

Seeking European partners for a Pathfinder project on trustworthy cognitive AI for adaptive perioperative training and clinical decision-making

Summary

Profile type

Research & Development Request Spain

Company's country

POD reference

RDRES20261007003

Profile status

PUBLISHED

Type of partnership

Research and development cooperation agreement

Targeted countries

• All countries

Contact Person

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Term of validity

7 Oct 2026
7 Oct 2027

Last update

7 Oct 2026

General Information

Short summary

A Spanish healthcare innovation initiative is preparing an EIC Pathfinder Challenges 2026 proposal under the DeepRAP topic. The project seeks to develop trustworthy cognitive AI for complex perioperative environments, enabling reasoning, abstraction, planning, real-time training adaptation and explainable decision support. We seek universities, research organisations and tech SMEs with expertise in cognitive AI, neuro-symbolic reasoning, multimodal systems and trustworthy AI.

Full description

A Spanish healthcare innovation initiative, led by an operating-room nursing professional with more than 26 years of clinical experience, is developing an immersive virtual-reality environment for perioperative training. The platform enables realistic clinical simulation, action tracking, competency assessment and future integration of haptic technologies and biometric sensing.

The platform will serve as the clinical demonstrator for NEURYNTA (Neurocognitive Artificial Intelligence for Reasoning, Planning and Adaptive Expertise in Complex Perioperative Environments), a proposed research project addressing the EIC Pathfinder Challenges 2026 DeepRAP topic.

The project aims to investigate a new generation of trustworthy cognitive AI systems capable of reasoning, abstraction and planning under uncertainty in complex perioperative scenarios. Rather than relying exclusively on pattern recognition or statistical prediction, the proposed architecture will seek to understand context, model causal relationships, adapt training strategies dynamically and provide human-understandable explanations for its

decisions.

The envisioned system will combine:

- Cognitive and neuro-symbolic AI.
- Causal reasoning and knowledge representation.
- Hierarchical planning and dynamic re-planning.
- Multimodal data integration.
- Explainable and trustworthy AI.
- Human-AI collaboration mechanisms.
- Data-efficient learning approaches.

The clinical demonstrator will provide a realistic and measurable environment for validating advanced cognitive AI concepts in a safety-critical healthcare context. The platform will enable the assessment of clinical reasoning, adaptive expertise, cognitive workload, decision-making processes and human-AI interaction using quantitative performance indicators.

The proposal will be coordinated by a Spanish biomedical research institution. One or more European partners are sought to strengthen the scientific and technological aspects of the consortium.

Target partners include:

- Universities.
- Research and technology organisations (RTOs).
- Innovative technology SMEs.
- Research groups working on trustworthy AI, neuro-symbolic AI, reasoning, human factors, neuroergonomics or intelligent learning systems.

Partnerships are sought under research cooperation agreements and Horizon Europe collaborative projects.

Official deadline for the call: 28th October 2026

Deadline for expressions of interest: 15th October 2026

Anticipated duration of the project: To be defined

Advantages and innovations

The proposal combines a high-risk, high-gain cognitive AI research challenge with a measurable and safety-critical healthcare application.

Key innovations include:

Beyond pattern recognition: the system aims to reason about context, causality, uncertainty and learning objectives rather than relying solely on predefined pathways or scoring systems.

Trustworthy cognitive intelligence: explainability, transparency, robustness and AI Act alignment are embedded in the architecture from the outset.

Real-time adaptation: training strategies can be dynamically adapted according to performance, decision-making behaviour and evolving competence levels.

Multimodal understanding: integration of virtual-reality interactions, behavioural indicators, performance metrics and future biometric information.

Human-AI collaboration: the project investigates how AI can support expert decision-making and adaptive learning without replacing human judgement.

Transferability: the resulting architecture could later be adapted to other complex professional environments requiring reasoning, planning and decision support, including emergency response, industrial operations and critical infrastructures.

Expected benefits include improved training efficiency, accelerated skill acquisition, enhanced patient safety and the development of next-generation trustworthy cognitive AI technologies.

Technical specification or expertise sought

Demonstrated expertise in cognitive or neuro-symbolic AI; causal/logical reasoning and planning under uncertainty; multimodal integration (VR events, performance and sensors); data-efficient learning; XAI, formal methods, safety and trustworthiness evaluation. Ability to lead a work package, define tasks, effort and budget, and commit before the call deadline.

Stage of development

Under development

IPR Status

IPR granted

IPR Notes

Sustainable Development goals

- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 3: Good Health and Well-being**
- **Goal 4: Quality Education**

IPR Notes

Partner Sought

Expected role of the partner

Universities, research organisations and technology SMEs from EU Member States or Horizon Europe Associated Countries are sought. The core AI partner should contribute to the NEURYNTA architecture and its integration with the Virtual Nurse demonstrator. Priority capabilities include: (1) neuro-symbolic AI and cognitive architectures; (2) reasoning, abstraction, hierarchical planning and re-planning; (3) multimodal fusion and efficient models; (4) explainability, formal guarantees, robustness, privacy and AI Act alignment; and (5) benchmark and validation protocol design. The partner should engage immediately in proposal writing, propose tasks and deliverables, and provide realistic person-month and budget estimates. Groups in neuroergonomics, cognitive load, clinical simulation, human factors or human-AI collaboration evaluation are also relevant.

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **University**
- **SME ≤ 10**
- **SME 50 - 249**
- **Big company**
- **R&D Institution**

Call Details

Framework program

Horizon Europe

Call title and identifier

DeepRAP: Deep Reasoning, Abstraction & Planning towards trustworthy Cognitive AI Systems — HORIZON-EIC-2026-PATHFINDERCHALLENGES-01-03

Submission and evaluation scheme

Single-stage submission; expert evaluation followed by portfolio mapping and selection.

Anticipated project budget

Up to EUR 4,000,000 (indicative)

Coordinator required

No

Deadline for EoI

15 Oct 2026

Deadline of the call

28 Oct 2026

Project duration in weeks

36

Web link to the call

https://eic.ec.europa.eu/eic-funding-opportunities/eic-pathfinder/eic-pathfinder-challenges-2026_en

Project title and acronym

NEURYNTA — Neurocognitive Artificial Intelligence for Reasoning, Planning and Adaptive Expertise in Complex Perioperative Environments.

Dissemination

Technology keywords

- **01003016 - Simulation**
- **01005006 - Visualisation, Virtual Reality**
- **01003003 - Artificial Intelligence (AI)**
- **01003023 - Environmental and Biometrics Sensors, Actuators**

Targeted countries

- **All countries**

Market keywords

- **05005019 - 'Surgery and Anaesthesiology**
- **05005021 - Medical computer sciences**
- **02007016 - Artificial intelligence related software**
- **02007012 - Medical/health software**
- **02007010 - Education software**

Sector groups involved