

# ITOP REVOLUTION

Revolutionizing oncology treatment through precision medicine GenAI and other AI elements, with the large-scale deployment of the Integrated Theranostic Oncology Platform (ITOP) integrating with HIS and radiopharmaceutical production companies' order and supply systems

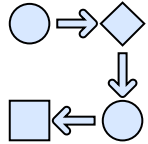
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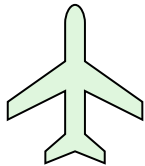
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# Challenges – Radioligand Therapies (RLT)



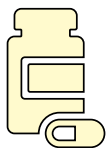
## Workflow and Oversight Challenges

- **Lack of interoperability** in systems for patient data, RLT cycle planning, and logistics increases risk of errors and inefficiencies.
- **Manual handling** of time-sensitive processes can reduce operational efficiency, patient outcomes, and add large administrative burden on healthcare staff.
- Errors can lead to **therapy waste, increased healthcare costs, and poor patient outcomes.**



## Logistical and Operational Complexity

- Radiopharmaceuticals have **short half-lives**, requiring **precise timing** and **rapid handling.**
- Cross-border manufacturing and subsequent delivery requires **seamless information flow** between involved stakeholders.
- Current systems are not suited to meet **future demand** as RLT utilization grows globally.



## Limited Access to Life-Saving Therapies

- Patients face barriers to **personalized care** due to inefficiencies in current RLT management processes.
- Current inefficient practices in RLT workflow management can **limit widespread scalability of advanced theranostic solutions.**

# Objectives



## Seamless Integration of Data and Systems:

- Develop an **Integrated Theranostic Oncology Platform (ITOP)** to **streamline RLT delivery** and **enhance process efficiency**, through effective integration of **GenAI** and other **AI modalities** for dynamic processing and adaptation of clinical workflows.
- Facilitate **seamless system integration** by integrating hospital information systems (HIS), RLT ordering platforms, and treatment records.



## Enhance Precision and Workflow Efficiency:

- **Deploy GenAI models** trained on diverse data sets to streamline RLT planning processes.
- Leverage other AI functionality to **automate treatment workflows**, minimizing errors in highly **time-sensitive** RLT treatment schemes.
- Support clinical decision-making by supporting **data-driven recommendations**, reducing clinician workload while improving accuracy.



## Improved Accessibility and Outcomes:

- Ensure **timely, scalable, and equitable** delivery of RLT.
- Use data-driven insights to **personalize treatment plans** and **reduce disparities** in patient outcomes.



## Foster Collaboration and Innovation:

- Drive **public-private partnerships** with healthcare providers, SMEs, pharmaceutical and MedTech companies, patient associations, and research institutions to co-develop **scalable solutions**.
- Enable research and development through **data-driven insights**, **FAIR-compliance** and **predictive analytics**.

# Approach - Overview

## Vision



Transform theranostic care through the development and wide deployment of the **AI-powered Integrated Theranostic Oncology Platform (ITOP)**



**Leverage GenAI and other AI modalities** to unify fragmented RLT process management and simplify tracking.

## Core Strategy



Integrate **HIS, radiopharmaceutical supply systems, and clinical workflows** into an interoperable ecosystem.



**Enable data collection and analysis** to generate real-world evidence about therapy delivery and patient outcomes, while enhancing healthcare research capabilities.

## Methodology



### Data Consolidation

**Integrate patient-specific data** from HIS and radiopharmaceutical ordering platforms for improved **interoperability**.

**Streamline workflows** for greater consistency and accessibility.



### AI-Powered Optimization

Apply **predictive analytics** to personalize therapy decisions.

**Automate scheduling and resource allocation** for optimal efficiency.



### Data Repository and Retrospective Research

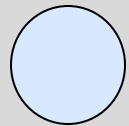
Create a **centralized repository** for patient data to facilitate secondary data use and advanced analytics.

Ensure compatibility with **EHDS standards**, enabling EU-wide data sharing capabilities.

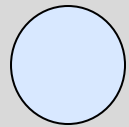
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# Approach - Collaboration and Implementation

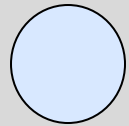
## Stakeholder Engagement



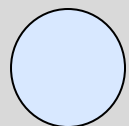
**Technology and Integration Partner** - iToGroup for platform development, deployment, integration, and maintenance.



**Academic Institutions** - collaboration with Lithuanian University of Health Sciences for expertise in theranostics.



**Pharmaceutical Partners** - partnerships with Novartis for streamlined supply chain integration and RLT expertise.



**Healthcare Providers** - collaboration with Hospital of Lithuanian University of Health Sciences Kaunas Clinics for primary platform integration and usability.

## Step-by-step Deployment

1

**Prototype Development** – the Integrated Theranostic Oncology Platform (ITOP) prototype is developed and deployed in LSMU Kaunas Clinics.

2

**Pilot Testing** – the platform is enabled within a testing environment with artificial patient data to pressure test the solution prior to real-world implementation.

3

**Full-Scale Rollout** – the solution is deployed and validated in participating centres with real patient data and system integrations.

4

**Research Enablement** – the data of the system's operations and anonymized patient parameters are collected within the data repository for potential future research utilization as retrospective analysis.

# Outcomes and Impact – Innovation, Efficiency and Sustainability

## Innovation and Efficiency

- **AI-Driven RLT management platform:** First AI-based RLT management platform, minimizing risk of human error in RLT process management and reducing manual healthcare staff workload by 40 %. Effective implementation of GenAI modules to facilitate compliant clinical summary and report creation, in line with local requirements.
- **Faster and more involved treatment planning:** ITOP enables 10x faster treatment scheduling compared to current manual standard. Additionally, the system automatically notifies staff about process deviations, ensuring rapid response timing.
- **Compliance and interoperability:** ITOP is fully compliant with applicable EU regulations, including GDPR and is compatible with diverse HIS systems used by Member States.

## Sustainability and Long-Term Vision

- **Waste reduction** – reduced radiopharmaceutical waste due to optimized logistic management, in alignment with the EU Green Deal.
- **Scalability and research:** ITOP enables EU-wide collaborative research on retrospective patient data collected through systematic, anonymized collection, in line with EHDS goals.

# Outcomes and Impact – Public Health

## Public Health Impact

- **Access to RLT:** Expanded equitable access to lifesaving RLT for metastatic prostate cancer and GEP-NET, thus supporting EU Beating Cancer Plan by ensuring optimized access to innovative treatment.
- **Personalized Care:** Improved patient outcomes through personalized treatment protocols.
- **Timely Treatment Provision:** Larger proportion of patients receiving timely RLT therapy due to more interoperable data flow for logistics and resource management.

# Expertise and Resources

Driving Innovation with Collaborative Partnerships



## **IT and Project Management Partner (iToGroup):**

- Leading platform's technical design ensuring usability and scalability.
- Leading the IT development of the platform, ensuring advanced AI functionalities and seamless integration with external systems (incl. HIS).



## **Clinical / Academic Partners (Lithuanian University of Health Sciences (LSMU) and LSMU Kaunas Clinics:**

- Leading clinical development of ITOP by providing expertise in defining the platform's medical requirements and design.
- Leading clinical trial design, patient recruitment, platform validation and outcome analysis.



## **Industry Collaboration (Novartis):**

- Provide support and expertise in RLT process management, including RLT treatment workflows, logistics and supply chain management.



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# Expertise and Resources

Driving Innovation with Collaborative Partnerships

## Open for Partnerships

We are seeking partners in the following domains:

- **AI and Data Science Firms:** deploying predictive analytics and ML models for RLT process optimization.
- **Healthcare Providers:** validating ITOP in a clinical setting, providing feedback, and assisting in system optimization.
- **Academic and Research Institutions:** supporting with validation trial design, executing real-world evidence research on RLT patient data collected through ITOP.
- **Technology Firms:** developing platform architecture, HIS integrations, platform localisation to meet local requirements.
- **Regulatory Authorities:** ensuring compliance and paving pathways for global scalability.
- **SMEs:** specialized expertise in IT systems, AI, and healthcare technology.
- **Patient Advocacy Groups:** providing insights into patient needs, promoting adoption, ensuring patient-centered approach to RLT management.
- **Health Economics Experts:** assessing cost-effectiveness of ITOP implementation and scalability.

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