

eHealth Solutions

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Software Imagination & Vision

SIMAVI
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SIMAVI Business Card

+ 90 R&D projects awarded

Horizon EUROPE
Horizon 2020

ERASMUS+
EDF DEP

ISF
ERA-Net

EUREKA
Eurostars

SIMAVI develops solutions for various industries

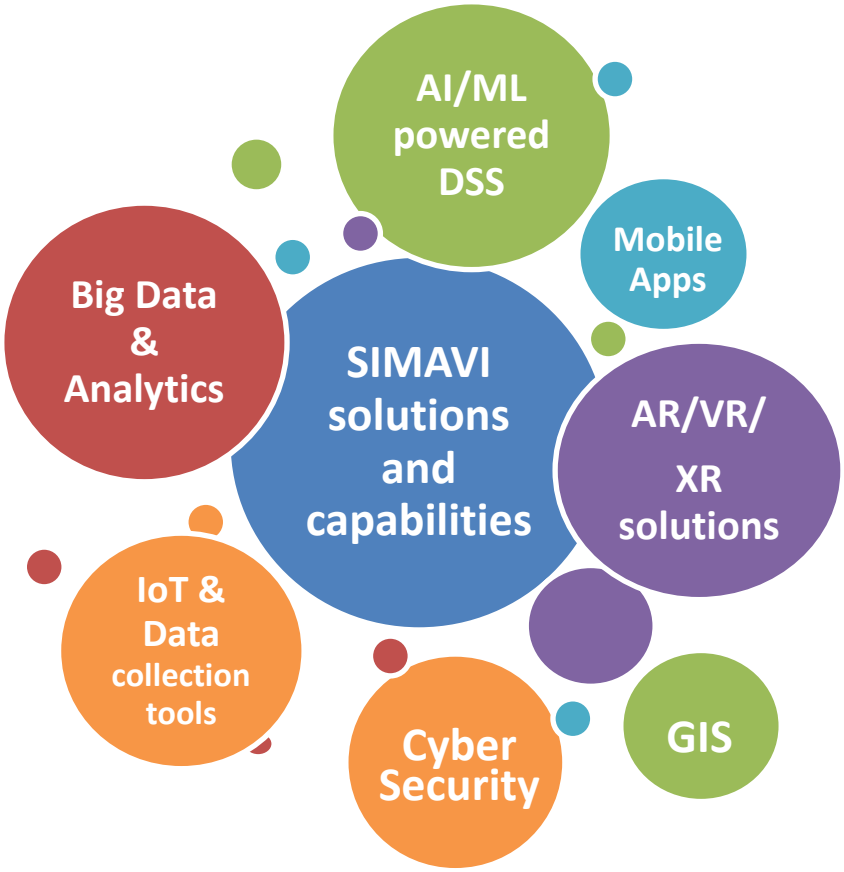
12 Projects Coordinated

- eHealth
- Security, Cybersecurity & Intelligence
- eTraining
- Research & Development Projects
- Defence
- Energy, Mobility & Transportation
- Industry 4.0 & Circular Economy
- eAgriculture, Climate Change & Biodiversity Protection
- eCustoms
- Enterprise Application Suite
- Customized Applications
- eGovernment

https://simavi.ro/en/rd-projects

SIMAVI overview

Software Imagination & Vision



Competences

- ✓ **Platforms development**, **integration** and interoperability
- ✓ **AI/ML powered Software Tools**, DSS and Analytics
- ✓ **AR/VR/XR** development for awareness, field-support and training
- ✓ **User-center design** (UX, UI, UJ)
- ✓ **Pilot deployment** and implementation in Eastern Europe, by engaging key partners:
  - Hospitals
  - Cities & Public Authorities
  - NGOs & Clusters & Research Centers
  - Farmers & farm associations
  - Industry 4.0
  - Energy DSO/TSO
  - LEAs & FRs

eHealth – country level solutions

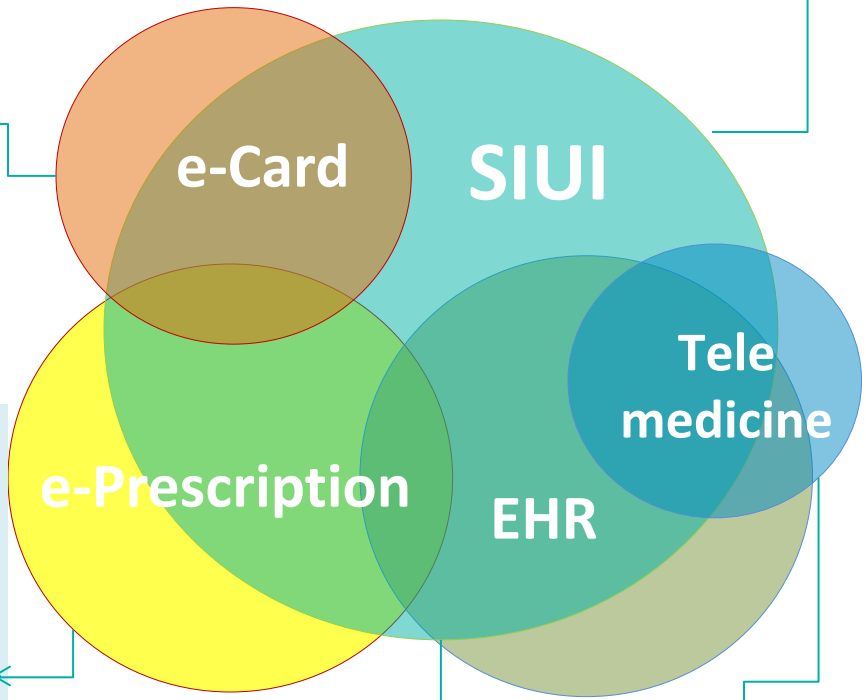
Integrated Health Information System in Romania – SIUI

Beneficiary: National Health Insurance House (CNAS)

15,5 millions persons registered with cards



- 150+ millions prescriptions registered in 3 years;
- 16,000 prescriptions daily.



Completed in Dec. 2015



- over 6,000 Family Doctors
- over 1,000 hospital users
- 8.6 millions personal files

Covers all population of Romania

- all Health Insurance County Houses
- **62,968** doctors
- **14,812** family doctors
- **111,783** nurses
- **5,799** clinical services providers
- **2,672** laboratory services providers
- **893** home care providers
- **1,126** providers of ambulatory recovery services
- **802** hospital services providers
- **179** ambulance services providers
- **302** suppliers of medical devices
- **5,398** providers of pharmaceutical services
- **6,799** dental care providers

eHealth expertise (1)

Solutions & Experience

Healthcare and Patient Support

- ✓ Tele-monitoring & Tele-rehabilitation applications
- ✓ Integrated and interactive Patient Care Ecosystem that supports quality of life for elderly people
- ✓ **Virtual Coach** and personalised interfaces for Data Visualization and User Engagement
- ✓ Virtual Assistant and Application for Patient' Treatment Journey dedicated for healthcare professionals and carers use
- ✓ Monitoring solution for patients with neurodegenerative diseases
- ✓ Serious Games for brain training
- ✓ AR/VR for rehabilitation support

REFERENCES

Click on Projects

CVDLINK
[Coordinator SIMAVI]

iBeChange

CARING NATURE
Sustainable solutions for healthcare

STRATIFAI

MES-CoBraD

enact

PAINLESS
Pain Relief in Cancer

eHealth expertise (2)

Solutions & Experience

Advanced Technology Solutions

- ✓ Decision Support Tool for monitoring and controlling of air quality
- ✓ AI based DSS to foster evidence-based pain relief methods for cancer patients
- ✓ Knowledge Sharing System for healthcare providers that supports co-creation activities.
- ✓ Hospital Decision Support System for a better view of all associated parameters, knowledge and arguments.
- ✓ Multi-source real-world clinical information access and integration framework
- ✓ Data integration framework with Federated and FAIR repository
- ✓ ML Anomaly Detection Component and NLP services
- ✓ Diagnostic Support Tool to assist healthcare professionals

REFERENCES

Click on Projects

eHealth expertise (3)

Immersive Training and Knowledge Sharing



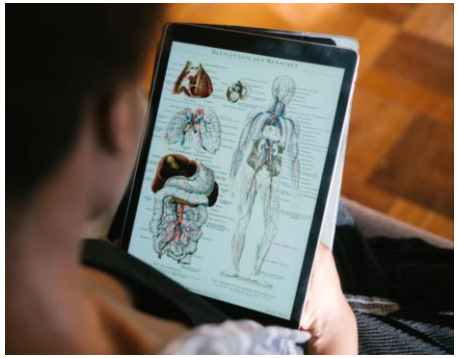
✓ **Simulation & Training**:

- Authoring Tools to create XR immersive content and Virtual Labs, that support realistic simulations for medical training
- VR skills development and AR overlays for real-time guidance and assistance

✓ **Patient Rehabilitation & Support**: XR/AR/VR applications to support physical and cognitive rehabilitation and engaging experiences for patients

✓ **Complete portfolio of digital solutions for continuous learning and development**

✓ **Knowledge Sharing Platforms** for the dissemination of best practices and research findings within the healthcare community



Health projects – References (1)

https://cvdlink-project.eu/

SIMAVI Coordinator

A federated paradigm of real-world data sources utilization for the empowerment of diagnosis, prognosis and risk assessment of cardiovascular conditions

The 48-month project CVDLINK with a **total budget of 9.67 million euro**, involving **19 partners** from **11 countries**, aims to tackle these challenges by implementing a privacy-by-design European-wide federated platform-as-a-service (PaaS**)** for the delivery of effective data-driven human-centric interventions and the advancement of research and management in the CVD domain.

Within the project, **7 different cardiovascular conditions** will be examined, making use of different retrospective datasets, cohort studies and biobanks from **7 counties**, aiming to set a paradigm of the how heterogeneous data sources, can be effectively exploited for building comprehensive AI-driven tools, in order to bring substantial benefits for health systems, patients, industry and EU citizens. The developed tools will be prospectively **validated in 5 countries**, demonstrating the impact of CVDLINK.

Health projects - References (1)

https://cvdlink-project.eu/

CVDLINK aims to implement a privacy-by-design European-wide federated platform-as-a-service (PaaS) for the delivery of effective data-driven human-centric interventions and the advancement of research and management in the CVD domain.

CVDLINK is based on two major offerings:

(1) the seamless and legally compliant linking and integration, secure sharing and automated curation of existing data;

(2) a set of AI and data-enabled precision medicine tools and pipelines, for better diagnosis, risk stratification and treatment.

SIMAVI role:

- **Project Coordinator**
- System design and CVDLINK system roadmap
- **CVDLINK federated and FAIR repository** - Data integration framework and preparation of existing data sources
- **CVDLINK integration and prototypes releases**
- Setup, user training and support

Health projects - References (2)

https://cordis.europa.eu/project/id/101157151

Environmental Effect on Health Care and Wellbeing and Active Interventions

ENACT aims at building a pathway to generate clinical, technological and economic short & long-term impact targeting local and regional stakeholders and create impact by: Developing a state-of-the-art environmental risk score and analyser driven framework and platform to predict, monitor and prevent the exposomic risk of acute and chronic health conditions of chronic vascular and non-vascular NCDs. This new exposomic risk score and analyser will support (a) patients, (b) health professionals/hospitals, and (c) policy makers; aiming at reducing the human and financial burden of NCDs, considering potential individual vulnerability factors, and reinforcing both a clinical and a policy implementation that enables prevention and disease management for higher quality of life.

SIMAVI role:

- Leading the architecture design
- Leading the development of ENACT Federated Suite of Services where the fully integrated platform with all the tools and services will be delivered
- Leading the development of the citizen app and data dashboard for the different stakeholders (clinicians at PoC, urban planners, cities, regulators)

Health projects - References (2)

iBeChange https://ibechange-website.ecancer.org/

Addressing Psychosocial And Lifestyle Risk Factors To Promote Primary Cancer Prevention: An Integrated Platform To Promote Behavioural Change

iBeChange aims to design, develop, and test the iBeChange platform, a user-focused management system that empowers people to achieve healthy and sustainable behaviors and emotions.

The iBeChange project will go beyond the state of the art of sustainable behavioural change (BC) and emotional management (EM) by combining practice- and evidence-based knowledge coming from clinical psychology and BC theories with the potentialities of adaptive digital technologies and artificial intelligence.

SIMAVI role:

- Design of the **Point of Care** tool
- **Virtual Coach** and personalised interfaces for Data Visualization and User Engagement
- Implementation of the **Behaviour Change Platform**

Health projects - References (3)

CARING NATURE
Sustainable solutions for healthcare

https://caringnature.eu/

ClimAte neutRal INitiatives for GrowiNg heAlTh and care Unmet Requirements

The CARING NATURE aims to develop and test innovative solutions to reduce the impact of the healthcare sector on the environment, without interfering with the safety of patients and operators.

CARING NATURE project's goal is to develop and validate some ***sustainable***, ***health and care-specific*** and ***adoptable*** methodological, organizational and technological solutions focusing on ***buildings***, ***waste***, ***telemedicine***, ***governance framework*** and ***staff engagement*** to achieve an effective, durable and significant impact in the reduction of pollution and GHG emissions of the health and care systems.

SIMAVI role:

- **Knowledge Sharing System** allows healthcare providers to engage in collaborative co-creation activities related to their sustainability overall activities.
- **Hospital Decision Support System** as a user-friendly tool to help the users to reach to the decision faster and with a better view of all associated parameters, knowledge and arguments.

Health projects - References (4)

https://stratif-ai.eu/en

Continuous stratification for improved prevention, treatment, and rehabilitation of stroke patients using digital twins and AI

STRATIF-AI for the first time will use DT cutting-edge technology to connect a series of apps that together covers an entire patient journey. Using 6 new clinical studies, involving 8 new partner hospitals, we will both refine and validate the models, and demonstrate how the same digital twin can follow a patient across different apps, covering all phases of stroke: from prevention, to acute treatment, and rehabilitation. Our scalable platform for continuous stratification forms the foundation for a new interconnected and patient-centric healthcare system.

SIMAVI role:

- STRATIF-AI platform development and hybrid modeling
- Application for physical rehabilitation
- UX design and data harmonization & interoperability
- Pilot deployment and implementation at Emergency Hospital "Bagdasar-Arseni" (Bucharest, Romania)

The project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101080875

Health projects - References (5)



https://deephealth-project.eu

Deep-Learning and HPC to Boost Biomedical Applications for Health

The aim of ***Deep*Health** is to offer a **unified framework** that envisions to tackle **real needs of the health sector and facilitate the daily work of medical personnel** and **the expert users** in terms of **image processing** and the use and **training of predictive models** without the need of combining numerous tools by exploiting:

- ✓ ***Underlaying heterogeneous HPC and Big Data architectures; and***
- ✓ ***State-of-the-art techniques in Deep Learning and Computer Vision.***

SIMAVI role:

- DeepHealth Toolkit (DHt) front-end
- Validation of DeepHealth concept
- Pilot deployment and implementation at Clinic Hospital Prof. Dr. Theodor Burghele (Bucuresti, Romania)

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825111

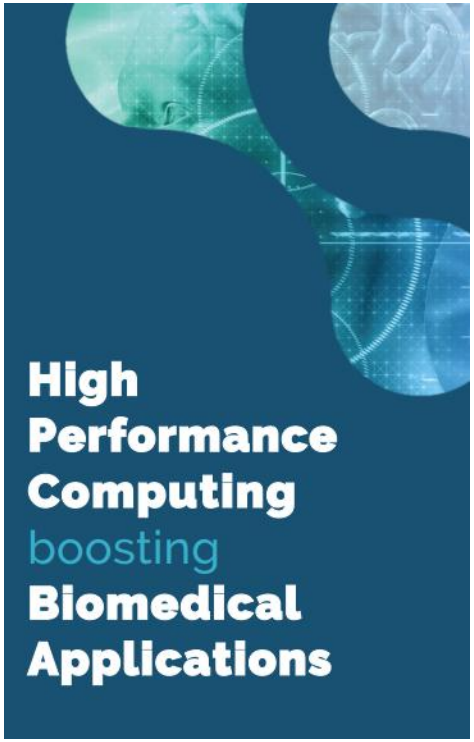
Health projects - References (5)

DeepHealth Toolkit (DHt) front-end & Validation of DeepHealth concept

- **DeepHealth Toolkit (DHt) front-end** for facilitating the use of the functionalities provided by the core technology libraries:
  - ✓ *European Distributed Deep Learning Library (EDDLL)*
  - ✓ *European Computer Vision Library (ECVL)*

  The front-end includes the executable programs for designing, training and testing predictive models for image processing, and has a graphical user interface via web. Is used to import the model (raw and metadata) to manage the model training sessions and to assess results.

- Monitoring the **DeepHealth validation process** covering all use cases and application platforms used within the project.



The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825111

Health projects - References (6)

MES-CoBraD

https://mes-cobrad.eu/

Multidisciplinary Expert System for the Assessment & Management of Complex Brain Disorders

The **M**ultidisciplinary **E**xpert **S**ystem for the Assessment & Management of **Co**mplex **Bra**in **D**isorders (**MES-CoBraD**) project aims at **improving diagnostic accuracy and therapeutic outcomes** in people with **Complex Brain Disorders (CoBraD)**, as reflected in the **Neurocognitive (Dementia), Sleep, and Seizure (Epilepsy) disorders and their interdependences through Real-World Data (RWD)** from multiple clinical and consumer sources through comprehensive, cost-efficient, and fast protocols.

SIMAVI role:

- MES-CoBraD architecture & requirements
- Integrated MES-CoBraD platform

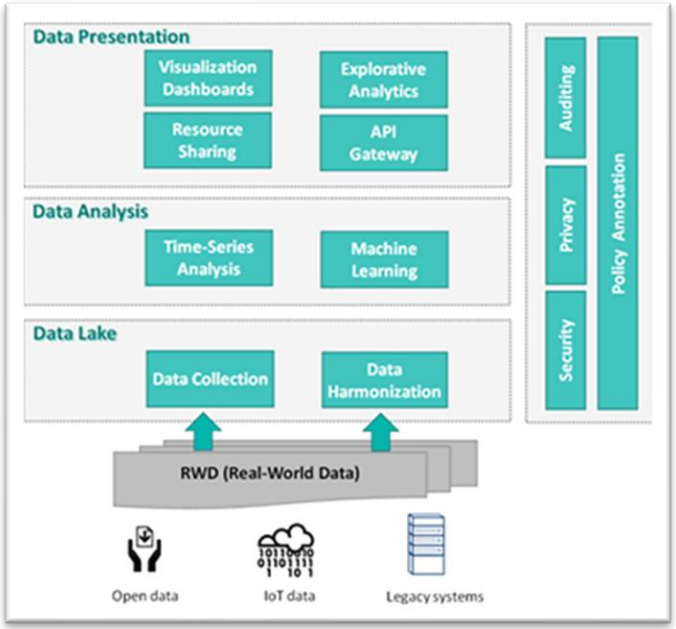
The project has received funding from the European Union's Horizon 2021 research and innovation programme under grant agreement No 965422

Health projects - References (6)

MES-CoBraD platform

The **MES-CoBraD Platform** will leverage upon:

- ✓ **Open standards and protocols and open-specification components**
- ✓ Definition of a **common and standard-based data framework** for ensuring interoperable, secure and privacy-preserving access to the heterogeneous data collected and smooth API-based data exchange with external systems
- ✓ Easily **configurable and customizable dashboards**
- ✓ **Preconfigured exploratory data analytics** to facilitate even non-tech-savvy stakeholders in easily, with no effort, extracting value from the collected data
- ✓ **machine learning** and **time-series analysis**



The project has received funding from the European Union's Horizon 2021 research and innovation programme under grant agreement No 965422

Health projects - References (7)

https://sphinx-project.eu

An Universal Cyber Security Toolkit for health-care industry

SPHINX aims to introduce a health tailored Universal Cyber Security Toolkit, thus enhancing the cyber protection of the Health and Care IT Ecosystem and ensuring patients' data privacy and integrity.

The project will also provide an automated zero-touch device and service verification toolkit that will be **easily adapted** or **embedded on existing, medical, clinical or health available infrastructures.**

SIMAVI role:

- Cross-layer anomaly detection framework
- Interactive Dashboards
- Training Activities
- Pilot deployment at Polaris Medical Hospital (Cluj, Romania)

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826183

Health projects - References (7)

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SPHINX

Cross-layer Anomaly Detection Framework

- **Data Traffic Monitoring (DTM) component is responsible for threat identification by monitoring the network traffic and applying signature-based detection analysis.**
  - ✓ *capturing traffic from multiple protocols;*
  - ✓ *analyzing packets and files in different formats;*
  - ✓ *identifying traffic information for every user and source;*
  - ✓ *highlighting unusual communication/activity according to the rules and filters defined;*
  - ✓ *identifying new assets on the network.*
- **Anomaly Detection (AD) component analyses network activity by using the following types of algorithms:**
  - ✓ *k-means-clustering algorithm for analyzing HTTP and DNS traffic*
  - ✓ *Statistical algorithms for issues like Alien accessing too many hosts, P2P communication, Media streaming client, C&C BotNet communication*

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826183

Health projects - References (7)

Interactive Dashboards

Interactive Dashboards (ID) is a component that centralizes and converts data (web traffic, alerts) obtained from all the SPHINX components in different types of graphical representations (tables, graphs, diagrams and custom plugins) to offer IT staff a faster and more compact interpretation of the network system.



- ✓ *Allows the users to see at a glance the status of the IT system*
- ✓ *Offers quick investigation and suggestions for problems in the IT system*
- ✓ *Contains data converted into interactive graphs*
- ✓ *Centralizes alerts from other components*
- ✓ *It is customizable (users can select, create or edit their own graphs and dashboards)*

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826183

Cybersecurity & Security

Solutions & Experience

Security Infrastructures and Frameworks

- ✓ Real-time Early Detection and Alerting Framework for Operation Control Systems
- ✓ Operational Cybersecurity Risk Management Platform
- ✓ Big Data Integration Platform with real-time alerts
- ✓ Physical threat response Optimization (PTRO) tool
- ✓ Data Fusion Tool for multi-source comprehensive data view
- ✓ Analytics for real-time border event alerts

Data Acquisition, Analysis, and Visualization

- ✓ Social Media Data Acquisition Engine
- ✓ Multimedia Analysis for Crime prevention and Investigation
- ✓ Mobile apps monitoring or for on Field Guidance
- ✓ AI/ML-powered Prediction & Visual Intelligence
- ✓ Stream data collector
- ✓ Biometric data integration & analysis

Training and Skill Development

- ✓ XR Training dedicated to LEAs, First Responders and Cybersecurity experts

REFERENCES

Click on Projects

ODYSSEUS [Coordinator SIMAVI]

MARCONNECT [Coordinator SIMAVI]

TeamaWare [Coordinator SIMAVI]

BORDER UAS [Coordinator SIMAVI]

VIGIMARE

SECUR EU

REDALERT [Coordinator SIMAVI]

CUSTOM|AI

CONNECTOR

CC-DRIVER

PANTHEON

SIMARGL

SPEECHXRays

ECHO

S&R

MAGNETO

SECANT

PREVISION

ISOLA

CONNEXIONS

IMPETUS

SMILE

ENSURESEC

CREST

SPIRIT

METICOS

Energy efficiency & Mobility

Solutions & Experience

✓ IoT Platform development & Data integration from IoT sensors

✓ EIIS (Energy Integrated Information System) application

✓ Predictive Analytics Tool to anticipate downtime, failure, critical events

✓ Software Architecture for small and medium distribution system operators (DSOs)

✓ Integrated Smart GRID Cross-Functional Solutions

✓ Cybersecurity domain solutions (vulnerability assessment, threat detection, risk mitigation):

- Heatmaps to represent vulnerable components or malware/intrusion activity
- Dashboard and Attack Graphs displaying how an intruder can traverse a network of nodes through vulnerabilities
- Dark Web Monitoring tool (MT) for potential threats
- SIEM (System Information Event Management) for collecting and analyzing security event data

REFERENCES

Click on Projects

ENERGY SHIELD

[Coordinator SIMAVI]

FlexiGrid

inteGRIDy

CyberSEAS

DEM4PED

iDRIVING

INTERPED

eLearning & eTraining

Solutions & Experience

- ✓ Augmented cultural heritage inclusion and accessibility
- ✓ **One-stop-shop** and open marketplace for **XR applications** as support for learning, training and education
- ✓ Context-Aware **AR content** for combining digital information with the physical world
- ✓ **Authoring Tools** to create, design, and produce digital content
- ✓ Interactive & **Educational games** development
- ✓ Complex **Virtual Laboratories** with 3D immersive
- ✓ eLearning platform dedicated to Training & Awareness
- ✓ Single API interface to interact with **different VR devices**
- ✓ Deployment across **multiple mobile and wearable AR/VR devices**

REFERENCES

Click on Projects

SHIFT

[Coordinator SIMAVI]

XR4ED

HECOF

PALAEMON

S&R

beaconing

newton

3D Pathology

ISOLA

SPIRIT

LAW-GAME

eLearning & eTraining

Software Imagination & Vision

Complete portfolio of digital solutions for learning and development, providing our clients with a wide spectrum of solutions, from traditional to cutting edge.

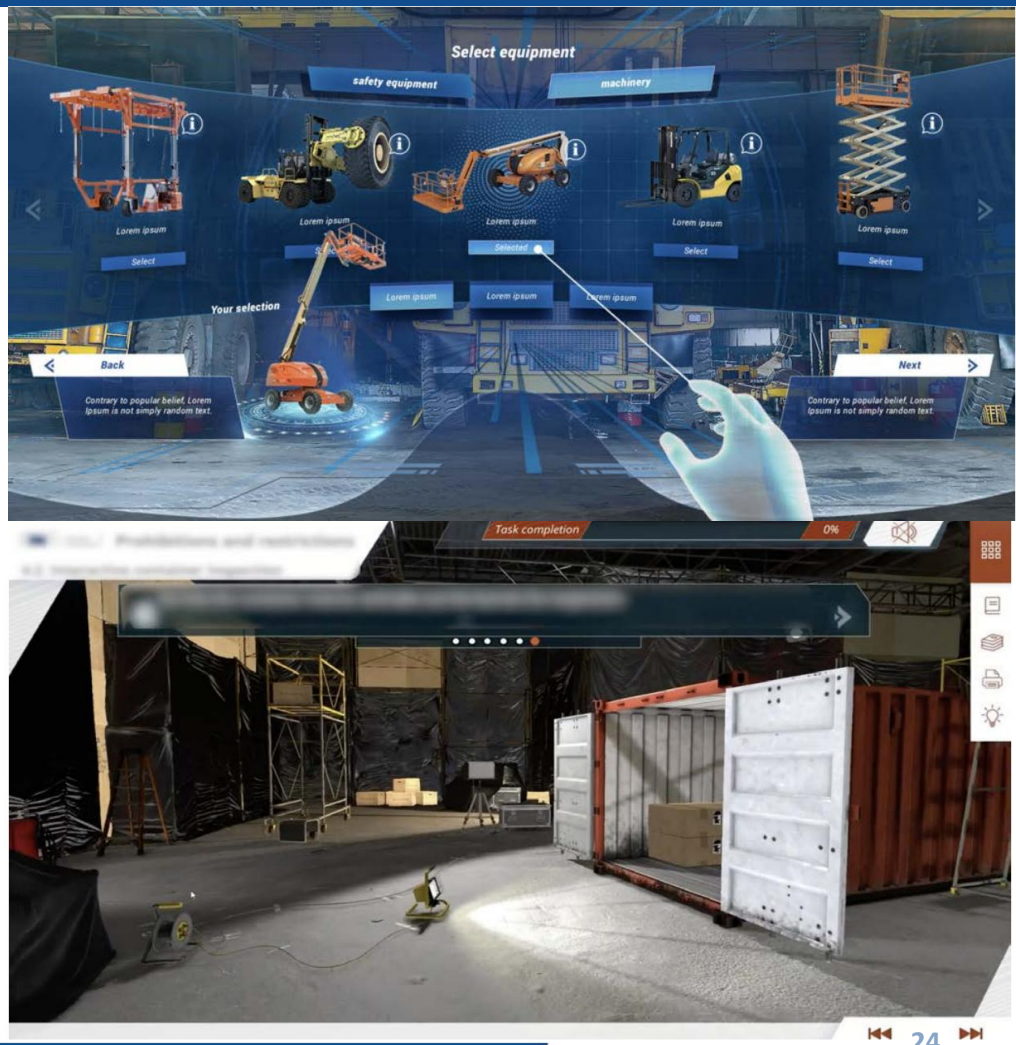
eLearning Courses
We create online courses, 30 to 90 minutes long, that can deliver the required knowledge and skills on any topic

Microlearning
Designed for on-demand learning, microlearning videos are designed to provide employees with support at the point of need

Video Learning
Designed to engage any learner, video courses are the most efficient way to deliver knowledge to the target audience

LMS
We provide installations and customizations of open-source Learning Management Systems, such as Moodle or Totara.

Consultancy
We provide extended consultancy on learning and development, from L&D strategy, analysis, impact or creating competency frameworks



eLearning & eTraining

Software Imagination & Vision

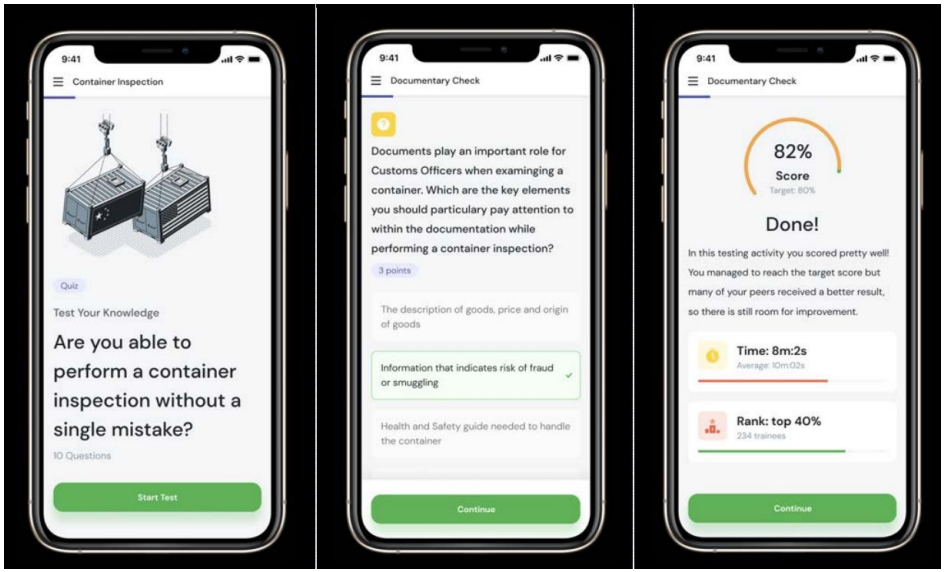
Mobile Learning

We create mobile learning applications designed to support learners with knowledge support at the point of need

AR/VR

We create customized Augmented Reality/ Virtual Reality applications that can emulate any technical environment for training







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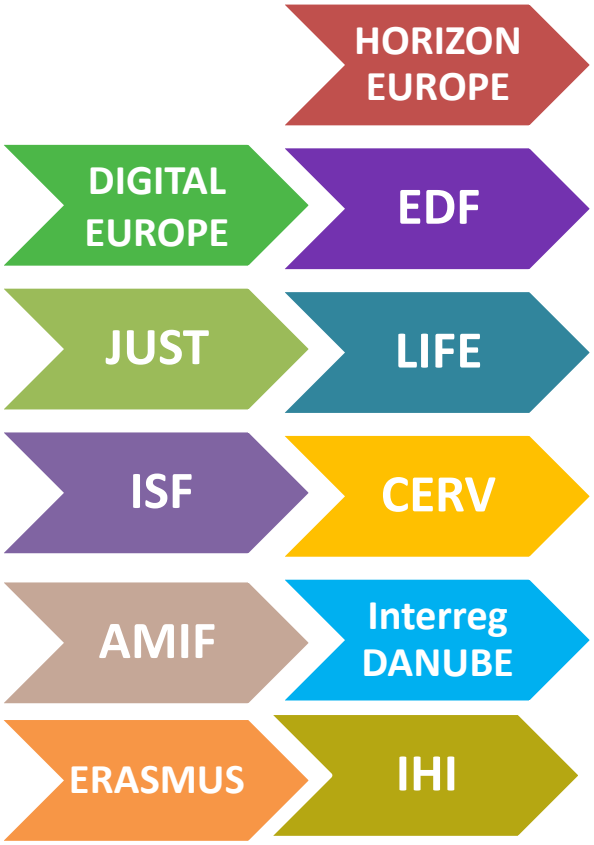
EU R&D Programs of interest



HORIZON EUROPE

- **CL 1. Health**
- **CL 2. Culture, Creativity and Inclusive Society**
- **CL 3. Civil Security for Society**
- **CL 4. Digital, Industry and Space**
- **CL 5. Climate, Energy and Mobility**
- **CL 6. Food, Bioeconomy, Natural Resources, Agriculture and Environment**

SIMAVI
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European Affiliations

AIOTI
Alliance for Internet of Things Innovation

bridge HORIZON 2020

BDV BIG DATA VALUE ASSOCIATION

DUC

MSP
MAGURELE SCIENCE PARK

CyberEPES Cluster

HL7 Europe

PATROMIL

Romanian Employers' Association of Military Equipment Manufacturers

Romanian Cluster PROECO - CBRNE

Thank you!

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https://simavi.ro/en/rd-projects

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