

Gergely Szertics

Head of AI4Impact program

AI for Impact From concepts to beta solutions

2025 március 25
Budapest

Covering one aspect is not enough



How can we support all types of activities within science?



HUN
REN **A4S**
FOR SCIENCE

Supporting scientist in
research process
(AI4S)

HUN
REN **A4E**
FOR EFFICIENCY

Enhancing support
functions with AI
(AI4E)

HUN
REN **A4i**
FOR INNOVATION

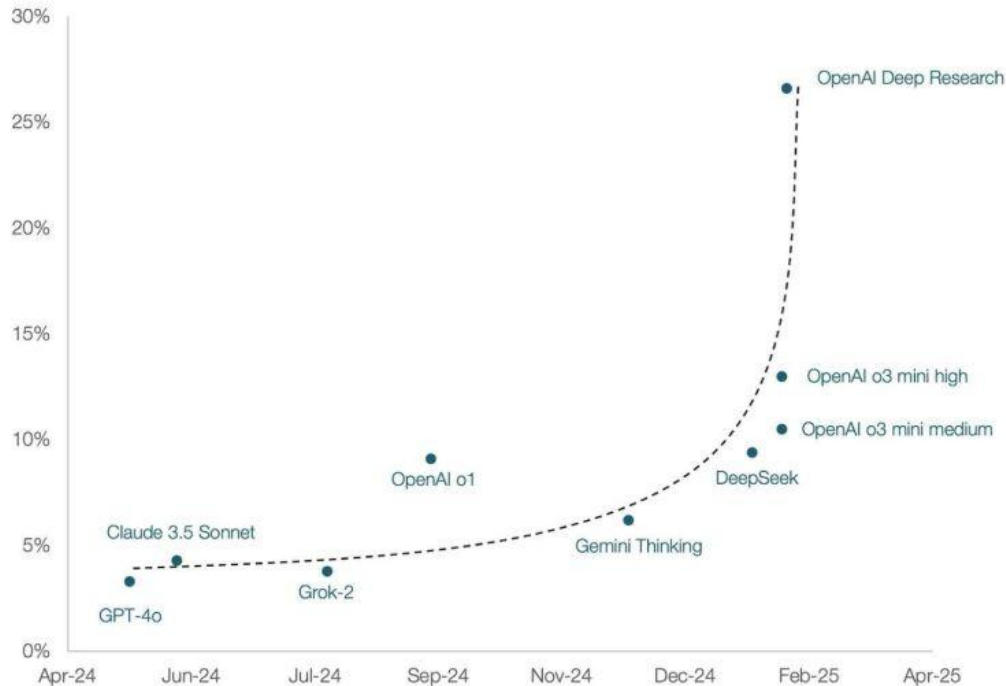
Supporting the innovation
value chain with AI
(AI4I)

HUN
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FIRST SCIENCE

Disrupting science with AI
(AI1S)

Hitting new highs

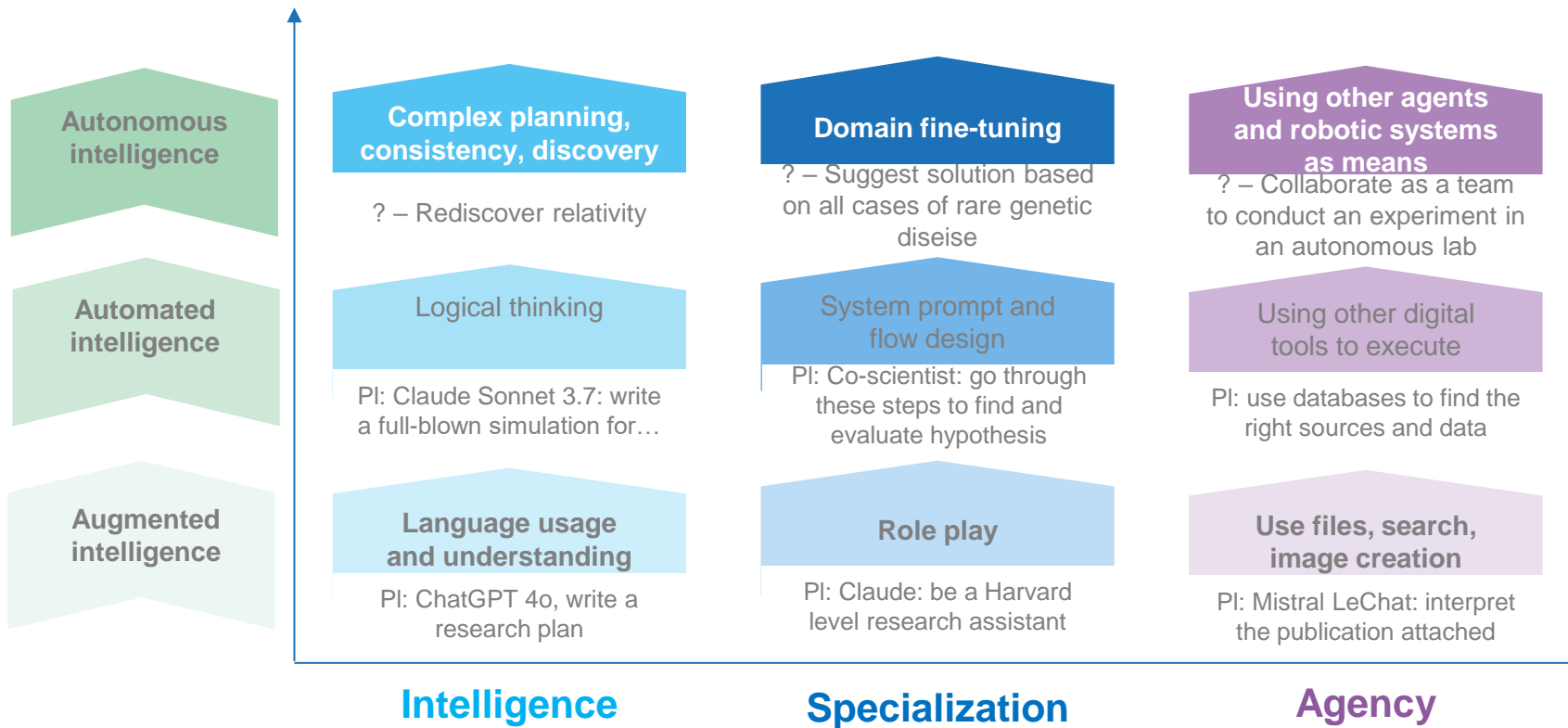
AI Scores on *Humanity's Last Exam*



**January 2025:
Humanity's last exam**

Source: Tomas Pueyo for Uncharted Territories, with data from Dan Hendrycks, of *Humanity's Last Exam*

Threads of intelligence development



Three waves of AI that we have to manage



AUGMENTED
Intelligence



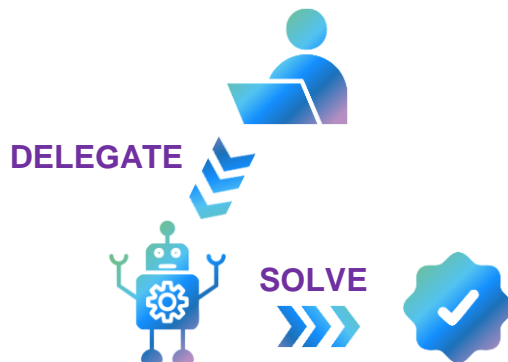
AUTOMATED
Intelligence



AUTONOMOUS
Intelligence

Augmented... Automated... Autonomous... Intelligence

AI-s can be more and more a central part of how we do science



Augmented Intelligence

Getting help for a concrete task.
Needs culture change

Automated Intelligence

Engineering a set of steps to be automated. Needs designed flows.

Autonomous Intelligence

Disrupting how science can be done.
Needs a dedicated pioneering team.

Covering one aspect is not enough



How can we support all types of activities within science?



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**AUGMENTED
Intelligence
support**

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**AUGMENTED and AUTOMATED
Intelligence support**

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**AUTOMATED and
AUTONOMOUS
Intelligence**

Let's see what you can use!

Our first AI focuses

HUNREN A4S
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**AI enabled
competence map
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**Chatting with
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documentations
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**“From website to
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**AI-first
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New toolkit added to AI tooling

Available now:

GenAI4Science with models:

- LLaMa 70B
- DeepSeek
- ...

New release:

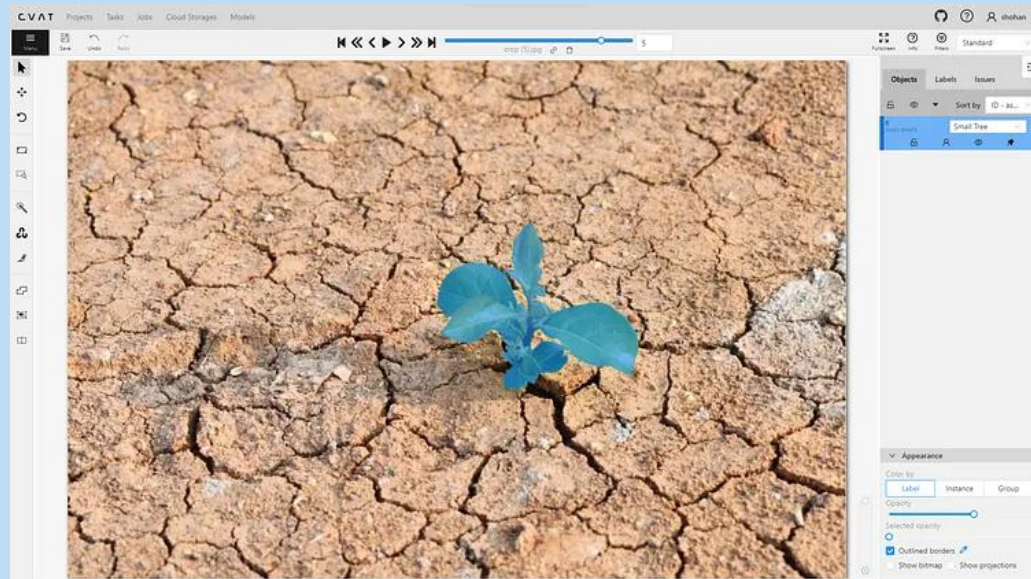
CVAT: online image annotation tool

- Key use-case: "I have a lot of images where I want to segment objects with a few labels"

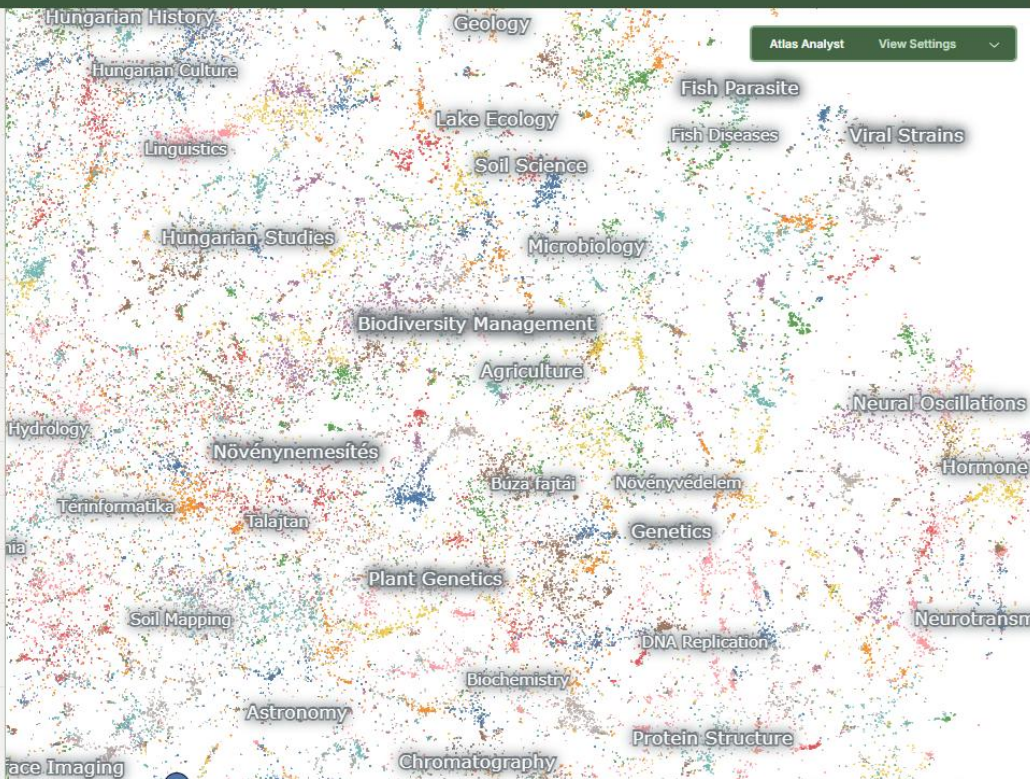
Coming up (May?):

Protein and gene sequencing model hosting service

- Alpha Fold3
- Chai-1
- Evo 2
- ...



HUN-REN competence map



A similarity map of publications that we can use for:

- competence clusters
- shift in emphasis in time
- key collaboration areas
- partner finder
- institution level competence browsing

Kutatóintézetek

Rendezés: Intézmény neve 

 Növekvő

 Csökkenő

Agrártudományi Kutatóközpont

Állatorvos-tudományi Kutatóintézet

Atommagkutató Intézet (ATOMKI)

Balaton Limnológiai Kutatóintézet

Bay Zoltán Alkalmazott Kutatási
Közhasznú Nonprofit Kft.

Bölcsészettudományi Kutatóközpont
(BTK)

Csillagászati és Földtudományi
Kutatóközpont (CSFK)

Energiatudományi Kutatóközpont (EK)

Földfizikai és Űrtudományi Kutatóintézet
(FI)

Kísérleti Orvostudományi Kutatóintézet
(KOKI)

Közgazdaság- és Regionális Tudományi
Kutatóközpont (KRTK)

Nyelvtudományi Kutatóközpont (NYTK)

Ökológiai Kutatóközpont (ÖK)

Rényi Alfréd Matematikai Kutatóintézet

Számítástechnikai és Automatizálási
Kutatóintézet (SZTAKI)

NOMIC atlas ← hun-ren-publication-map-2000-2025-v4 ⓘ View in Atlas

szabogergo2019

Selection

🔍 🔍 🎯 🗑️ 🖱️

Data Preview

🌐 Topics

- Chromatography
- Liquid Chromatography
- Physics

title text
TLC and GC Analysis of the Essential Oils of Stachys Species

firstAuthor text
Háznagy-Radnai, E

institution text
HUN-REN Ökológiai Kutatóközpont

institution_mtid number
23675

mtid number
124554

otype text

📄 Table

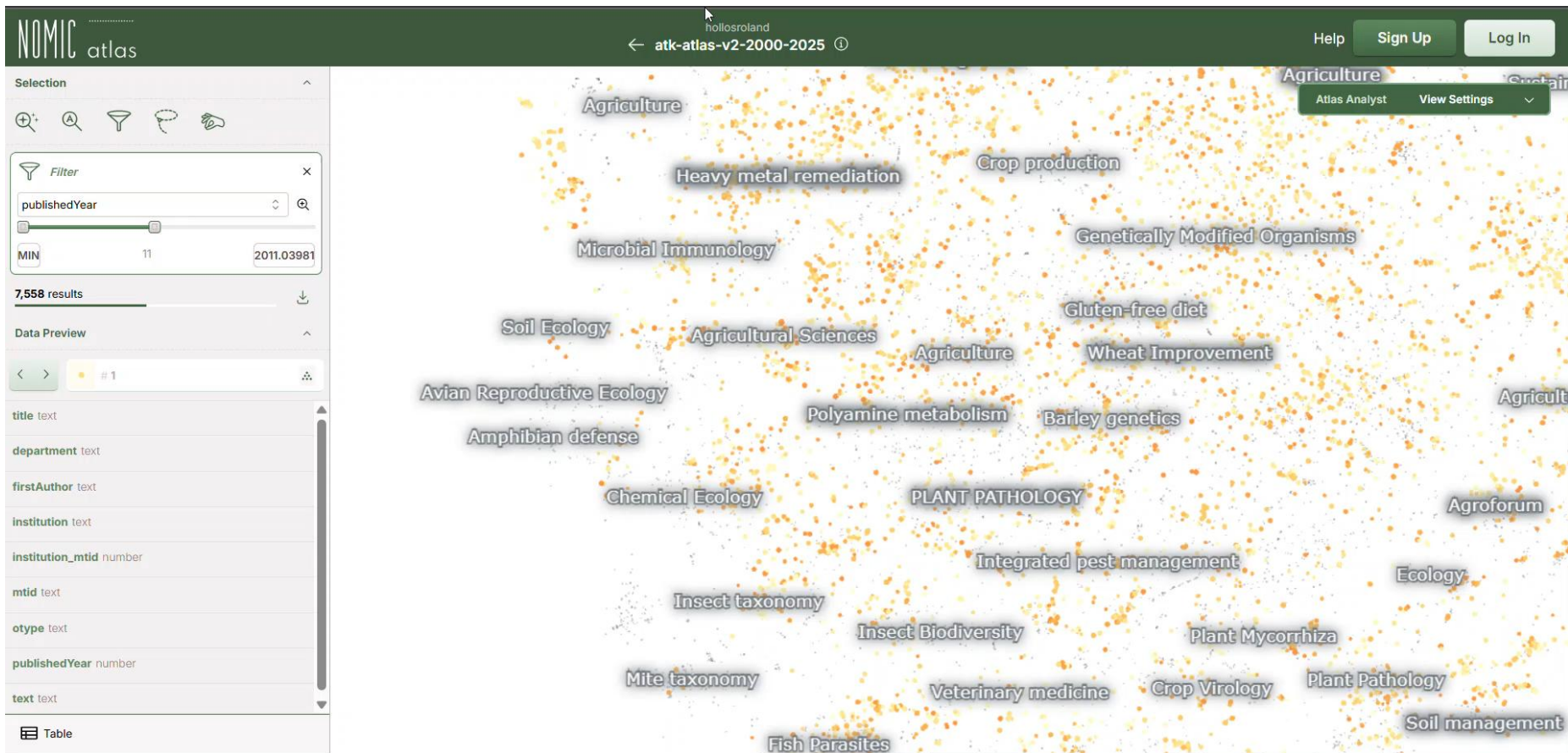
Atlas Analyst View Settings ×

+ Add data to context

Ask a question...

Ask over all data

Institution level competence map



We are inviting you to use for your own



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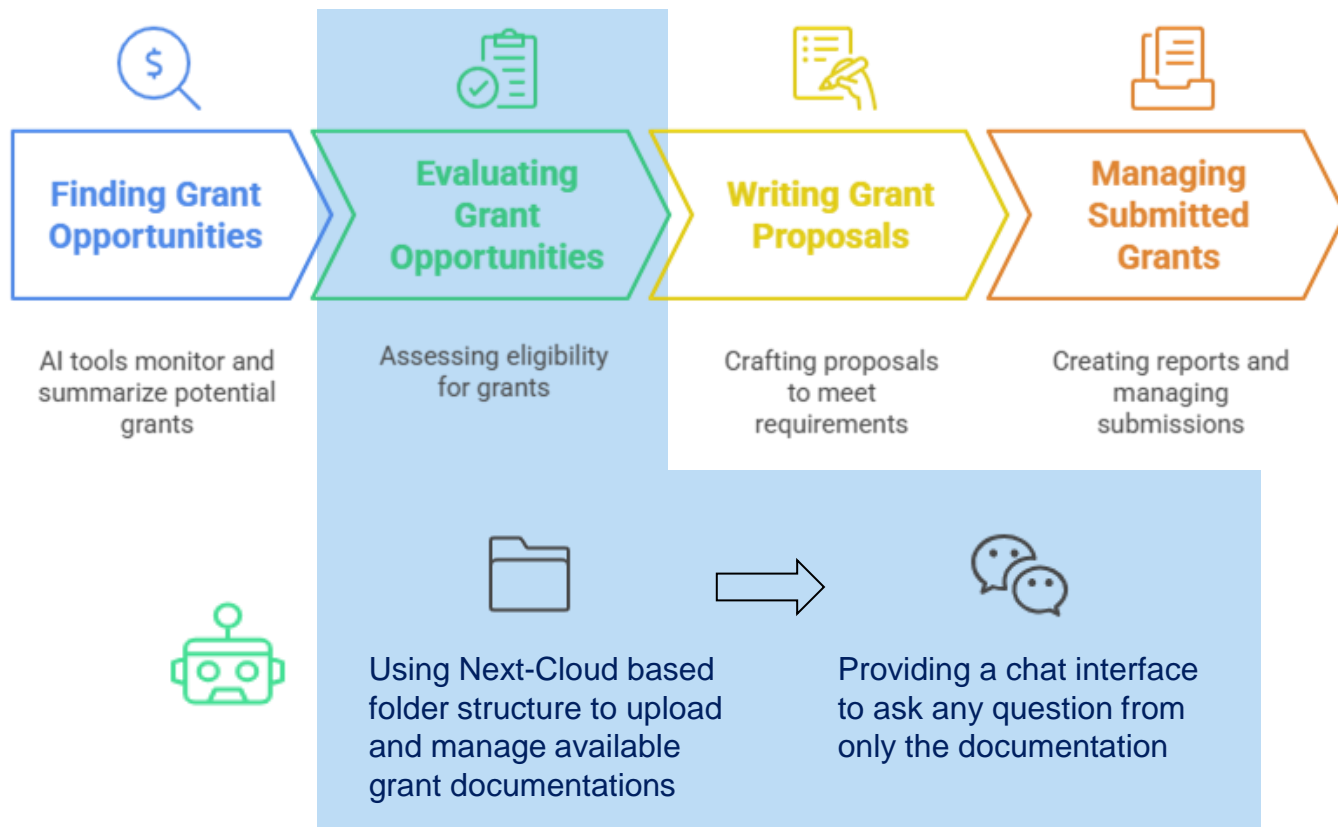
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**AI-first
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Helping with research grants



ATK Pályázatok Chat

Válasszon egy oszlopot a listából, majd kattintson a Belépés a Chat-be gombra.

Kérem válasszon mappát



Kérem válasszon mappát

ADVANCED_25

EXCELLENCE_25

HIGHLIGHT_25

HU-RIZONT nemzetközi kiválósági kutatási együttműk

STARTING_25

Belépés a Chat-be 

Mappa: EXCELLENCE_25

Felhasználó: Mennyi az elnyerhető támogatás?

Ügynök: Az elnyerhető támogatás összege programonként eltérő. Például a pályázati felhívásban szereplő alprogramok esetében a támogatás összege a következő: • EXCELLENCE kutatási pályázat: legfeljebb 160+40 millió forint 24 hónapra • STARTING kutatási pályázat: legfeljebb 100+25 millió forint 48 hónapra • ADVANCED kutatási pályázat: legfeljebb 120+30 millió forint 48 hónapra • HIGHLIGHT kutatási pályázat: legfeljebb 320+80 millió forint 48 hónapra Továbbá a nemzetközi együttműködésen alapuló pályázatok esetében a támogatás összege: • Magyar-osztrák együttműködés: legfeljebb 68 millió forint 48 hónapra • Magyar-szlovén együttműködés: legfeljebb 51 millió forint 36 hónapra Általános szabályként, a támogatás igényelhető részében (amely a kísérletes kutatásokra opcionálisan pályázható, 25%-os, dologi költségkeret nélküli rész felett van) a közvetlen költségek összegének 20%-a vehető igénybe.

Írja be az üzenetet...

Küldés

visszatérés a mappakiválasztáshoz

Let's see what you can use!



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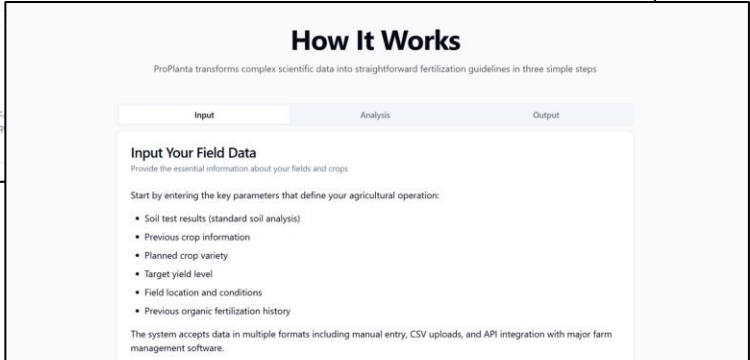
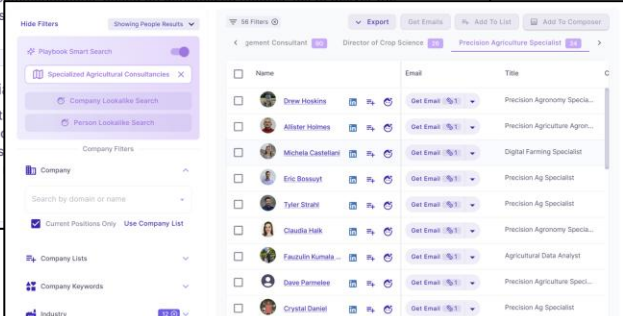
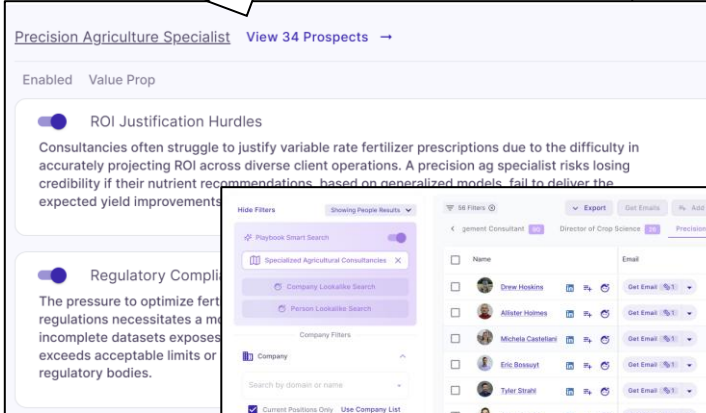
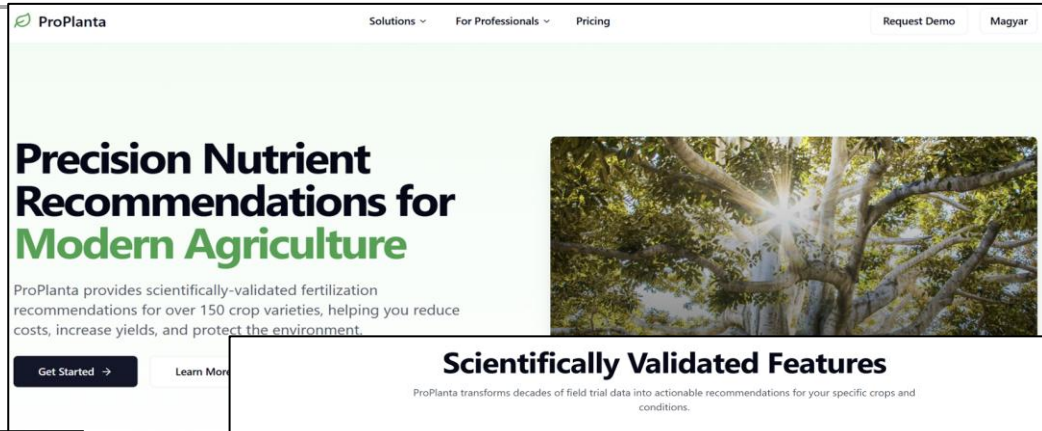
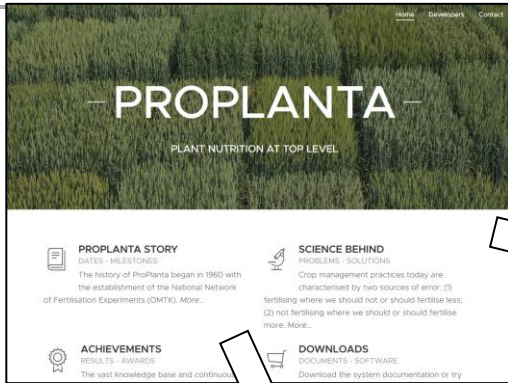
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Where we already tried it



PROPLANTA



**Nandor Fodor
(ATK)**



**Roland Hollós
(ATK)**

*“In just a few sessions, the AI4Innovation team unlocked an incredible range of opportunities for us. They quickly identified our real needs, **boosted our visibility and market appeal with smart AI tools, found potential partners and users, and even improved our pricing strategy.**”*

3D-X



**Peter Horváth
(SZBK)**



**Ákos Diósi
(SZBK)**

*“The AI4Innovation team outlined solutions that allowed us to see our project from a completely new perspective. By applying various AI technologies, they delivered results that exceeded our expectations. **Their solutions not only simplified our go-to-market process but also played a major role in helping us reach our goals.**”*

AI supported go-to-market initiation workshop



First innovator
workshop in May!

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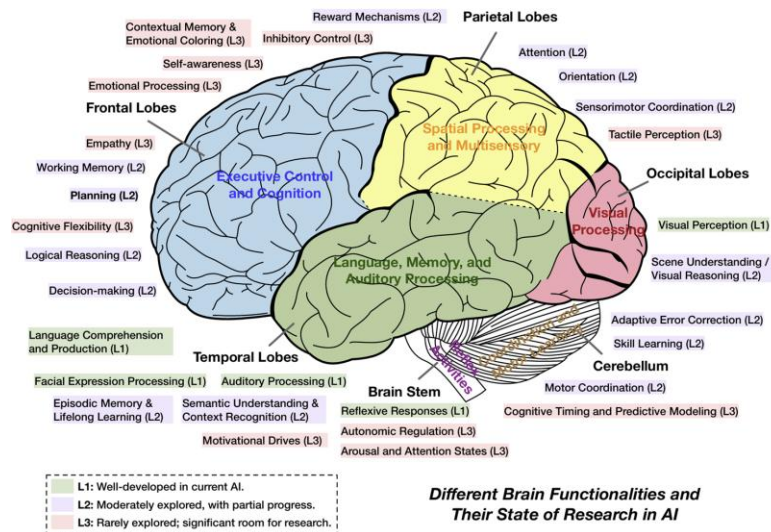
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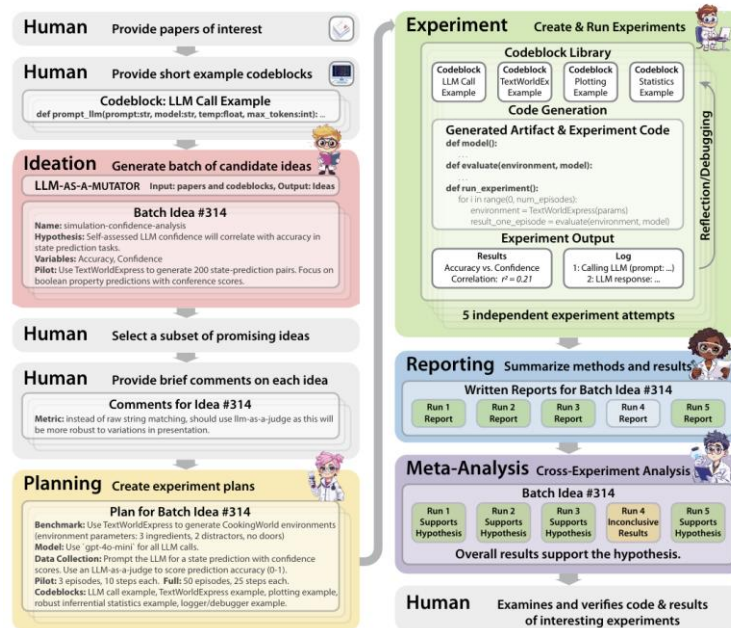
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Advances and Challenges in Foundation Agents



29th March 2025

CodeScientist



20th March 2025

The Automation of Science

A Robot Scientist (AI scientist, self-driving lab) is a physically implemented robotic system that applies techniques from artificial intelligence to execute cycles of automated scientific experimentation. **A Robot Scientist can automatically execute cycles of hypothesis formation, selection of efficient experiments to discriminate between hypotheses, execution of experiments using laboratory automation equipment, and analysis of results.** The motivation for developing Robot Scientists is to both to better understand the scientific method, and to make scientific research more efficient. ... I am now working on Genesis, a third-generation Robot Scientist designed to work on yeast systems biology. **Genesis will be able to run 1,000 cycles of hypothesis-led experiment in parallel per day.** Large Language Models (LLMs) are transforming AI, however their output cannot be trusted. One very promising way forward is to **utilise LLMs to output formalised scientific knowledge that can be tested and trusted.** In the future I believe that it is likely that advances in AI and lab automation will drive the development of ever-smarter Robot Scientists.



Ross D King
16 April 16h CET
Webinar
Save the date!

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**Apply for the beta services,
events, and communities through
your AI Ambassadors!**

**Let's expand the reach
of the AI for Impact program
to the department level!**

Using GenAI and NLP to Standardize Metadata in the Chip-Atlas



Eszter Ari

Biological R. C., Szeged



“We were able to **classify non-standardised metadata** of biological samples to ‘native’ and ‘non-native’ categories.”



Improve the searchability of gene activation patterns by proteins

AI4Science program

- paving the way toward true interdisciplinarity



AI4Science in the Service of Research

Empowering scientific discovery by integrating advanced AI tools into real-world research.

Genomic Metadata Standardization

Eszter Ari

Biological Research Centre,
Szeged



Chemical Mixture Toxicity

András Ács

Balaton Limnological
Research Institute



Connected Fields of Knowledge

Nándor Fodor

Centre for
Agricultural Research



Infrared Prediction in Fusion

Balázs Molnár

Centre for
Energy Research

