

COSYLAB welcomes EUTOPIA partners

Eutopia Week, November 23, 2022

Project Management Office
project.office@cosylab.com

University
of the Future,
Universe of
Opportunities

21–25 November 2022, Ljubljana, Slovenia

University of Ljubljana



AGENDA

WELCOME SPEECH by Janko Burgar M.Sc

Vice President of Strategic Development, President of the ScienceTech Management Board

ROUND TABLE INTRODUCTION- all participants

COSYLAB AT A GLANCE – dr. Kristjan Anderle, Chief Scientific Officer

COSYLAB R&D project portfolio – Nina Pečoler, PMP, Head of Project Management Office

COSYLAB good practices – Živa Brglez, Project Manager, Project Management Office

- Heavy Ion Therapy Research Integration- HITRIplus
- Distributed Artificial Intelligent Systems- DAIS

DISCUSSION ON COOPERATION OPPORTUNITIES IN R&D EU PROJECTS

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DISCUSSION ON COOPERATION OPPORTUNITIES IN R&D EU PROJECTS



COSYLAB

**Powering our planet's most
sophisticated machines and
contributing to curing cancer**

Eutopia Week, November 23, 2022

COSYLAB AT A GLANCE : enabling advanced cancer treatment and clean future energy

Company

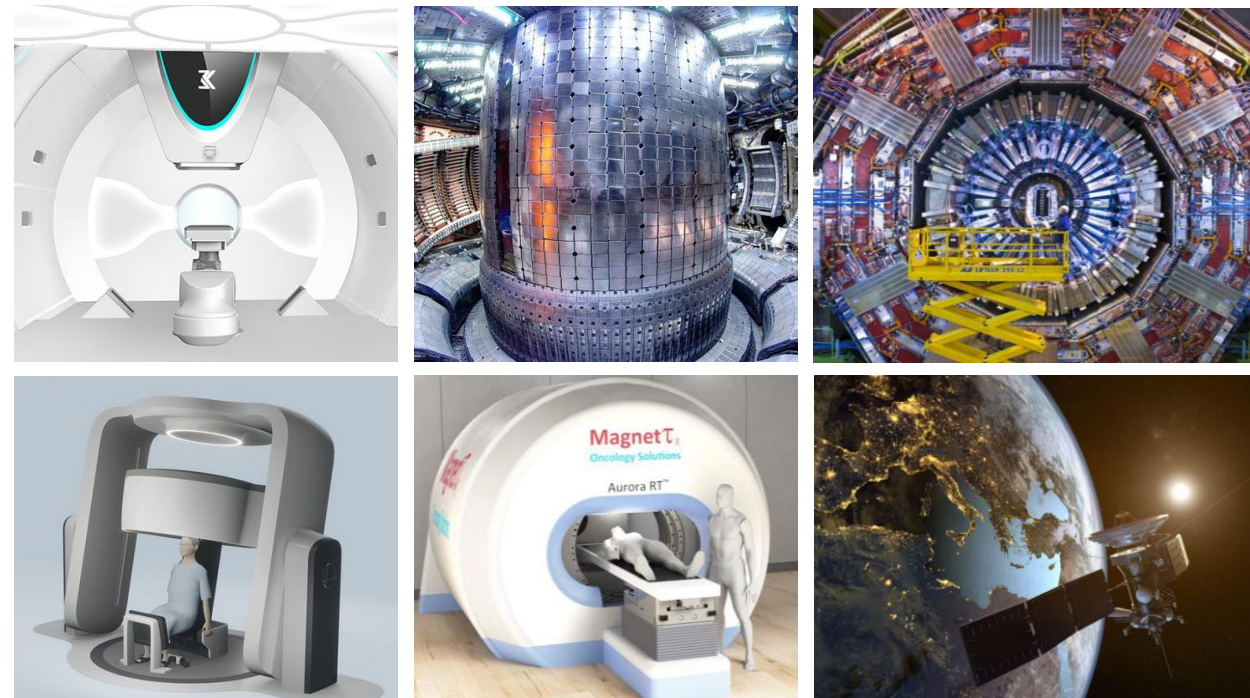
- World's leading provider of **software solutions** for the planet's most complex, precise, and advanced systems
- **20+ years** experience
- Global team of **300+ highly skilled developers and engineers**
- Considerable **domain expertise**
- Established processes, **ISO certified and IEC compliant**
- Highest credit rating **SB1 (AA by S&P)**
- HQ in Europe; subsidiaries **worldwide**



References

Powered by Cosylab

Cancer therapy systems / Complex medical devices / Particle accelerators / Large telescopes / Fusion reactors / Space industry



Most renowned organizations from across the globe trust Cosylab



The background features a dark blue gradient with a starry sky effect, including several bright, multi-pointed stars. A prominent, glowing, wavy grid pattern of thin white lines flows across the lower half of the image, creating a sense of motion and depth.

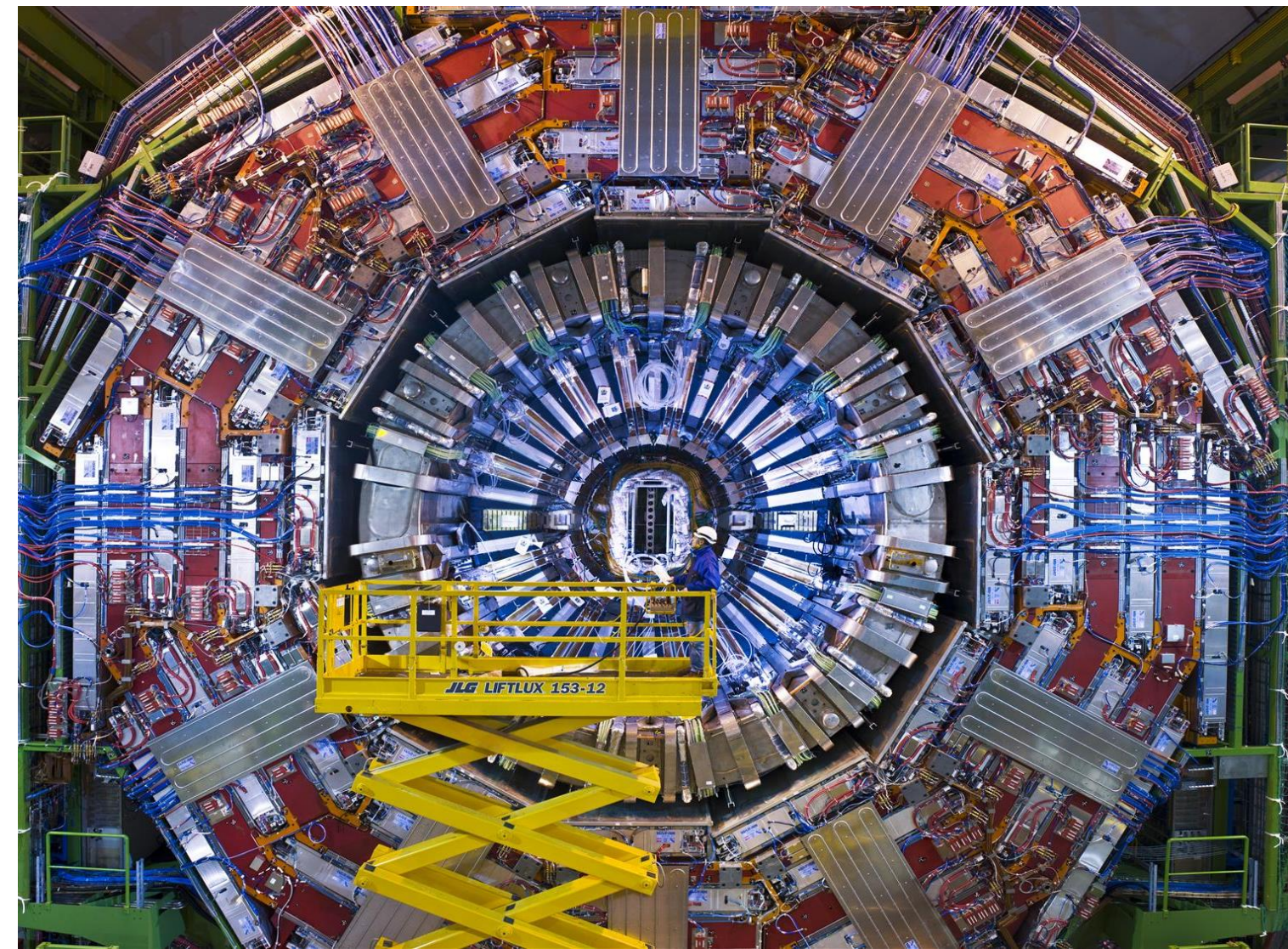
Key references

MedAustron, Austria

– The most cutting-edge centers for cancer treatment and research



CERN, Switzerland – The World's largest centre for scientific research



Alma, Chile

The world's largest ground-based radio telescope at an altitude of 5000 m

- Cosylab worked on continuous development and maintenance of the ALMA Common Software
- The control system framework significantly reduces time for development and testing and increases reliability and maintainability
- ESO continues to rely on Cosylab's expertise on a current telescope construction: the E-ELT (European Extremely Large Telescope).

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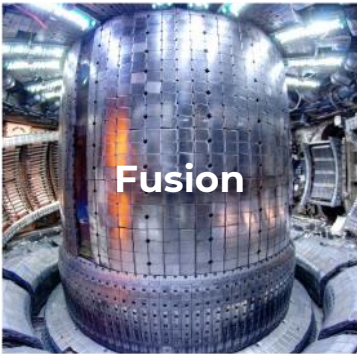
Cosylab at a glance

- World's leading provider of **software solutions** for the planet's most complex, precise, and advanced systems for **20+ years**
- Cross-functional team of **300+ highly skilled engineers, physicists, and clinical experts**
- Considerable **domain expertise**
- Established processes, **ISO and IEC**
- Highest credit rating **SBI (AA by S&P)**
- HQ in Europe; subsidiaries **worldwide**



What we do?

SCIENTIFIC



Fusion

Scientific Services

Medical Services



Radiation therapy

MEDICAL

**Academic Institution
Device Manufacturers**



Accelerators



Space & Astronomy



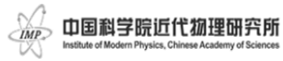
Complex Medical Devices

Medical Products

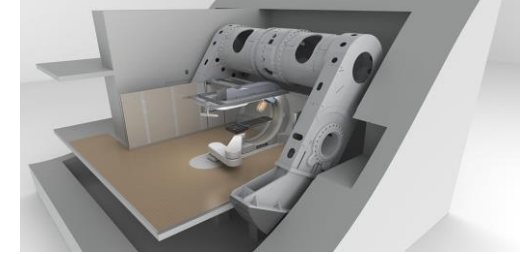
Device Manufacturers

Cosylab SW is treating patients worldwide

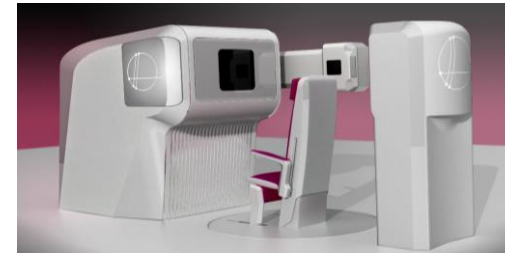
30,000+ patients were treated using our software, in hospitals worldwide, since 2014.



Varian



Mevion



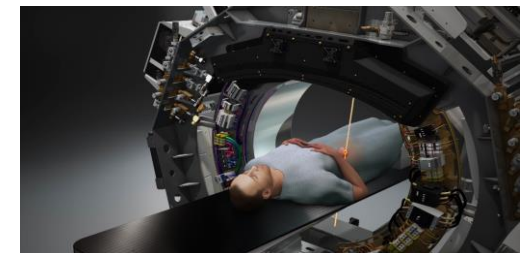
Leo Cancer Care



Neutron Therapeutics



MedPhoton

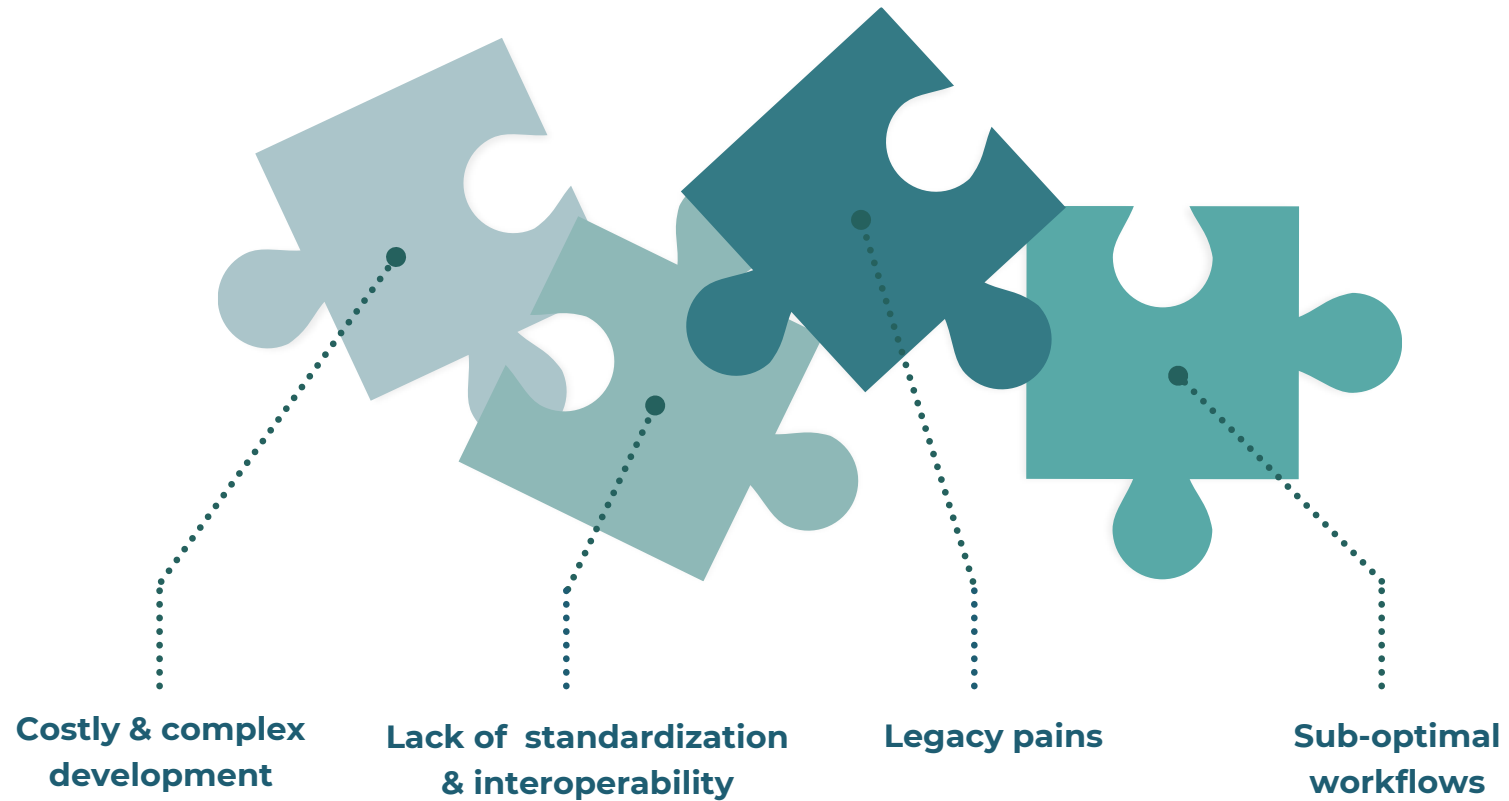


Reflexion

Radiation Therapy

Present and future

Current status of Radiation Therapy



How can we improve it?

Software is the key to the future of Radiation Therapy

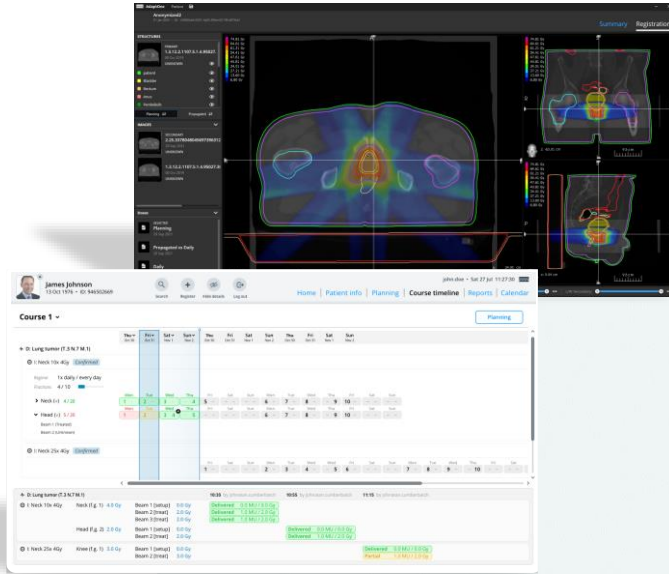
Use of
the latest
technologies

Seamless
and tight
**integration,
accessibility**

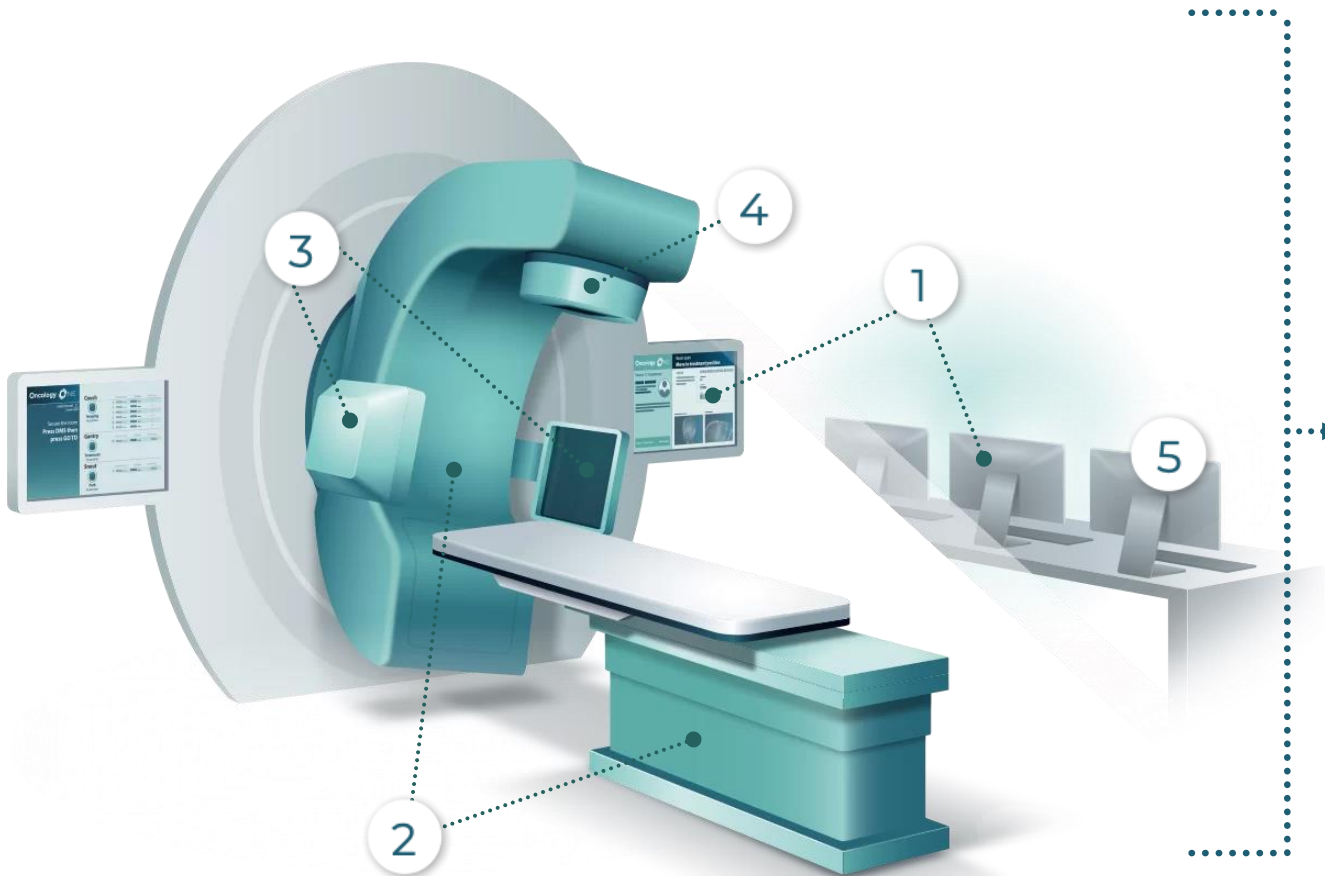
High
usability

Personalized
treatment
and workflow
automation

Our solution



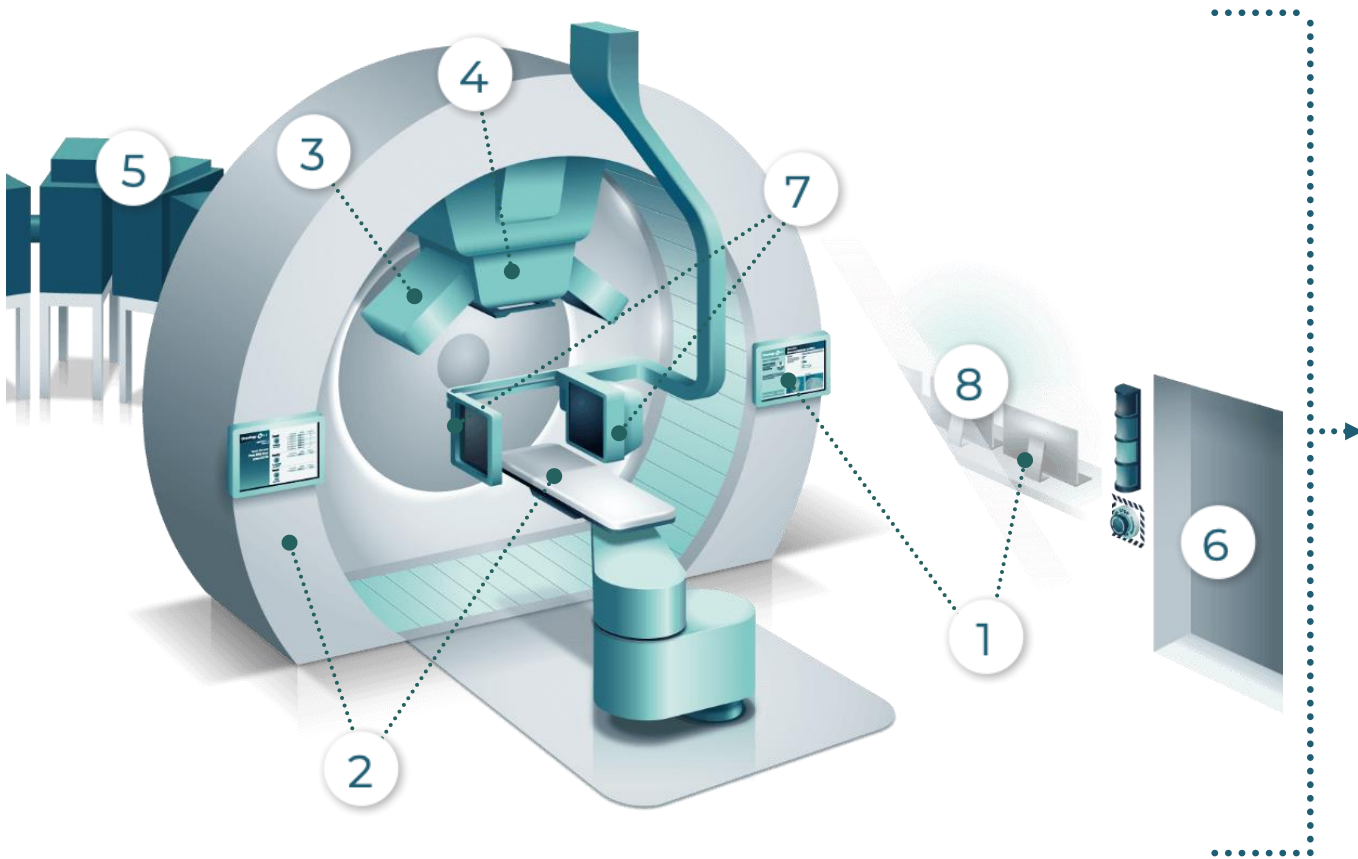
Covering all aspects of a treatment device



Oncology **ONE**

1. Treatment Control System
2. Patient Positioning and Motion Management
3. Image Guidance and Patient Position Verification
4. Dose Delivery
5. Workflow Management

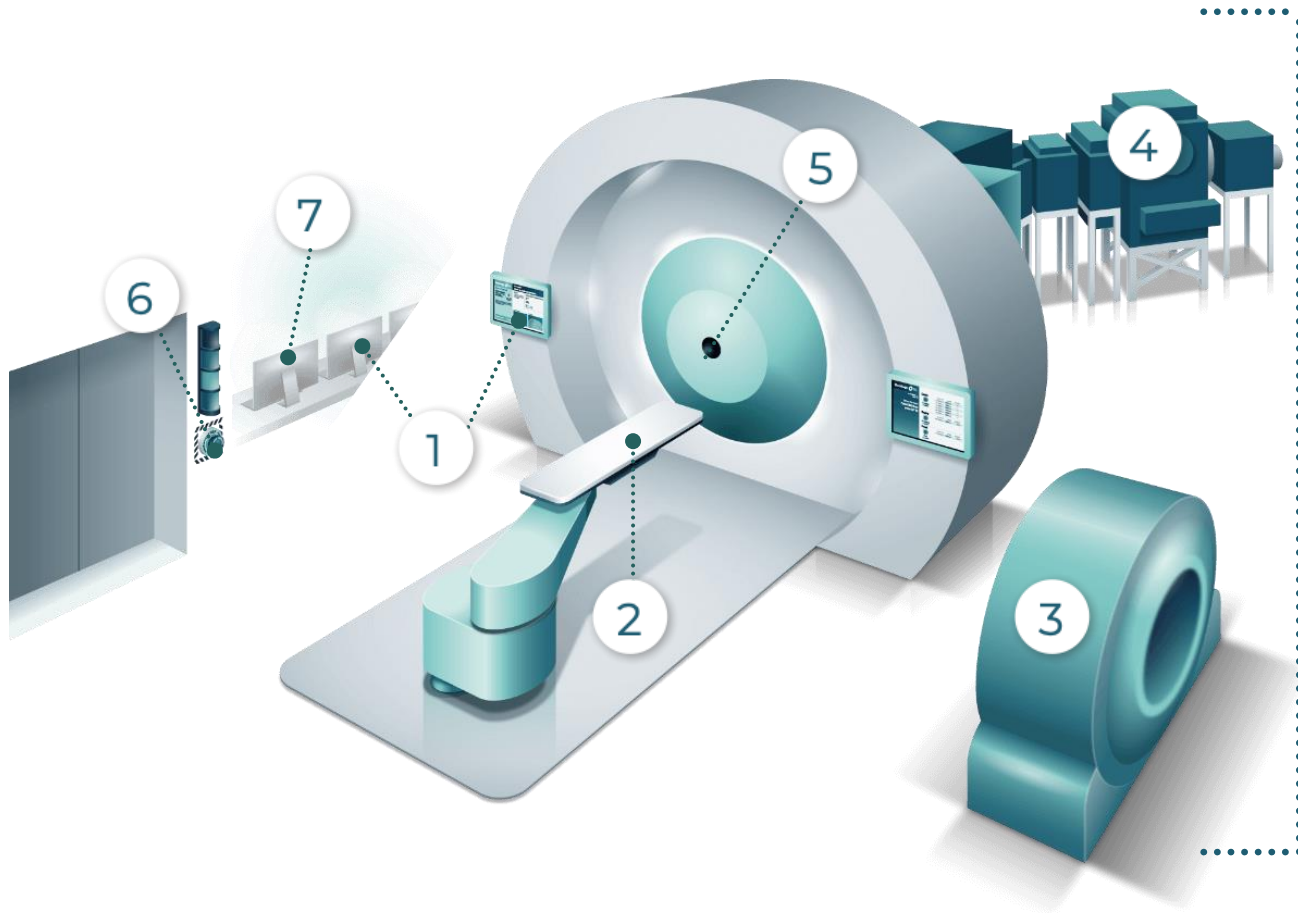
Covering all aspects of a treatment device



Oncology **ONE**

1. Treatment Control System
2. Patient Positioning and Motion Management
3. Image Guidance and Patient Position Verification
4. Dose Delivery
5. Accelerator Control System
6. Safety System
7. Proton Imaging
8. Workflow management

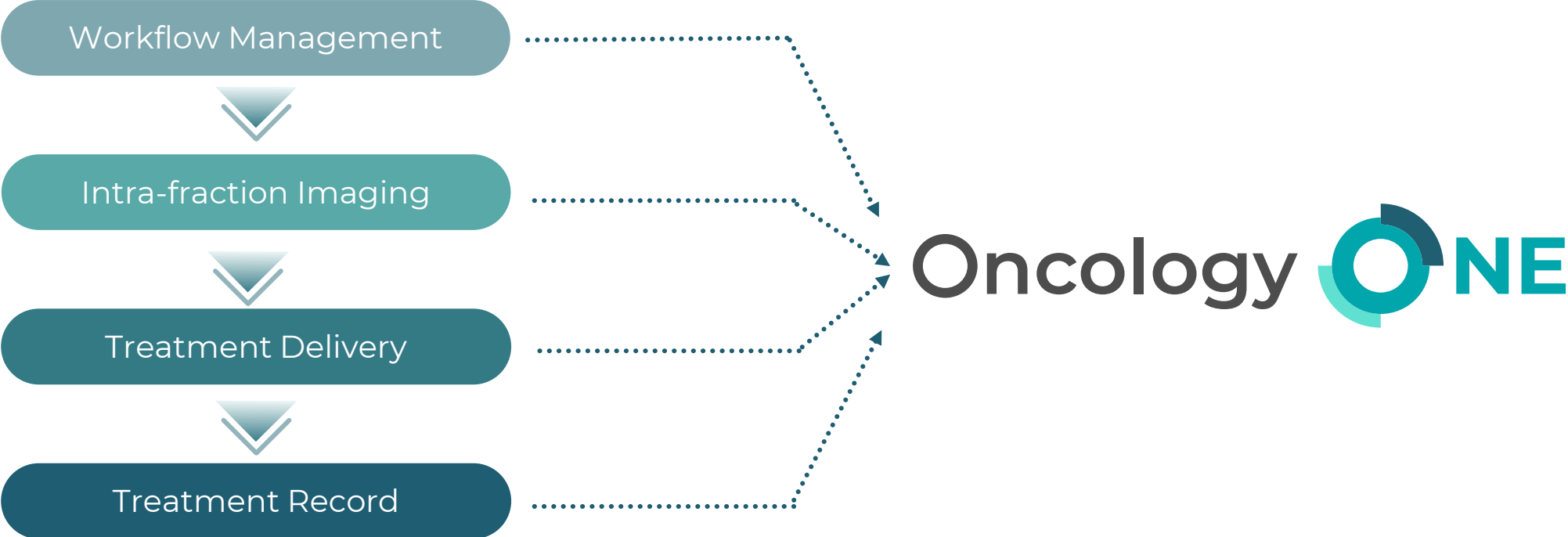
Covering all aspects of a treatment device



Oncology **ONE**

1. Treatment Control System
2. Patient Positioning and Motion Management
3. Image Guidance and Patient Position Verification
4. Accelerator Control System
5. Dose Delivery
6. Safety System
7. Workflow management

Covering all aspects of a clinical workflow



Collaboration model

Oncology  ONE

License + S&M



Services



Worldwide
support



Flexible
business setup

ShowCase: Leo Cancer Care

Decided to base **entire** product portfolio on Oncology 

Collaboration model:

- license + S&M
- Integration: design study (T&M), and development project (fixed-price)

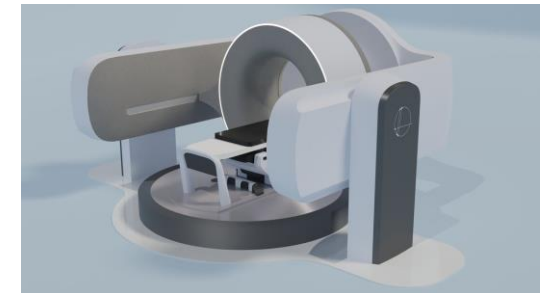
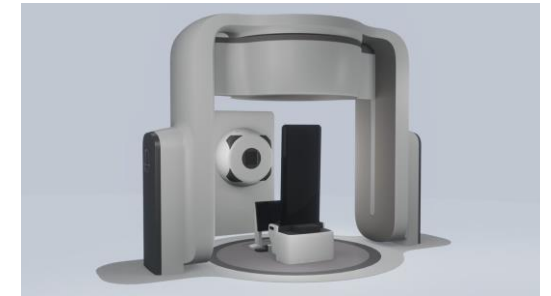
Reasons:

- Shorten time-to-market
- Reduce development risks
- Focus on business and its own core competencies
- Cosylab's flexibility

“Cosylab has a great way of interacting with their customers. That's really the best definition of partnership. We don't really see ourselves as a customer, but more of a partner of Cosylab.”



Stephen Towe,
CEO



We create **value** for device manufacturers



Lower development risks and faster time to market



Simplified supply chain management process (ISO 13485)



Medical software documentation enabling device certification (CE, FDA, NMPA)



Worldwide support, on-site and remote



A fixed cost and delivery date



Development towards new technologies

Thank you.



dr. Kristjan Anderle

Chief Scientific Officer

E: kristjan.anderle@cosylab.com

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COSYLAB R&D project portfolio

COSYLAB is contributing to the world's pressing challenges

EU & UN policies

Cosylab aligns with the priority thematic areas

- UNSDG 3: Good health
- UNSDG 7: Clean Energy
- UNSDG 9: Foster Innovation

EU policies

Europe's Beating Cancer Plan

Green Deal, etc

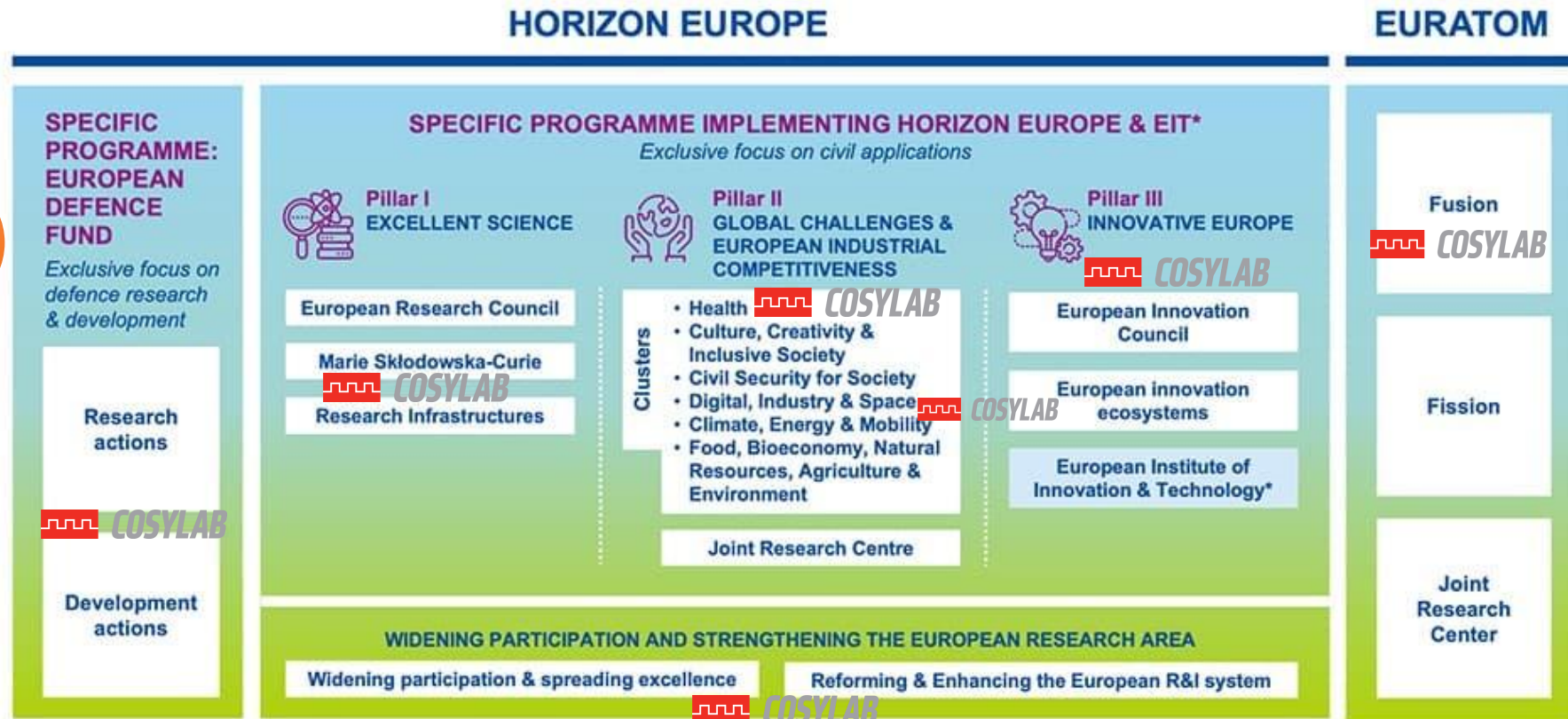
R&D Thematic areas



COSYLAB R&D Projects Portfolio

Company

R&D Thematic areas



* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

References



Cosylab R&D projects portfolio

National R&D&I Projects

NATIONAL PROJECTS

- **Large Basic Research Project:** Online adaptive re-planning in proton and radiotherapy
- **KOC IKT:** Competence center for personnel development in the field of information and communication technologies (partnership with 30 SMEs, large industry, start-ups; 100+ trainings), Coordinator
- **APTACS:** Accelerator Control Systems
- **GDAQ:** A generic platform for capturing data from proton therapy devices



arrs

SLOVENIAN RESEARCH AGENCY



University of Ljubljana
Faculty of *Electrical Engineering*



ONKOLOŠKI INŠTITUT
INSTITUTE OF ONCOLOGY
LJUBLJANA



KOC IKT

Cosylab R&D projects portfolio

EU R&D&I Projects (HE & H2020)

Acronym (Call)	Title
SMASH (<i>MSCA-Cofund</i>)	Machine learning for Science and Humanities
EUROFUSION (<i>Euratom</i>)	Development of Fusion Energy
HITRIplus (<i>INFRAIA-02-2020 RIA</i>)	Heavy Ion Therapy Research Integration plus
RAPTOR (<i>MSCA-ITN</i>)	Real-time Adaptive Particle Therapy of Cancer
DAIS (<i>Key Digital Technologies JU</i>)	Distributed Artificial Intelligent Systems
PROBONO (<i>COST action</i>)	PROton BORon Nuclear fusion: from energy production to medical applicatiOns
ARIES (<i>H2020-INFRAIA-2016</i>)	Accelerator Research and Innovation for European Science and Society
LABS2Market (<i>EIT Health</i>)	Building a Health Spinout Programme and Ecosystem



Cosylab Cooperation Opportunities

Areas of expertise

Radiation
therapy

Complex
medical
devices

Accelerators

Space

Fusion

Astronomy

HORIZON EUROPE

- Pillar I (MSCA);
- Pillar II (Cluster 1 Health, Cluster 4 Digital, Climate & Energy)
- Pillar III (EIT, EIC)
- Widening (Hop-on Facility, Teaming)
- Euratom

- Mission Cancer
- Innovative Health Initiative (IHI)
- EU4Health programme
- IPCEI Health
- IPCEI Personalised Medicine

Research cooperation on Industrial Fusion in USA

Cosylab Cooperation Opportunities 2023

Hop On Facility

HOP ON FACILITY: KEY FEATURES (1)

Who:

- A **consortium funded under Pillar 2 or the EIC Pathfinder actions** of Horizon Europe with a valid grant agreement but with no partner from a Widening country;
- A **legal entity from a Widening Country** wishing to join this collaborative R&I action.

How:

- The proposal must be **submitted by the coordinator of the consortium** funded under Pillar 2 of Horizon Europe.
- **All consortium partners need to agree** on the accession of the new partner.
- The proposal should include a detailed description of the **profile of the new partner** and its role in the existing project and the **R&I relevance and complementarity** needs to be demonstrated.
- The additional partner and task should be described in a dedicated proposal template, DoA of parent project to be annexed



Call - Hop-on facility

HORIZON-WIDERA-2023-ACCESS-06

Opening: 10 Jan 2023

Deadline(s): 28 Sep 2023, 26 Sep 2024

Indicative budget: 100-600 k for a legal entity from Widening country; 10% fee for Coordinator

Cosylab Cooperation Opportunities 2023

IHI CALLS 2023



[Apply for funding](#)

[Shape our future research](#)

[Projects and results](#)

[Resources for projects](#)

the end of 2022 and the beginning of 2023. IHI is publishing the draft topic texts in advance of the official call launch to give potential applicants additional time to start building a consortium and drafting a proposal.

IHI call 3 (single stage call)

- [Topic 1: Screening platform and biomarkers for prediction and prevention of diseases of unmet public health need](#)
- [Topic 2: Patient generated evidence to improve outcomes, support decision making, and accelerate innovation](#)
- [Topic 3: Combining hospital interventional approaches to improve patient outcomes and increase hospital efficiencies](#)
- [Topic 4: Strengthening the European ecosystem for Advanced Therapy Medicinal Products \(ATMPs\) and other innovative therapeutic modalities for rare diseases](#)
- [Topic 5: Digital health technologies for the prevention and personalised management of mental disorders and their long-term health consequences](#)

IHI call 4 (two stage call)

- [Topic 1: Expanding translational knowledge in minipigs: a path to reduce and replace non-human primates in non-clinical drug safety assessment](#)
- [Topic 2: Patient-centric blood sample collection to enable decentralised clinical trials and improve access to healthcare](#)

Note that the topics may change considerably between the versions published here and the call launch, and applicants should check the final, approved topic texts once the calls are launched.

**Call forecasted to open
2. December 2022**

**Submission deadline:
March 2023**

Cosylab Cooperation Opportunities 2023-2024

HE Pillar II- Cluster 1 Health – WP 2023-2024

[HORIZON-HLTH-2023-CARE-08-01: European Partnership on Personalised Medicine](#)

Destination 5. Unlocking the full potential of new tools, technologies and digital solutions for a healthy society

[HORIZON-HLTH-2023-TOOL-05-03: Integrated, multi-scale computational models of patient patho-physiology \('virtual twins'\) for personalised disease management](#)

[HORIZON-HLTH-2023-TOOL-05-04: Better integration and use of health-related real-world and research data, including genomics, for improved clinical outcomes](#)

[HORIZON-HLTH-2023-TOOL-05-05: Harnessing the potential of real-time data analysis and secure Point-of-Care computing for the benefit of person-centred health and care delivery](#)

Destination 6. Maintaining an innovative, sustainable and globally competitive health industry

[HORIZON-HLTH-2024-IND-06-08: Developing EU methodological frameworks for clinical/performance evaluation and post-market clinical/performance follow-up of medical devices and in vitro diagnostic medical devices \(IVDs\)](#)

[HORIZON-HLTH-2024-IND-06-09: Gaining experience and confidence in New Approach Methodologies \(NAM\) for regulatory safety and efficacy testing – coordinated training and experience exchange for regulators](#)

Cosylab Cooperation Opportunities 2023-2024

HE Pillar II- Cluster 4 Digital, Industry, Space– WP 2023-2024

[HORIZON-CL4-2023-RESILIENCE-01-02: Innovative technologies for sustainable and decarbonised extraction \(RIA\)](#)

Destination 3: World-leading Data and Computing Technologies

Call - World leading data and computing technologies

[HORIZON-CL4-2023-DATA-01-02: Integration of data life cycle, architectures and standards for complex data cycles and/or human factors, language \(AI, data and robotics partnership\) \(RIA\)](#)

[HORIZON-CL4-2023-DATA-01-04: Cognitive Computing Continuum: Intelligence and automation for more efficient data processing \(AI, data and robotics partnership\) \(RIA\)](#)

Call - World leading data and computing technologies

[HORIZON-CL4-2024-DATA-01-01: AI-driven data operations and compliance technologies \(AI, data and robotics partnership\) \(IA\)](#)

Destination 4: Digital & Emerging Technologies for Competitiveness and Fit for the Green Deal

[HORIZON-CL4-2023-DIGITAL-EMERGING-01-53: Versatile light sources and systems as tools for manufacturing and medical application \(Photonics Partnership\) \(RIA\)](#)

[HORIZON-CL4-2023-DIGITAL-EMERGING-01-57: Advanced imaging and sensing technologies \(IA\)\(Photonics Partnership\)](#)

[HORIZON-CL4-2023-DIGITAL-EMERGING-01-41: Investing in alternative quantum computation and simulation platform technologies \(RIA\)](#)

[HORIZON-CL4-2023-DIGITAL-EMERGING-01-56: Photonic Strategies and Skills Development \(CSA\) \(Photonics Partnership\)](#)

[HORIZON-CL4-2024-DIGITAL-EMERGING-01-55: Photonics Innovation Factory for Europe \(Photonics Partnership\) \(IA\)](#)

[HORIZON-CL4-2024-DIGITAL-EMERGING-01-23: Public recognition scheme for Open Source \(CSA\)](#)

Cosylab Cooperation Opportunities 2023-2024

HE Pillar II- Cluster 4 Digital, Industry, Space– WP 2023-2024

Destination 5: Open Strategic Autonomy in Developing, Deploying and Using Global Space-Based Infrastructures, Services, Applications and Data

[HORIZON-CL4-2023-SPACE-01-11: End-to-end Earth observation systems and associated services](#)

[HORIZON-CL4-2023-SPACE-01-12: Future Space Ecosystem and Enabling Technologies](#)

[HORIZON-CL4-2023-SPACE-01-13: Future Space Ecosystem: Management and Coordination Activity](#)

[HORIZON-CL4-2023-SPACE-01-21: Low cost high thrust propulsion for European strategic space launchers - technologies maturation including ground system tests](#)

[HORIZON-CL4-2023-SPACE-01-22: New space transportation solutions and services](#)

[HORIZON-CL4-2023-SPACE-01-23: Modern, flexible and efficient European test, production and launch facilities](#)

[HORIZON-CL4-2023-SPACE-01-62: Quantum Communication Technologies for space systems](#)

[HORIZON-CL4-2023-SPACE-01-71: Scientific exploitation of space data](#)

[HORIZON-CL4-2023-SPACE-01-72: Space technologies for European non-dependence and competitiveness](#)

[HORIZON-CL4-2023-HUMAN-01-31: Toolbox for efficient IP licensing for market uptake and societal value creation \(CSA\)](#)

[HORIZON-CL4-2023-HUMAN-01-32: Piloting communities of expert facilitators to improve industry-academia-public sector co-creation \(CSA\)](#)

[HORIZON-CL4-2023-HUMAN-01-51: Pilots for an innovative human-centric industry \(RIA\)](#)

[HORIZON-CL4-2023-HUMAN-01-52: Drivers and success factors for progress towards Industry 5.0 \(RIA\)](#)

[HORIZON-CL4-2023-HUMAN-01-02: Large Scale pilots on trustworthy AI data and robotics addressing key societal challenges \(AI Data and Robotics Partnership\) \(IA\)](#)

[HORIZON-CL4-2023-HUMAN-01-81: Digital Humanism - Putting people at the centre of the digital transformation \(CSA\)](#)



Thank you

Eutopia, november 2022

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DISCUSSION ON COOPERATION OPPORTUNITIES IN R&D EU PROJECTS

HITRIplus Heavy Ion Therapy Research Integration plus



22 partner institutes

- 4 CIRT centres
- 10 research institutions
- 5 universities
- 3 SME/Industry

14 countries

*Project Proposal: INFRAIA-02-2020 RIA
European Research Infrastructures*

Five Strategic Objectives

Aimed at the advancement of ion therapy research with heavy ions (rather than protons).

- 1) To **integrate, open up and broaden** the leading ERI for the treatment of cancer with beams of ions.
- 2) To **coordinate and strengthen the research programmes** on heavy ion therapy of different European institutions, by promoting synergies, collaborations, innovation, knowledge transfer, new initiatives and sharing of tools and data.
- 3) To **develop** in a joint and coordinated way **novel technologies to improve the accelerators** and their ancillary systems that provide particle beams to this scientific community. These technologies will improve the present generation of facilities and will be the foundation for a next generation European design for ion therapy facilities.
- 4) To **establish** a European multidisciplinary **community for heavy ion therapy research**, aiming at improving treatment strategies and modalities by connecting physics and engineering with medicine, biology and biophysics, and to extend this community towards emerging European regions, addressing in particular new initiatives in South East Europe.
- 5) To **define** the **main technical features and the scientific programme** of a future pan-European Research Infrastructure for medical and radiobiological research with heavy ion beams, to be built in South East Europe or in another European region.

Cosylab leads WP11: Controls and Safety

OBJECTIVE

The goal of this WP is to **analyse and determine** the best **solutions** for an upgrade of current and future facilities in terms of **performance** and **cost**. Using experience from past research results in previous projects, as well as clinical users' experience, future trends and market needs, a **novel design for the control software and safety systems** will be elaborated. Existing state-of-the-art solutions for machine and treatment room controls and patient safety systems will be used as baseline on top of which novel solutions will be proposed – unique solutions which will facilitate both research and clinical users at the same time.

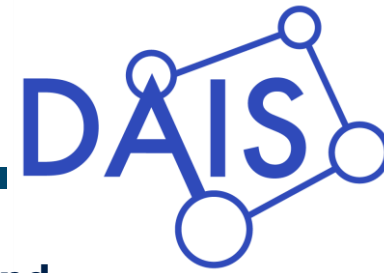


This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101008548

IMPACT

- 1) **Innovative and cost-effective solutions** in advanced medical accelerator technologies with novel, more efficient accelerators with a smaller footprint and higher ion beam extraction capability, and hence, a faster dose delivery resulting into **more efficient, faster and less expensive cancer patient treatment**.
- 2) Develop **common standards, common treatment protocols, technology development**, and common training, which will allow Europe to advance rapidly in this newly emerging field. The established common treatment platform could be utilised by any future forthcoming ion therapy facility in any European country, which decides to use the available commonly developed standards.
- 3) Define **a new common leading-edge European design for ion therapy facilities that will be transferred to industry** to allow European industry to compete with Japanese companies to access the growing ion therapy markets in Asia and USA.

Distributed Artificial Intelligent Systems – DAIS



A pan-European project **bringing faster, more secure and energy efficient data processing solutions** through the development of **edge AI software and hardware components**.

- 47 partners
- 11 countries
- 33 million €

DAIS has ambitious objective to develop intelligent and secure Edge solutions for industrial applications for European industry throughout the whole Supply Chain.

- Cosylab contributes to the **design and implementation of AI-algorithms** for the advanced movement of autonomic vehicles on the Edge hardware.
- Involvement in multiple WPs and SCs.
- Cosylab is **designing FPGA architecture and efficient edge-ready machine learning algorithms** able to detect obstacles and predict the optimal avoidance procedures, complemented with new traffic routing, when needed.
- The solution will be **tested and applied to self-driving carts**, implemented at TPV (project partner).



DAIS has received funding from Key Digital Technologies Joint Undertaking (KDT JU) under grant agreement No 101007273. The KDT JU receives support from the European Union's Horizon 2020 research and innovation program and Sweden, Spain, Portugal, Belgium, Germany, Slovenia, Czech Republic, Netherlands, Denmark, Norway, Turkey.





Thank you

Eutopia, november 2022

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DISCUSSION ON COOPERATION OPPORTUNITIES IN R&D EU PROJECTS



YOUR PARTNER IN R&D PROJECTS

- large industrial partner
- firm scientific foundation (spin-off of Jozef Stefan Institute)
- brings additional innovation aspect
- scale-up technology
- commercialisation
- wide EU network in health, space, energy
- familiar with EU funds requirements
- aligned with national strategic development priorities (Smart Specialisation, Digital Health)
- country from widening area

THANK YOU FOR YOUR
VISIT

THANK YOU **UNIVERSITY
OF LJUBLJANA**
FOR ORGANISING THIS
EVENT

and

WISHING YOU ALL A
PLEASANT STAY IN
LJUBLJANA

Project Management Office
project.office@cosylab.com



COSYLAB

CONTROL SYSTEM LABORATORY