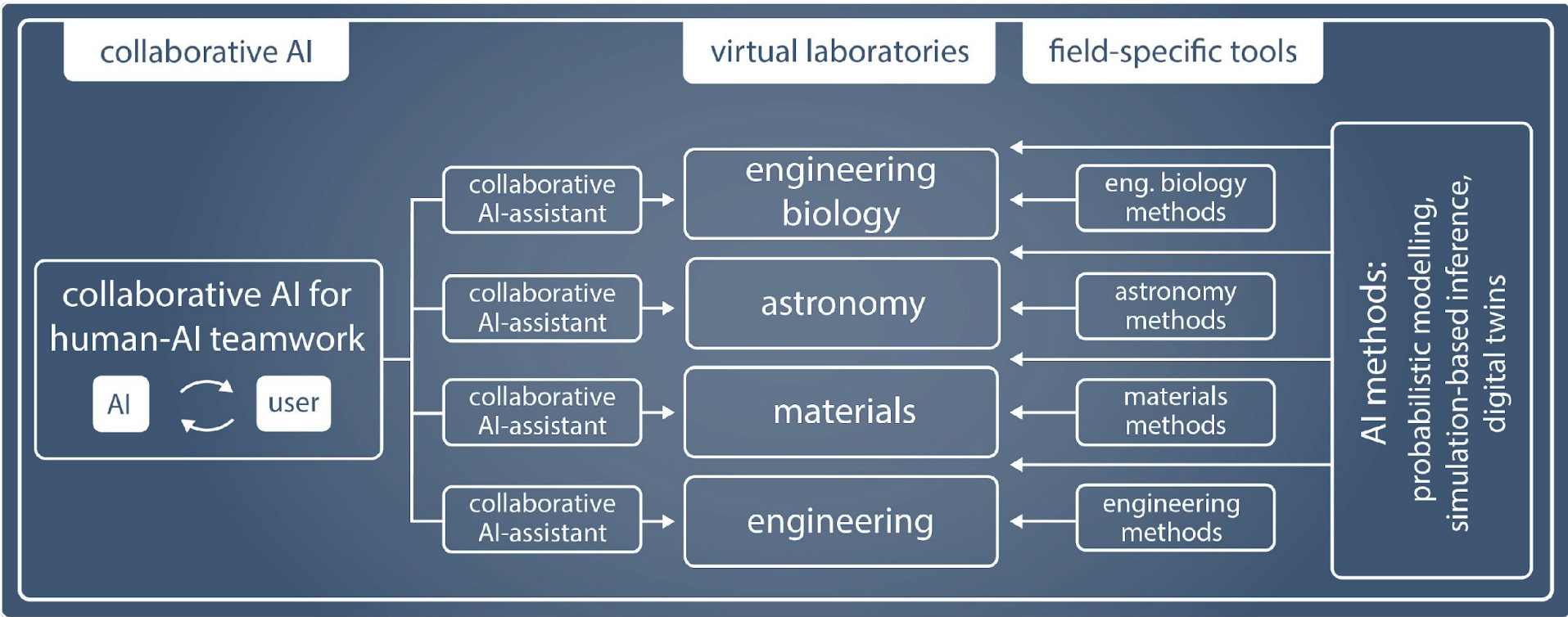


learning

AI-assistant learns over
rounds and drugs
continuous updating
of digital twins



AI-assisted virtual simulation-based laboratories



FCAI

Finnish
Center for
Artificial
Intelligence



Aalto University



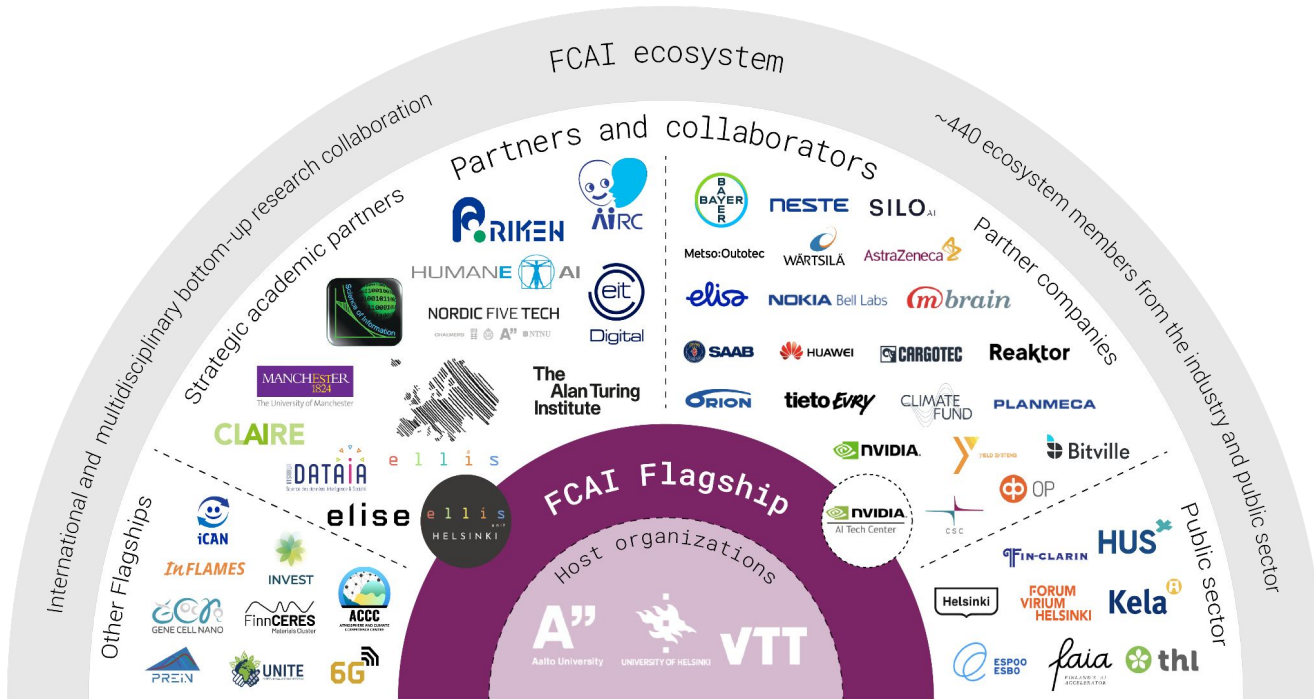
UNIVERSITY OF HELSINKI



fcai.fi

FCAI: A Flagship for Real-World AI

- 1 World-class fundamental AI research**
- 2 Transformation across domains**
- 3 Tightly-knit European collaboration**



- ### FCAI in numbers (2019–2022)
- 2550 peer-reviewed publications
 - 65% of publications in intl. collaboration
 - 11% of publications with industry
 - 22% share of highly cited publications
 - 100+ PhD and 800 Master's degrees, with 100+ companies

fcai.fi/ellis-institute-finland



e l l i s

European Laboratory for Learning and Intelligent Systems

ELLIS Institute in Finland

Increasing AI capability in Finland with the help of a top brand

Why?

Talent shortage is the most significant hurdle for companies' RDI investments – Finland needs ways to attract the best talent

What?

World-class research center
Key role in the pan-European network of AI excellence

Impact?

Attracts top experts and investments to Finland
Multiplicative effect: the number of experts in Finland will increase manifold, creating the conditions for extensive RDI work *



ELLIS: Joining forces in Europe

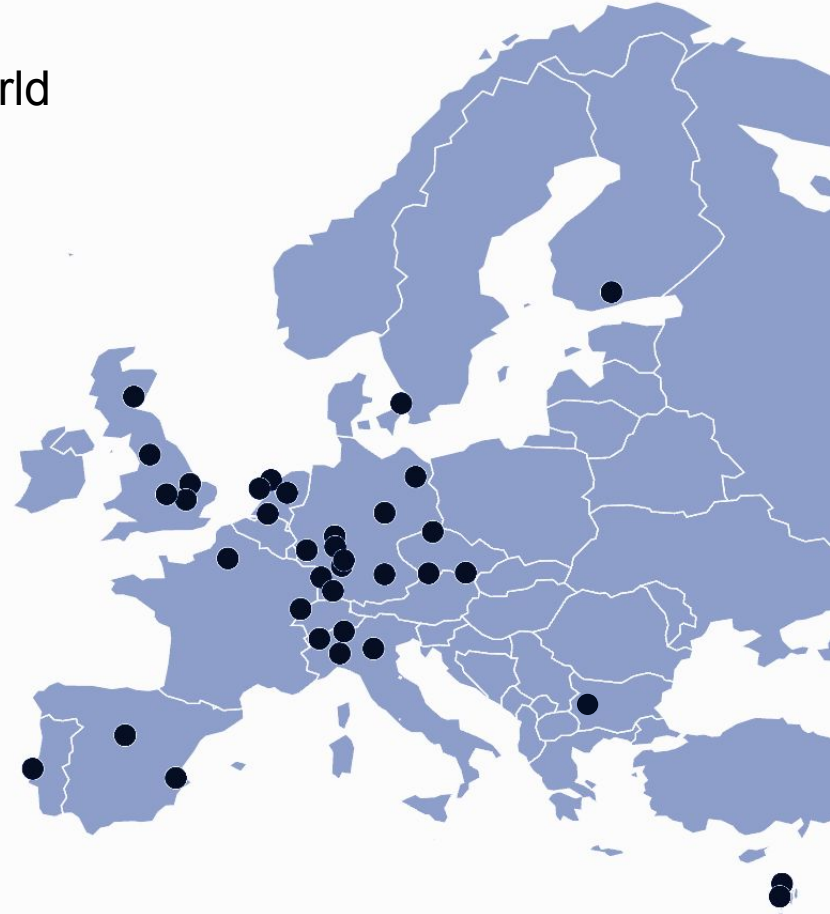
- Pan-European AI network of excellence to secure Europe's sovereignty in AI
- Attractivity for the best talent around the world
- 40 ELLIS units and local RDI hubs
- FCAI hosts the ELLIS unit in Finland

→ Next: A few ELLIS units will be expanded to ELLIS Institutes having a key role in the network – the locations for these institutes are selected now



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European Laboratory for Learning and Intelligent Systems



Aim to establish an ELLIS Institute in Finland

ELLIS Institute Finland

World-class AI research center
Brings experts, companies and investments to Finland

Research excellence as a basis



Builds on Finland's strong AI expertise

Large-scale RDI collaboration



Brings AI expertise to different fields and renews Finnish industry

Leveraging global partner network



Operates in close collaboration with other global top centers



e l l i s

European Laboratory for Learning and Intelligent Systems

More information: <https://fcai.fi/ellis-institute-finland>

ELLIS Institute Finland will boost RDI activities

Already a large number of companies in Finland have given their support and want to do this together

