

University of Craiova (Romania) — Partner expertise profile

Medical robotics · image-guided navigation · AI for medical imaging · medical devices · virtual human twins | Widening country partner for Horizon Europe Cluster 1 Health 2027, IHI, MSCA and COST | September 2026

Organisation	University of Craiova (UCv) — INCESA Research Hub, Laboratory of Microtechnologies and Medical Engineering; Laboratory of Mechanical and Biomedical Engineering (Faculty of Mechanics). Public higher-education and research organisation; validated PIC; LEAR = Rector.
Country	Romania — Widening country (eligible for Widening/Hop-On instruments; contributes to geographical balance of consortia).
Contact	Prof. Lucian Gruionu, Coordinator of the Horizon Europe team — lucian.gruionu@edu.ucv.ro — ORCID 0000-0002-4526-0864. Horizon Europe / EIC Pathfinder expert evaluator since 2021; former Director of the University's EU Funds Department.

Expertise offered

- **Medical robotics for flexible instruments** — robotic bronchoscopy and endovascular catheter manipulation (RoboCAT, SAR-E; compact, sterilisable, single-use cartridge), master–slave and semi-autonomous control, teleoperation; patent US2019388164-A1; prototypes at TRL 4, tested on an internationally recognised simulator and with SINTEF / Indiana University School of Medicine.
- **Image-guided navigation and augmented reality** — open-source planning/navigation platform (Qt/VTK/CTK): CT segmentation of airways, vessels, lymph nodes and tumours, optimal-path planning, real-time instrument tracking with NDI electromagnetic and optical systems and **fibre-Bragg-grating shape sensing** (radiation-free, MRI-compatible), EUS–CT/PET fusion, AR overlays on glasses and endoscopic video; TRL 4–5, tested on phantoms and in a patient study.
- **AI for medical imaging** — real-time detection and segmentation of pancreatic lesions in endoscopic ultrasound (CNN+LSTM), **prospectively validated in a multicentre clinical study (Endoscopy, 2025)**; deep-learning segmentation of PDAC on whole-slide images; lung-nodule quantification on CT; liver ultrasound; confocal endomicroscopy; open database of difficult lung pathologies; federated-learning-ready pipelines; regulatory-grade validation design (AI Act, MDR/IVDR).
- **Medical devices and additive manufacturing** — nitinol catheters and guidewires with position sensors, flexible biopsy tools, metal (Ti, CoCr) and biocompatible polymer 3D printing, 5-axis CNC and laser micro-fabrication, transparent patient-specific anatomical phantoms from real CT for bench validation and training.
- **Biomechanics and computational modelling for virtual human twins** — patient-specific FEA/CFD models (lung, vasculature, joints, tumour microvasculature — with MGH/Harvard), imaging-to-model pipelines, EDITH-oriented interoperability.

Topics of interest (2026–2027) and role sought

Cluster 1 Health: HORIZON-HLTH-2027-02-TOOL-01-two-stage (AI-derived imaging biomarkers of progression — respiratory/ILD, pancreatic, hepatic); HORIZON-HLTH-2027-02-IND-02-two-stage (point-of-care diagnostics: AI on ultrasound/EUS, sensorised 3D-printed instruments, technical validation); HORIZON-HLTH-2027-03-TOOL-04 (virtual human twins: organ-level models, imaging-to-model pipeline, explainable multimodal AI); HORIZON-HLTH-2027-01-STAYHLTH-01 (assistive-technology engineering, sensorised devices, AI on wearable and imaging data). **Mission Cancer:** HORIZON-MISS-2027-02-CANCER-05 (PCP — low-cost image-guided and AI diagnostics, technical partner of hospital procurers). **IHI:** HORIZON-JU-IHI-2026-13-two-stage-01 (regional node of an incubator network) and -03 (AI/digital biomarkers, lung CT). **Networks we can coordinate:** HORIZON-MSCA-2027-SE-01-01 and HORIZON-MSCA-2027-DN-01-01 (image-guided, AI-assisted robotic endoscopy), COST OC-2026-1 (main proposer).

Role sought: partner / work-package leader for AI-imaging, medical robotics, device engineering and digital biomarkers in Cluster 1 and IHI consortia (indicative contribution 250–450 k€ per project); coordinator of Widening, MSCA and COST actions. We reply to consortium invitations within 48 hours.

Track record and infrastructure

Coordinated international consortia: IDEAR — Improving Cancer Diagnostics in Flexible Endoscopy using AI and Medical Robotics (Norway Grants RO-NO-2019-0138, 1.23 M€, 2020–2024; partners SINTEF, St. Olavs University Hospital, POLITEHNICA Bucharest, Ceetron, Delta Health Care) and NAVICAD (EEA Grants, ~1.1 M€, 2014–2017, with SINTEF / St. Olavs). **Partner:** FP7 ITECH (CSA); four Marie Skłodowska-Curie actions at institutional level; **current:** work-package leader (surgical robot and navigation) in the STEP-funded SMART Center (2026–2029). Over 4 M€ raised competitively; 10 patent families (US, WO, JP, RO).

Collaborators: SINTEF Digital / St. Olavs University Hospital / NTNU (Norway), Johns Hopkins University (URobotics), MGH / Harvard Medical School, Orlando Health Center for Interventional Endoscopy (USA), Centro de Cirugía de Mínima Invasión Jesús Usón (Spain), POLITEHNICA Bucharest. **Clinical partner (where the call requires cohorts and clinical validation):** Carol Davila University of Medicine and Pharmacy, Bucharest — Prof. Adrian Saftoiu (15-year collaboration on AI-EUS and fusion imaging).

INCESA infrastructure: metal and polymer 3D printing, 5-axis CNC, laser micro-machining, NDI Aurora/Polaris tracking, FBGS shape-sensing interrogator, GPU workstations, Ansys/Abaqus/Mimics; multidisciplinary team of ~10 researchers (IT, automation, mechanical/biomedical engineering, medicine).

Selected publications: Bang JY, Saftoiu A, ... Gruionu L et al., *Endoscopy* 2025 (prospective validation of real-time AI for EUS) · Gruionu LG et al., *PLoS ONE* 2022 (FBG shape sensing + AI for lung navigation) · Brekken R, ... Gruionu L, Langø T, *Med Eng Phys* 2024 · Udristoiu AL, ... Saftoiu A, *Endoscopic Ultrasound* 2024 · Gruionu G, ... Munn LL, *Scientific Reports* 2024.

We welcome introductions to consortia in formation for the 2027 Cluster 1 Health and Mission Cancer calls and will attend the Cluster Health brokerage event (24–25 November 2026). Preferred channel: e-mail — lucian.gruionu@edu.ucv.ro.