

Using Artificial Intelligence in Medical Diagnostics in North East Region

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North East Regional Development Agency
Imago-Mol Cluster



North East RDA the facilitator of regional development



ROMANIA

ADR [®]
Agentia pentru Dezvoltare Regională
N O R D - E S T

Romania | In Europe
19,588,146 inhabitants

46% rural

54% urban

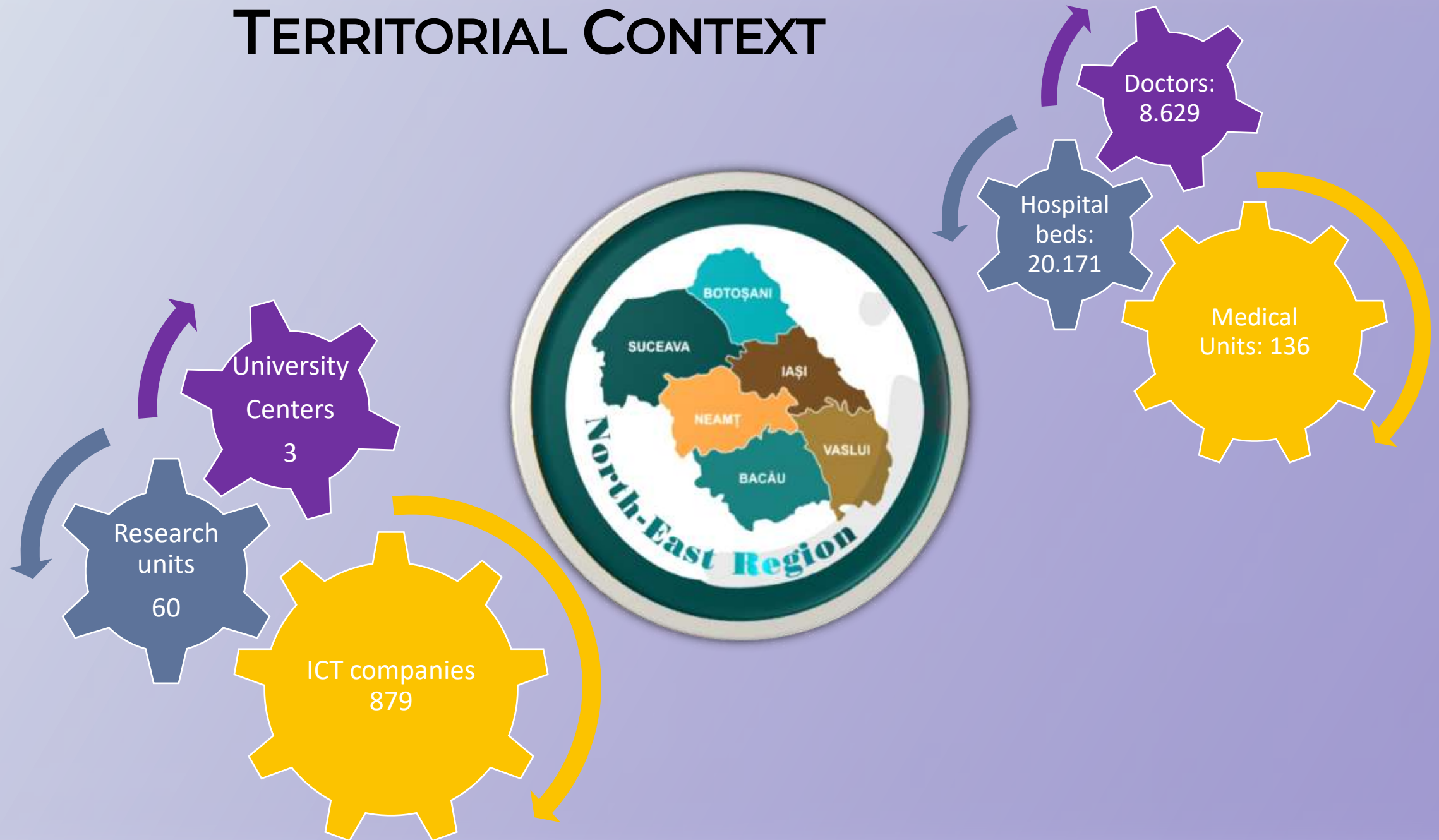
NE Region | In Romania
3,229,050 inhabitants

58% rural

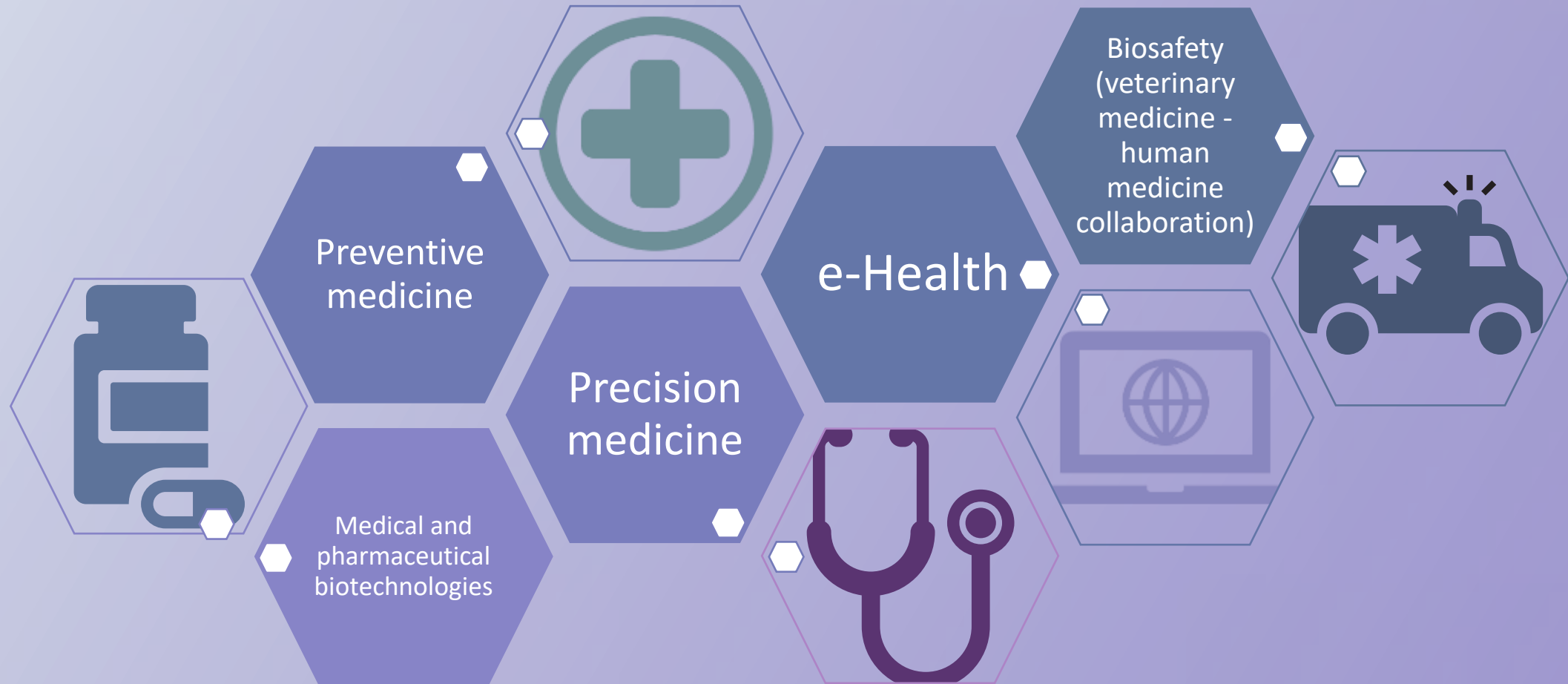
42% urban

www.adr-nord-est.ro

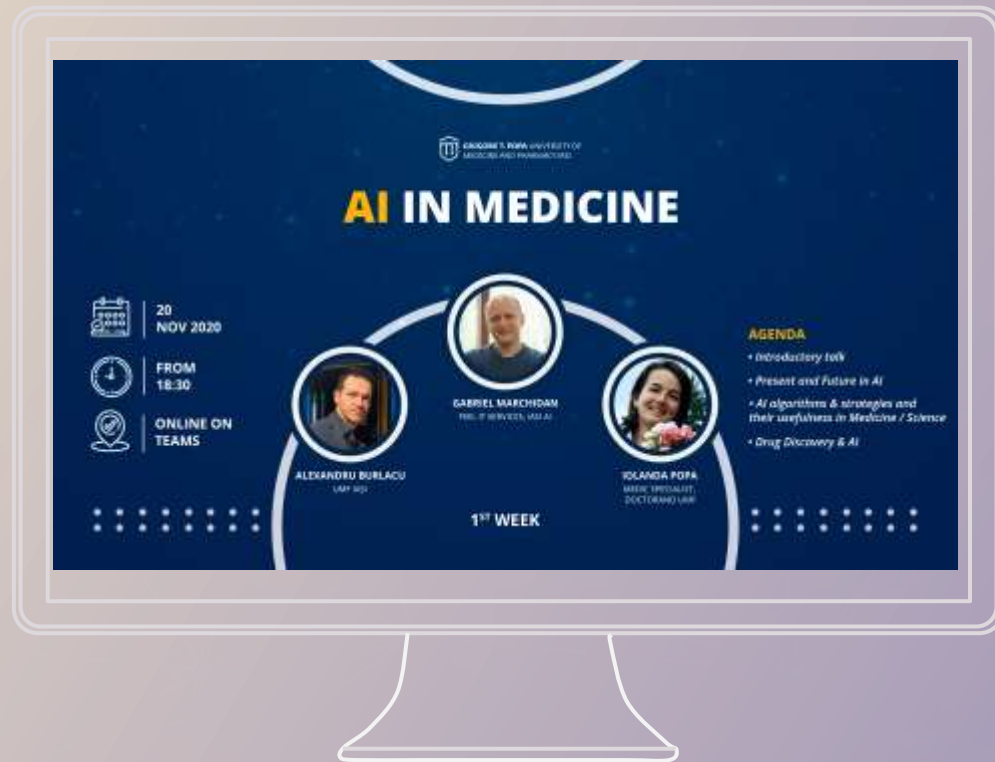
TERRITORIAL CONTEXT



North-East RIS3 – Health niches and sub-niches



University Course „AI in Medicine”



The University of Medicine from Iasi integrated in its curricula in 2020 an „AI in Medicine” optional course for the 5th year students.



GRIGORE T. POPA UNIVERSITY OF
MEDICINE AND PHARMACY IASI

CURRICULA OF THE UNIVERSITY COURSE ARTIFICIAL INTELLIGENCE IN MEDICINE

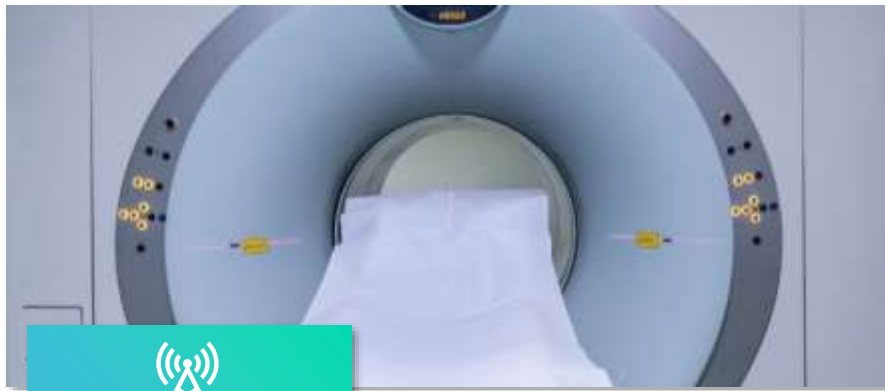
Programarea cursului optional Inteligenta Artificiala in Medicina (anul 5 Medicina Generala)
Introductory talk: Present and future in AI
AI algorithms & strategies and their usefulness in Medicine / Science
Data Science in medicine: Machine Learning techniques & tools for non-programmers, with application in medicine
Local projects using AI in medicine
AI in cardiology
AI in pneumology
AI & artificial pancreas
NLP (Natural language processing): theory and application
Digital Health & Telemedicine - concepts and examples from an industry point of view
The start-up phenomenon in MedTech: opportunities for entrepreneurship in medicine
Final talk & assessment



- ❖ **Main output of AMI-4EU project "Advanced Medical Imaging for All Europeans - Advanced Medical Imaging, interdisciplinary and integrated by creating a network of Regional Clusters and Development Strategies in Europe", funded by the European Commission FP7 - Regions of Knowledge, managed by the metacluster Madrid Network**
- ❖ **Set-up date: 7th of September 2012, North East RDA being founding member and facilitator**
- ❖ **Legal status: non-governmental & non-profit**

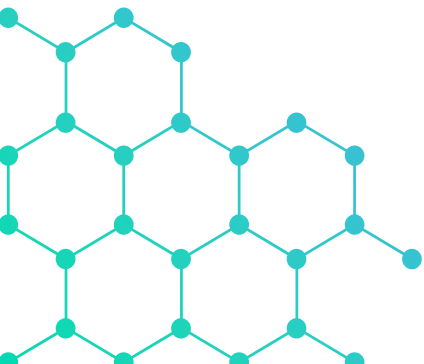


The only cluster in RO focused on
 medical imaging



Medical & Tech RDI &
 academic institutions

State-of –the art infrastructure for
 translational medicine, TTO's on
 medical & tech fields



01



03

02



Health-Tech companies &
 MedTech startups



Offering products/services such as tele-
 health solutions, tele-radiology, patients'
 platforms, AI medical software for medical
 imaging & radiotherapy





54 cluster members representing the healthcare ecosystem from the **North-East region of Romania**



Universities and research organizations

6

32

SMEs and startups



Healthcare providers

7



2

Facilitators



2



Public authorities

5

Associations



IMAGO-MOL projects in developing AI tools for better therapies

REVERT - taRgeted thERapy for adVanced colorEctal canceR paTients

H2020-SC1-2019-Two-Stage-RTD, SC1-BHC-02-2019

Systems approaches for the discovery of combinatorial therapies for complex disorders



Building of the **REVERT-DataBase (RDB)** thanks to a large number of standardized biobank samples with related structured data, and clinical databases (including known clinical and biological features as well as new, potential prognostic/predictive biomarkers) from several major clinical European centres.



Innovative artificial intelligence (AI)-based decision support system using the experience and the real-world data of several general Hospitals operating in the EU healthcare system ultimately aimed at developing an improved and innovative model of combinatorial therapy - based on a personalised medicine approach.



Evaluation of the AI generated model on survival and quality of life in a **prospective clinical trial** through testing of new treatment sequences of the available and authorized molecular targeted drugs in patients with mCRC.



An EU- network among SMEs, Research Institutions, Clinical Centres and Biobanks focused on R&D in the field of AI-Health for the development of personalised medicine.



CONSORTIUM



IT

- SAN RAFFAELE ROMA SRL
- AZIENDA ULSS 4 VENETO ORIENTALE
- OLOMEDIA SRL
- UNIVERSITY OF ROME TOR VERGATA

ES

- FUNDACION UNIVERSITARIA SAN ANTONIO
- INSTITUTO MURCIANO DE INVESTIGACIONES BIOSANITARIAS – HOSPITAL UNIVERSITARIO SANTA LUCIA

DE

- GENXPRO GMBH
- FEDERAL INSTITUTE FOR MATERIALS RESEARCH AND TESTING
- BIOVARIANCE GMBH

SE

- MALMO UNIVERSITY
- UMEA UNIVERSITY

RO

- IMAGO-MOL CLUSTER
- REGIONAL INSTITUTE OF ONCOLOGY IASI

LU

LUXEMBOURG INSTITUTE OF HEALTH

REVERT CONSORTIUM

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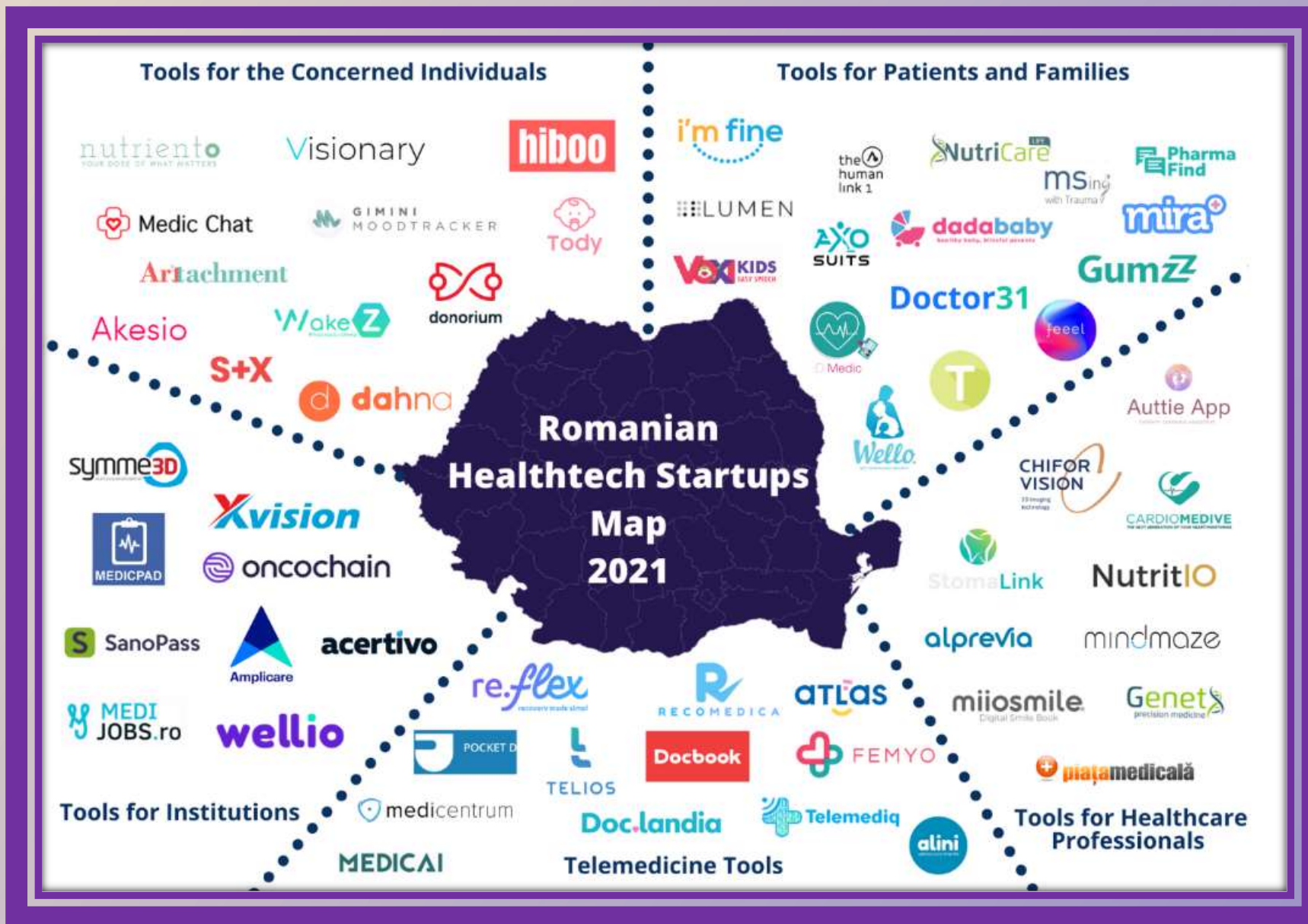


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START-UP PHENOMENON IN MEDTECH



AI START-UPS, MEMBERS OF IMAGO-MOL CLUSTER, ACTIVE IN HEALTHCARE



A start-up aiming to make healthcare smarter with the help of AI algorithms applied to medical imaging



A start-up focused on applied research in AI, who develops medical diagnosis software.



A start-up specialized in software development services for R&D



A start-up developing solutions for Automated tumor and organs-at-risk contouring for radiologists.

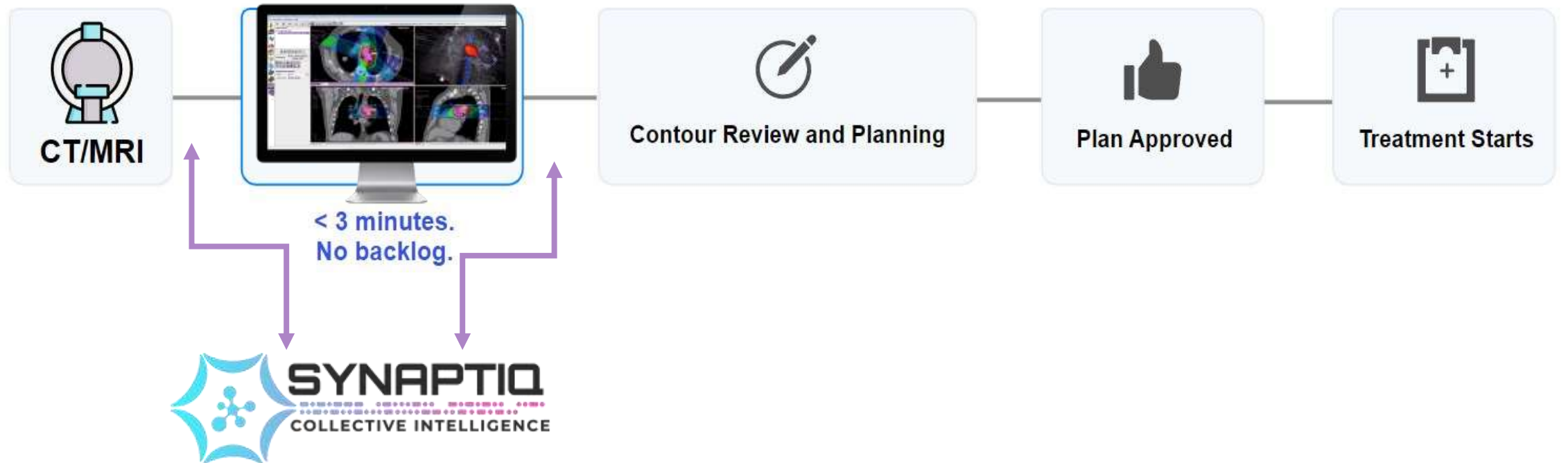


STATE OF THE ART SOLUTIONS

Automated tumor and organs-at-risk contouring software for radiation oncologists



Problems



Meet Mediq

Our software will provide support on **target volume delineation** by leveraging ML capabilities so that the **tumor identification** can be done in a fraction of time, with **higher accuracy** and **objectivity**. This will speed up the process, increasing the survival rate.



Unique features:



Unique AI architecture for robust and high accuracy delineation



Adaptive learning according to the user's individual technique



Active Revision. Make corrections with just one click

Impact



Our Product

State-of-the-art solution



Radiotherapy Centers

Up to \$200,000 cost reduction per year



Radiation Oncologists

4 hours of tedious work reduced to 5 minutes



Cancer Patients

Quicker and more robust treatment planning

PRODUCT OVERVIEW

Created to be an assistant to radiologists, XVision uses artificial intelligence algorithms to provide highly accurate interpretations of digital x-rays, helping doctors in the process of diagnosis.



General Screening

It identifies if there is at least one pathology present in the scan



In Depth Analysis

Can identify 17 most common pathologies present in traditional pulmonary X-rays



Bone Subtraction/ Suppression

+ Amplifies/suppresses the bone tissue visibility

The system is designed to be easily integrated into our partners' infrastructure

SENTICLAB

AI solutions for human wellness



AI4HealthCare

Currently in the health sector there are **critical issues** that can slow down the diagnosis and effectiveness of therapies, such as **dispersive workflows, uncertainty about how effective the diagnosis is for the patient, treatments that are not always differentiated.** In addition to these is the possibility of human errors.

Thanks to **AI4HealthCare**, it is possible to improve these processes, because the software uses **Artificial Intelligence to analyze, extract meta-data and classify medical reports and images (RX, PET and CT) related to lungs, liver and colon.** In addition, it identifies other similar cases and verifies the effectiveness of the therapy, monitoring its effects over time.

By offering support to the personal knowledge of individual doctors and their diagnostic skills, **AI4HealthCare brings significant qualitative and quantitative benefits for healthcare professionals and patients, reducing the reporting and waiting times for diagnosis.**





Clusters supporting SMEs: The Medic Nest Programme



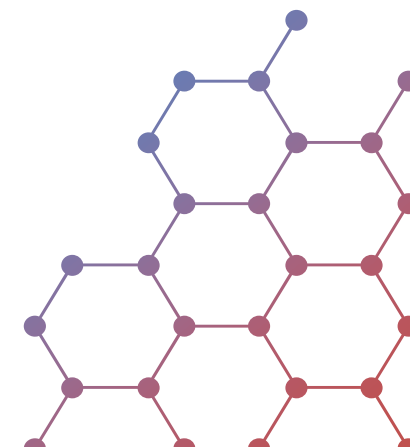
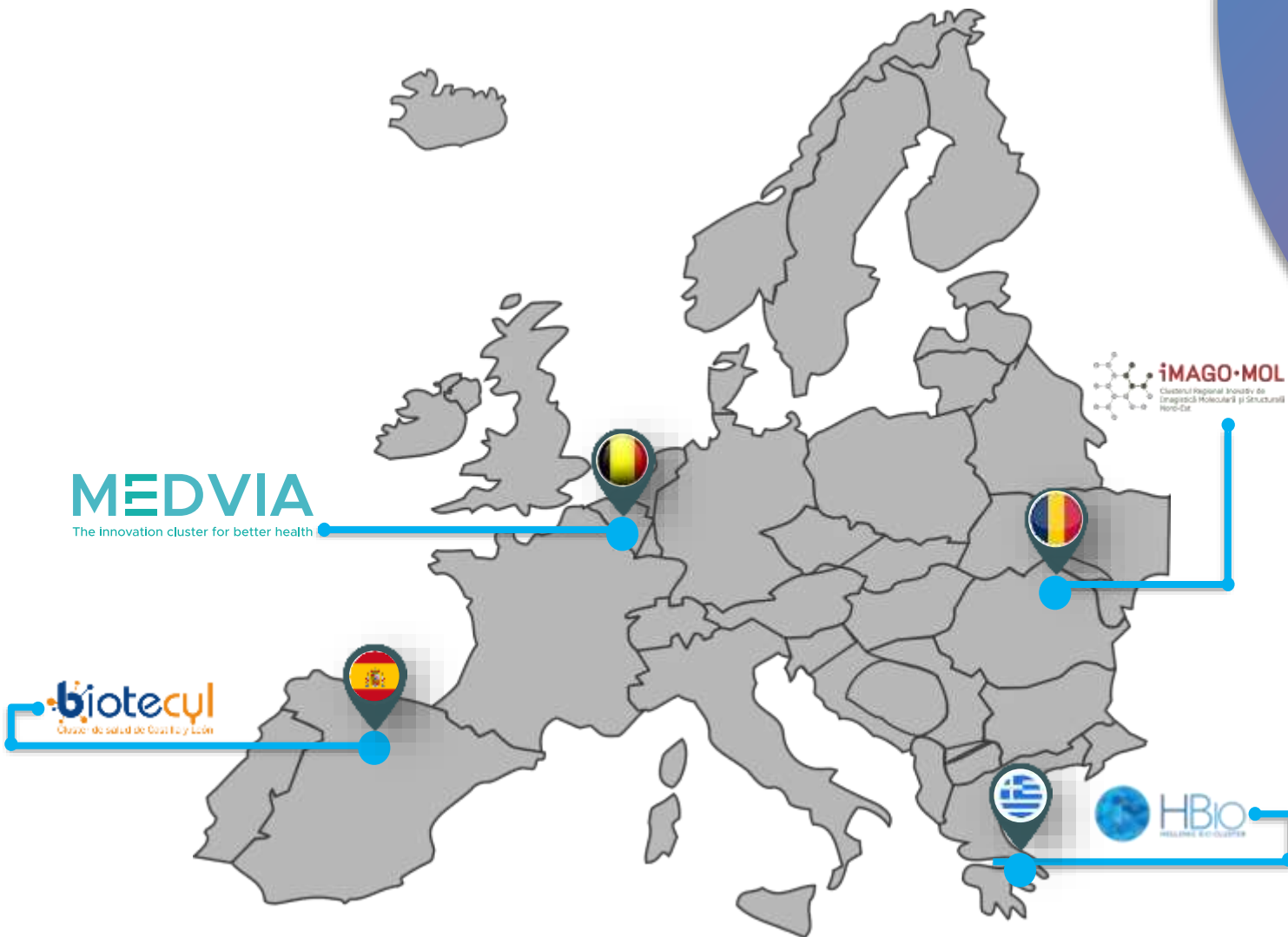
Co-funded
by the COSME programme
of the European Union



● **Precision MEDicine Clusters**
● integrating **digital technologies** for
● New EcoSystems in healthcare

INDUSTRIAL FOCUS

MedTech
Digital technologies
Biotech
Pharma
Medical imaging (structural & functional)





ClusterXchange Scheme



Partnership

through the partnership MEDIC-NEST Meta Cluster in Precision Medicine



80 exchanges

Out of which, 40 exchanges are involving SMEs

Medic Nest Precision MEDicine Clusters

integrating Digital Technologies for New EcoSystems in HealthCare





PLANNED CXC

November 2022, Iași,
Romania

IMAGO-MOL Cluster
Week



February 2023
Gent, Belgium

Life-on Chip Conference
MEDVIA Cluster Week

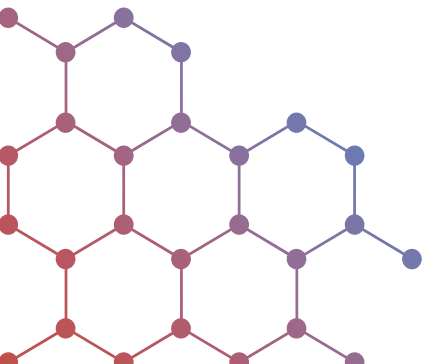


Hellenic Bioforum
HBIO Cluster Week

May 2023
Athens, Greece

September 2023 Leon,
Spain

BIOTECYL Cluster
week



Plenary Sessions

AI in medical diagnostics
Patient Data & AI
Best practices

Pitching Sessions to hospital
managers & Meeting VCs

C2C, B2B, R2B meetings

Site visits



We are looking forward for:



Partnership in the medical field



Alina Căpitanu, Head of External Projects Office
Vicepresident of Imago-Mol Cluster

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Thank you for your attention!