

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-RAISE-2027-01-01

“Automated Scientific Discovery (RAISE pilot) “



HORIZON-RAISE-2027-01-01: Automated Scientific Discovery (RAISE pilot) (RIA) 29M€

1. Expected outcomes

- Development of closed-loop scientific experimentation systems that integrate automation with AI-driven, trustworthy decision-making processes in existing laboratory environments;
- Accelerated scientific discovery with increased efficiency and reproducibility;
- Improved scientific productivity;
- Advancement of laboratory automation, including development of best practices, challenges, and opportunities for accelerating R&D; and
- Prototype functional demonstrators that showcase the integration of automation with AI-driven decision-making, enabling the development of closed-loop scientific experimentation systems.

2. Is there anything we do NOT want?

Very narrow, small scale projects, focused on hardware purchasing. Our focus is on advanced labs to help them further develop automation with an AI intelligence layer that orchestrates A to Z experiments, ideally in a network with other labs.

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3. Topic evolution

- It is a new topic with explicit focus on lab automation, AI-driven laboratory experimentation and connected labs
- It reflects global trends towards integration of AI in the lab, “self-driving labs”, the momentum for robotics
- It builds on advancement of AI integration in the disciplines selected for the call – materials science and food (scientific foundation models, networks of excellence, materials commons, HORIZON-CL4-2026-01-MAT-PROD-23), pioneering European initiatives (example: CAPeX, DK) and on advancement of European startups like Cusp.AI, Dunia.
- It is a topic under the RAISE umbrella (Resource for AI Science in Europe)

... and links to other topics

The selected projects will be expected to work in close collaboration with the community of other RAISE beneficiaries, as well as existing initiatives (like the Materials Commons)

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4. Which types of stakeholders are mainly addressed?

- Existing labs in the disciplines of the call (materials science, food)

5. Are there additional background documents or other relevant information?

- <https://www.iam-i.eu/vision/>
- [The laboratory of the future makes its own experiments](#)
- <https://youtu.be/dNtVyRZDb40?si=I2bPyaxfR5tc-Dww>
- [Inside the 'self-driving' lab revolution | Nature](#)

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Possible research targets include (key words, non-exhaustive list):

- **Autonomous/semi-autonomous and adaptive AI systems** that connect with laboratory instruments and robotics and can autonomously plan, act, learn and adapt within a scientific environment
- Assistive and interactive safe **AI-managed robotic systems** that automate diverse experiments and can be applied to a diverse hardware setup.
- Scalable automation solutions and networked AI systems that enable collaborative **experimentation across multiple labs**
- Systems that provide **real-time data processing and analytics**,
- Standards and protocols to ensure **interoperability** between different laboratory instruments, robotics, and AI systems

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-RAISE-2027-01-02:

“Automated Scientific Discovery – Food (RAISE pilot)”



HORIZON-RAISE-2027-01-02: “Automated Scientific Discovery – Food (RAISE pilot)” (HORIZON-RIA)

1. Expected outcomes

- Closed-loop scientific experimentation systems integrating lab automation with AI-driven decision-making in existing lab environments.
- Accelerated R&D, improved scientific productivity, and higher reproducibility in food systems (biomass, precision fermentation, alternative proteins/fats, bio-materials, ingredients).
- Functional prototype demonstrators showcasing semi- or fully autonomous experiment planning, execution, and analysis.
- Best practices, guidelines, and standards for lab automation and retrofitting.

2. Is there anything we do NOT want?

- Proposals requiring complete redesigns of physical labs; focus is on retrofitting existing facilities.
- Hardware purchase is secondary and must be specifically justified; priority is software, intelligence layers, and integration.
- Fully autonomous systems without human-in-the-loop oversight, safety guardrails, or ethical compliance.
- Avoid solutions lacking data interoperability, cross-lab networking, or data security standards.

HORIZON-RAISE-2027-01-02: “Automated Scientific Discovery – Food (RAISE pilot)” (HORIZON-RIA)

3. Topic evolution

- Introduced under the new **Horizon Europe RAISE Pilot** ("AI in Science") to mainstream agentic AI and closed-loop automation into domain-specific scientific disciplines.
- Marks a transition from general AI/Robotics tool development to domain-applied autonomous labs in FoodTech and Biotechnology.

... and links to other topics

- **Cluster 4 (Digital, Industry and Space):** Trustworthy AI, autonomous systems, robotics, and edge computing.
- **Cluster 6 (Food, Bioeconomy, Natural Resources, Agriculture and Environment):** Alternative proteins, bio-based materials, and precision fermentation R&D.
- **EOSC (European Open Science Cloud):** FAIR data protocols, secure data storage, and cross-border research data sharing infrastructure.
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HORIZON-RAISE-2027-01-02: “Automated Scientific Discovery – Food (RAISE pilot)” (HORIZON-RIA)

4. Which existing projects are relevant?

- **Self-Driving Lab (SDL) Initiatives / Materials Pioneers:** Projects like *BIG-MAP / BATTERY 2030+* (provides reference architectures for closed-loop AI experimentation pipelines).
- **CBE JU & Horizon Europe Cluster 6 Projects:** Existing precision fermentation and bio-manufacturing projects seeking automation retrofits.
- **Lab Interoperability Standards Initiatives:** SiLA 2 (Standardization in Lab Automation) and AnIML data standard networks.

HORIZON-RAISE-2027-01-02: “Automated Scientific Discovery – Food (RAISE pilot)” (HORIZON-RIA)

5. Which types of stakeholders are mainly addressed?

- **Academic & Research Organizations:** Food science, synthetic biology, biotechnology, and AI/Robotics research groups.
- **Industry & SMEs:** FoodTech, AgTech, precision fermentation startups, bio-manufacturers, and lab instrumentation/robotics integrators.
- **Software & Data Infrastructure providers:** Developers of agentic AI, predictive maintenance algorithms, and secure cloud platforms.
- **International partners:** Global entities with advanced lab automation expertise (international collaboration is explicitly encouraged).

HORIZON-RAISE-2027-01-02: “Automated Scientific Discovery – Food (RAISE pilot)” (HORIZON-RIA)

6. Are there additional background documents or other relevant information?

Opening: 22 September 2026 | **Deadline:** 02 February 2027 (17:00 Brussels Time)
Evaluation Model: Single-stage | **Funding Scheme:** Action Grant Budget-Based

Policy references:

- EU Policy Guidelines on Responsible AI in Science & Strategic Research Agendas for Food Systems.
- Guidelines on FAIR data management and cybersecurity by design for industrial R&D labs.

HORIZON-RAISE-2027-01-02: “Automated Scientific Discovery – Food (RAISE pilot)” (HORIZON-RIA)

7. What are relevant upcoming events?

Conferences: SLAS (Society for Laboratory Automation and Screening) conferences and AI in Science symposia. May 25–27, 2027 — Hamburg, Germany.

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8. Are there any future trends / emerging initiatives that proposers should be aware of?

- **Agentic AI & Self-Driving Labs (SDLs):** Transitioning from simple scripts to autonomous AI agents that reason, design, and adapt experiments in real time.
- **Green AI & Resource Optimization:** Integrating real-time AI modules to cut energy, reagent, and material footprint in R&D cycles.
- **Cross-Border Networked labs:** Multi-lab collaborative execution of experiments across different geographical locations.

9. Are there plans for follow-up funding?

- Potential scaling of successful pilots into broader FP10 AI-in-Science flagship programs.
- Commercial deployment paths via the **EIC (European Innovation Council) Accelerator** or **CBE JU** industrial scale-up calls.