

Testing and Experimentation Facility for Health AI and Robotics

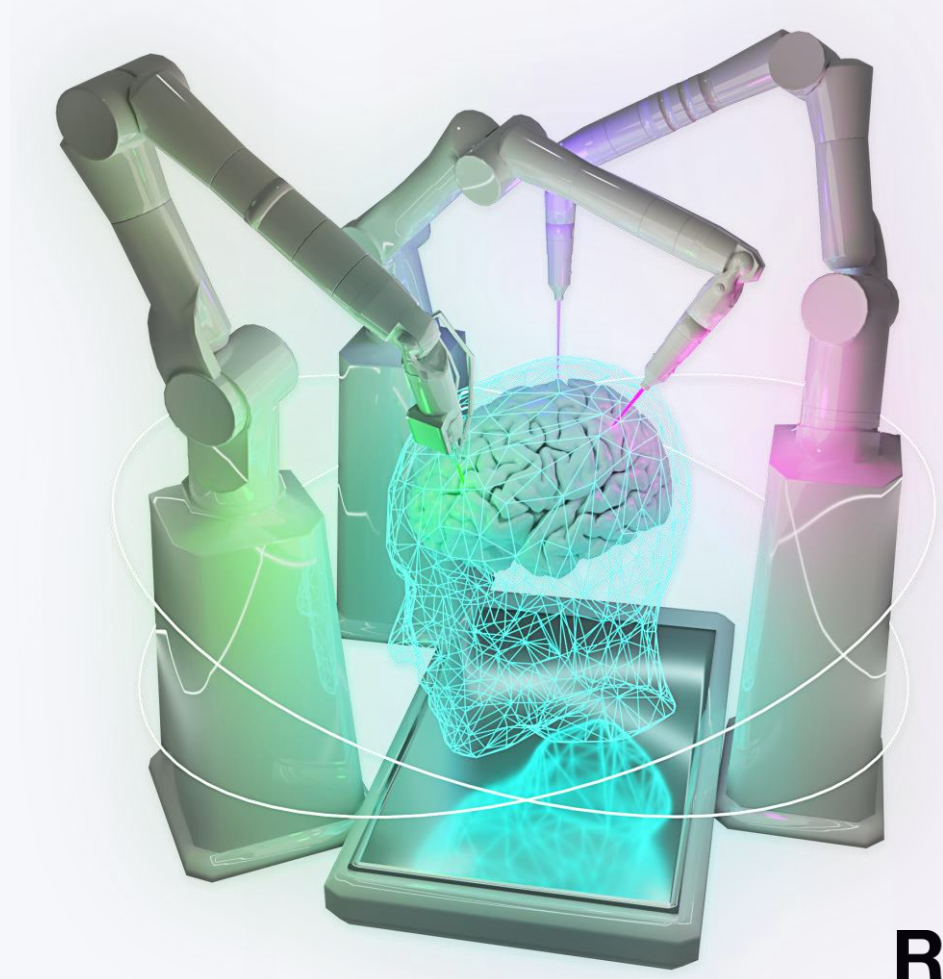
Alireza Salehi PhD.

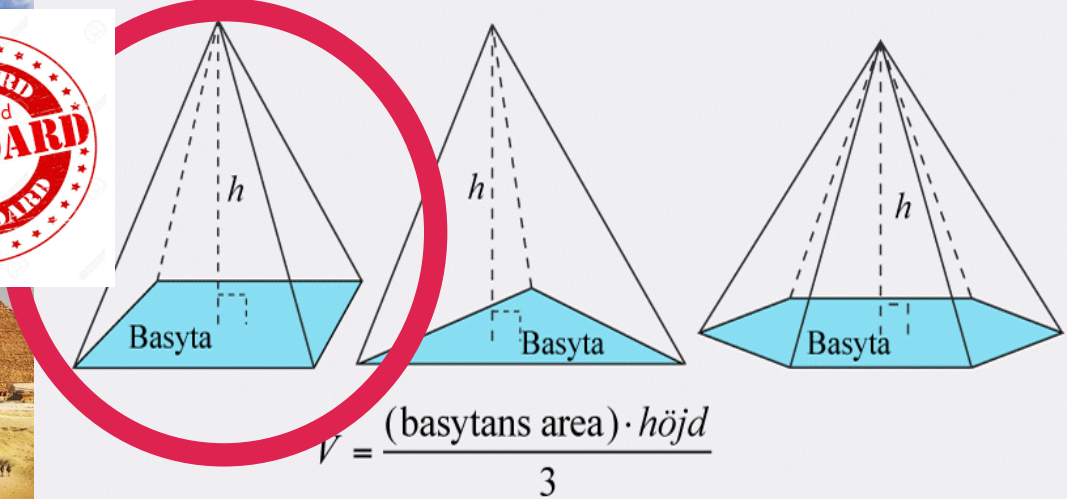
Senior Forskare

Research Institutes of Sweden (RISE),

Digital hälsa - Stockholm

2023-05-25





(cirka 2680-2150 f.Kr.)
cirka 5000 år sedan



2021- "2023"-framtiden



REF:

eddlar : <https://eddlar.se/lektioner/pyramid/>

LIVESCINCE: <https://www.livescience.com/22621-pyramids-giza-sphinx.html>

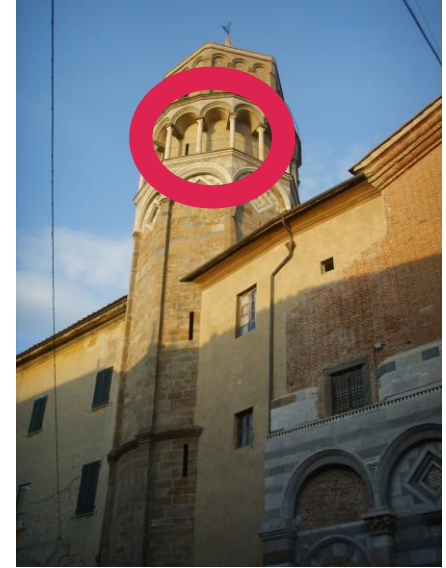
Schoolshistory.org.uk: <https://schoolshistory.org.uk/topics/medicine-through-time/ancient-egyptian-medicine/surgery-in-ancient-egypt/>

Lutande tornet i Pisa, Italien



Andra halvan av 1300-talet
Designades av *Diotisalvi*
Vad är standard?

Belltower of St.Nicholas



Designades av
Diotisalvi





En känd bågbro är Pont du gard i Frankrike.
Ref: Arch bridge, Nästa 2000 år gammal



Detta är en annan känd bågbro. Det är akvedukten i Segovia som ligger i Spanien, norr om Madrid
Ref: Arch bridge Segoviaakvedukten är det största romerska byggnadsverket i Spanien. Nästa 2000 år gammal



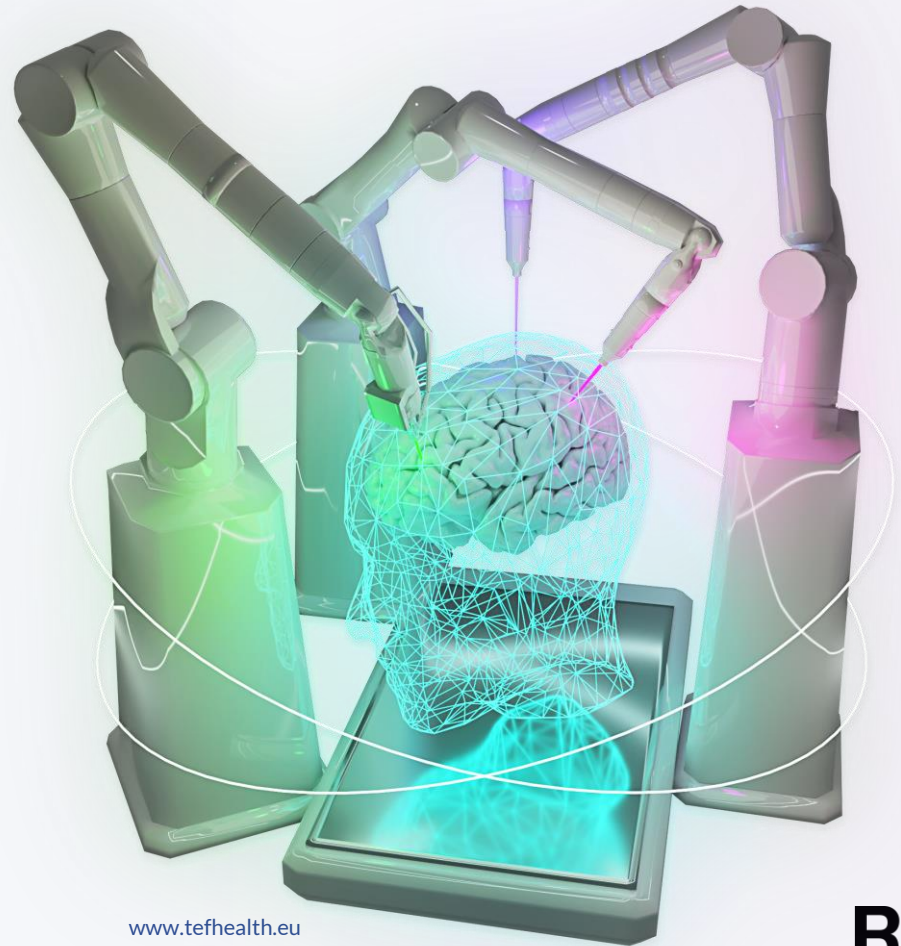
Kvarnholmsbron
i Nacka kommun, invigd 1924



Bågbro Västberga allébro i södra Stockholm. Bågar av stål med spännvidd 105 m, invigd 2017.

TEF-Health

Testing and Experimentation
Facility
for Health AI and Robotics



www.tefhealth.eu

European Competence Network at the Service of Innovators

Germany

- Charité University Medicine Berlin / Berlin Institute of Health
- TÜV Süd
- Fraunhofer Heinrich Hertz Institute
- National Metrology Institute / Physikalisch Technische Bundesanstalt (PTB)
- Berlin Partner for Economy and Technology GmbH
- KIPark e.V.
- TUM Robotics
- University Bonn
- University Erlangen

Sweden

- Karolinska Institute & Karolinska University Hospital (in vivo imaging facilities, multimodal imaging data)
- SciLifeLab (Science of Life Laboratory)
- infrastructure & data driven Life Science program
- RISE (Research Institutes of Sweden)

Italy

- University Pavia
- Politecnico di Milano
- Italian National Institute of Health
- RINA

Finland

- City of Helsinki
- Metropolia University
- Helsinki University Hospital
- Forum Virium Helsinki

Austria

- Medical University Vienna
- Technicum Vienna
- Austrian Institute of Technology
- Austrian Institute of Technology

Czechia

- Masrykova univerzita BRNO

EU

- EIT Health
 - Germany
 - France
 - Portugal
- EBRAINS AISBL
- EHDP2

France

- Laboratoire National De Métrologie Et D'Essais
- Clinatex facility @CEA
- CHU Grenoble Alpes Hospices Civils De Lyon
- IHU Strasbourg

Belgium

- CHU Charleroi / CHU Mont-Godinne / CHU Liège
- Multitel
- CETIC
- CRIDS
- Medtech Walloni
- Trusted AI Labs (TRAIL)
- EBRAINS AISBL

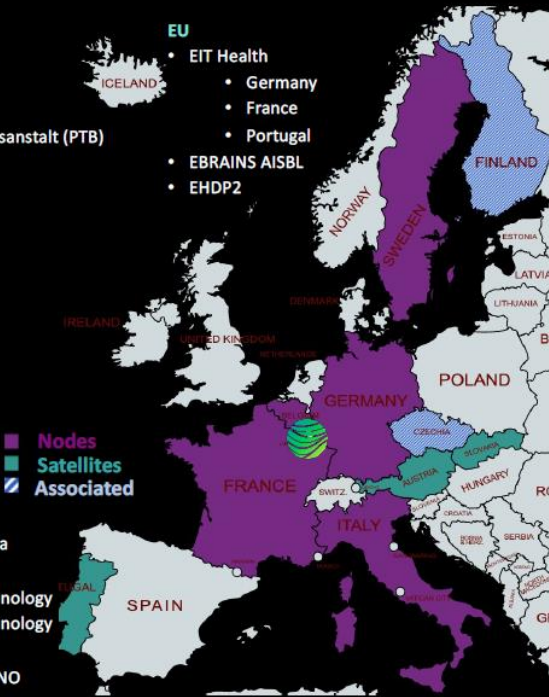
Portugal

- Instituto Pedro Nunes
- Health Cluster Portugal
- Centro Hospitalar e Universitário de Coimbra
- Centro Hospitalar de Sao Joao
- Caritas Diocesana de Coimbra
- Serviços Partilhados do Ministério da Saude

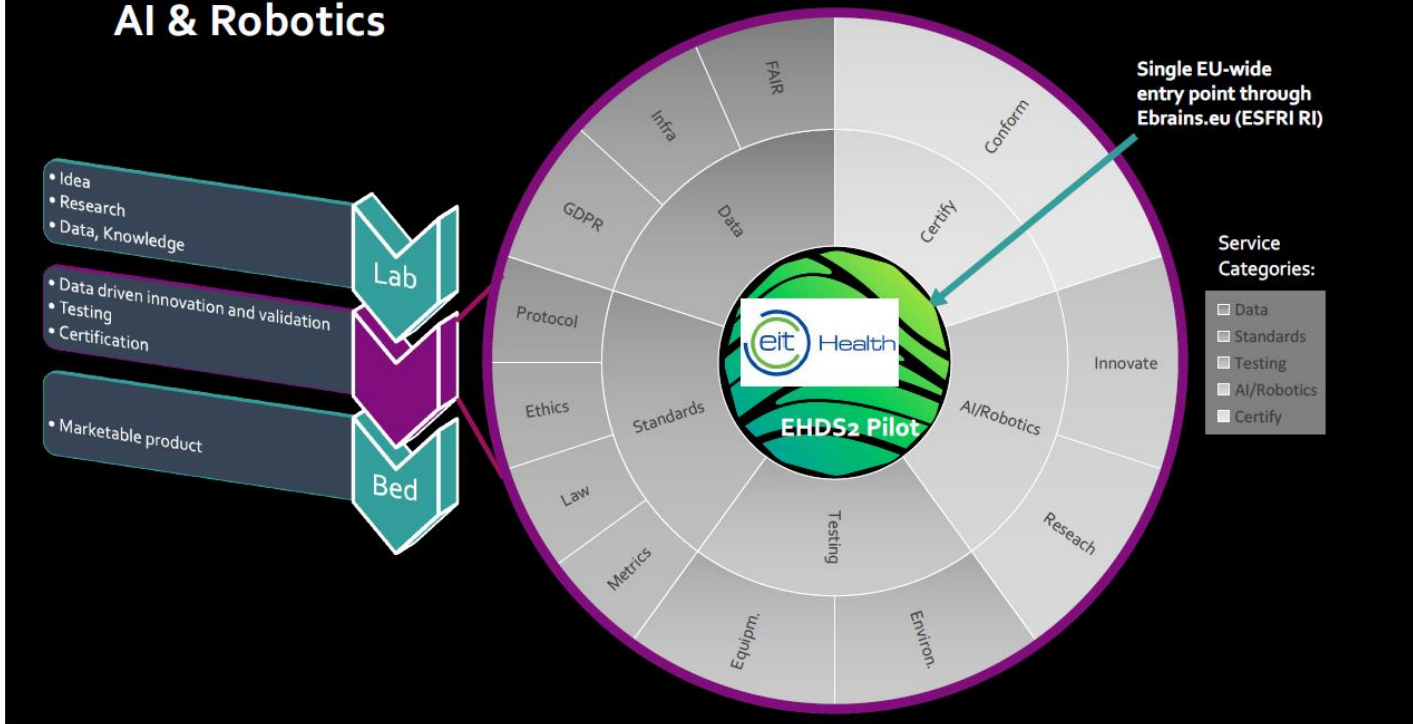
Slovakia

- University Hospital Martin
- University of Zilina
- Jessenius Faculty of Medicine

Contact: petra.ritter@charite.de

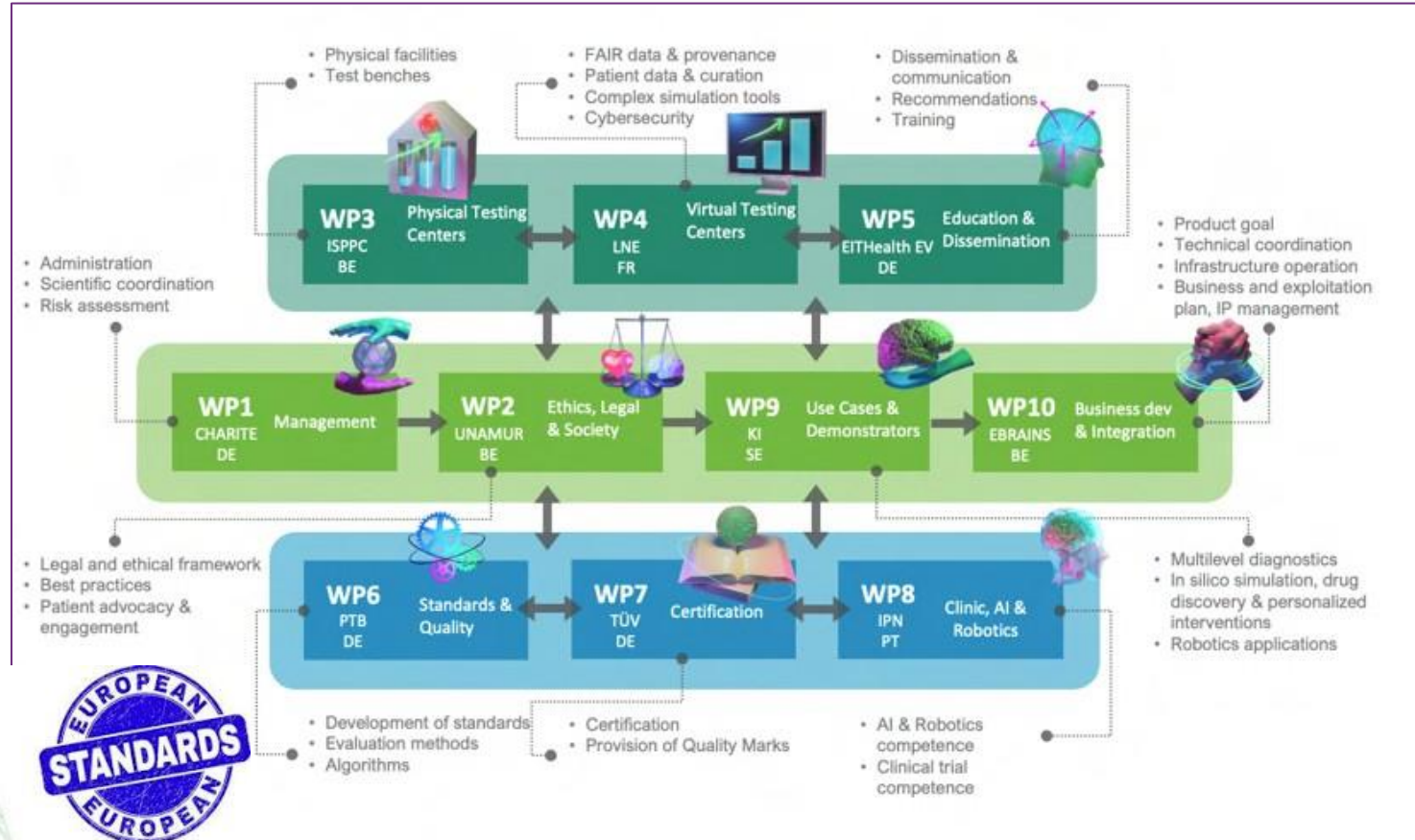


Action: Closing the Gap in the Innovation Chain for Health-AI & Robotics



Work plan

Genomförande 2023-2027



The Swedish TEF-health node

“We make unique imaging and omics infrastructures, data, clinical expertise, and AI-expertise available to SME:s in the life-science domain



Node lead:
Karolinska Institutet
Daniel Lundqvist,
daniel.lundqvist@ki.se



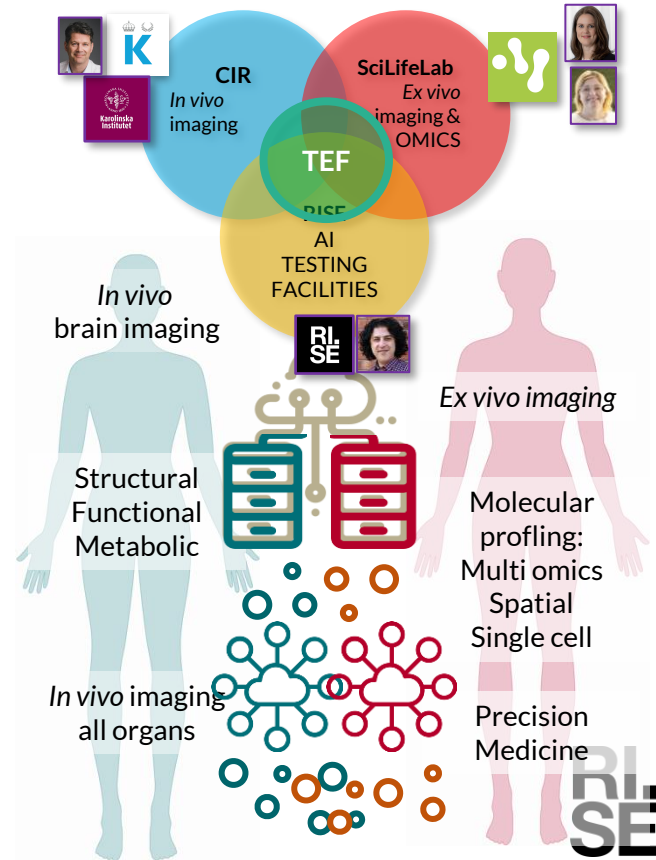
SciLifeLab
Sandra Falck
Sandra.falck@scilifelab.se



SciLifeLab
Päivi Östling
Paivi.ostling@scilifelab.se



RISE
Alireza Salehi
alireza.salehi@ri.se





Karolinska Institute (node lead): & Karolinska University Hospital

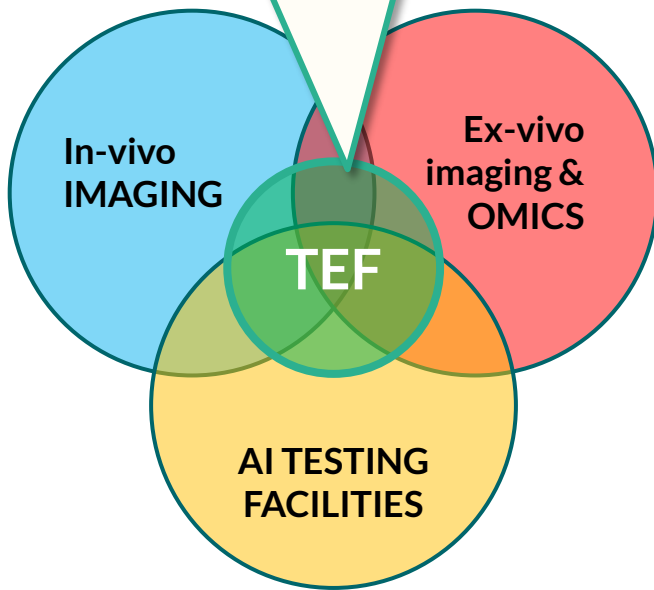
CIR Center for Imaging Research

In vivo imaging facilities, multimodal and multispecies imaging



RISE (Research Institutes of Sweden) – National testbed facilities, expertise in AI innovation, product development

Imaging and omics, data clinical expertise, infrastructure for precision medicine research



SciLifeLab (Science fo Life Laboratory)

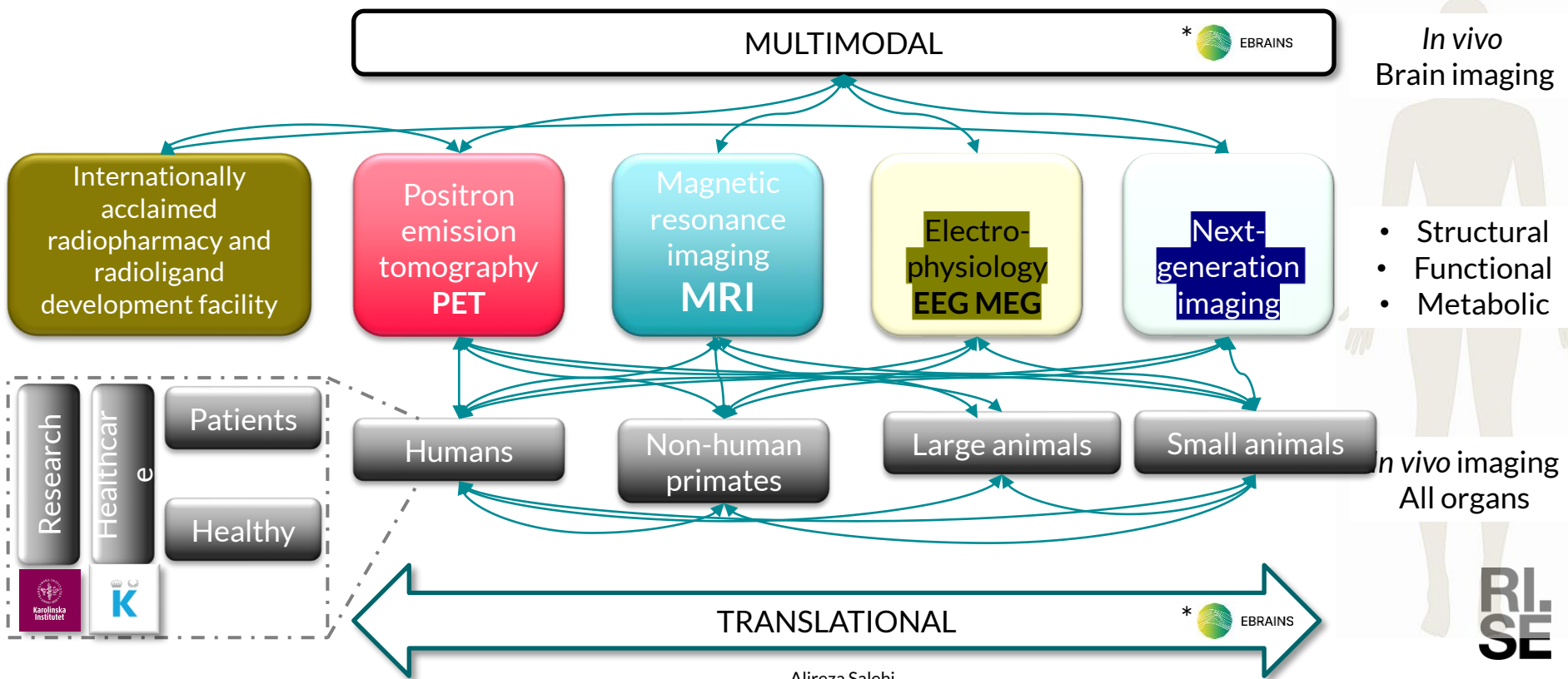
National omics tech infrastructure & data driven Life Science program





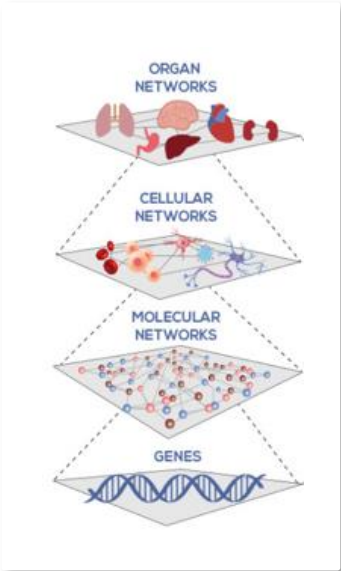
CIR – Centre for Imaging Research

Karolinska Institute & Karolinska University Hospital

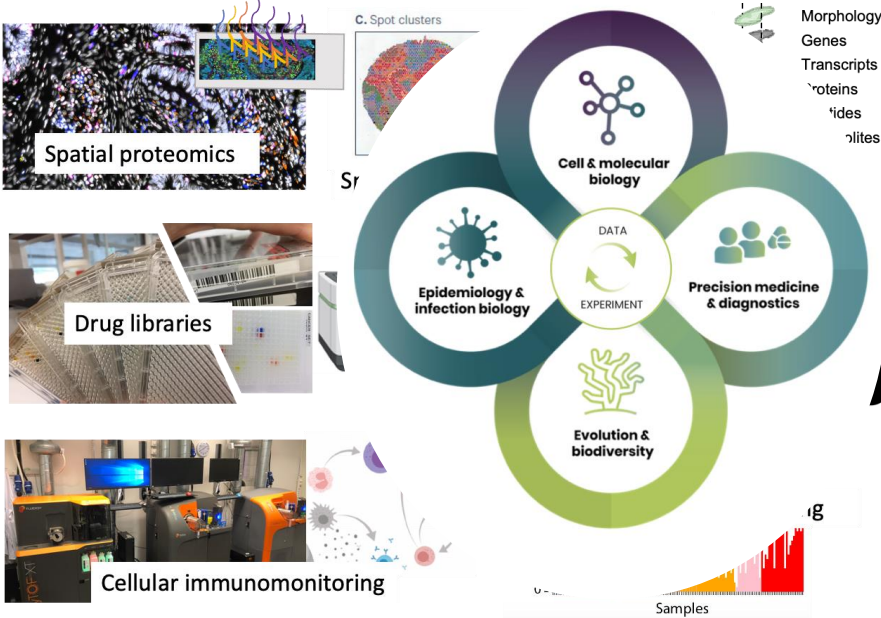


National technology infrastructure & Data Driven Life Science program

10 technology platforms



BIOINFORMATICS	GENOMICS
CLINICAL GENOMICS	CLINICAL PROTEOMICS & IMMUNOLOGY
METABOLOMICS	SPATIAL & SINGLE CELL BIOLOGY
CELLULAR & MOLECULAR IMAGING	INTEGRATED STRUCTURAL BIOLOGY
CHEMICAL BIOLOGY & GENOME ENGINEERING	DRUG DISCOVERY & DEVELOPMENT



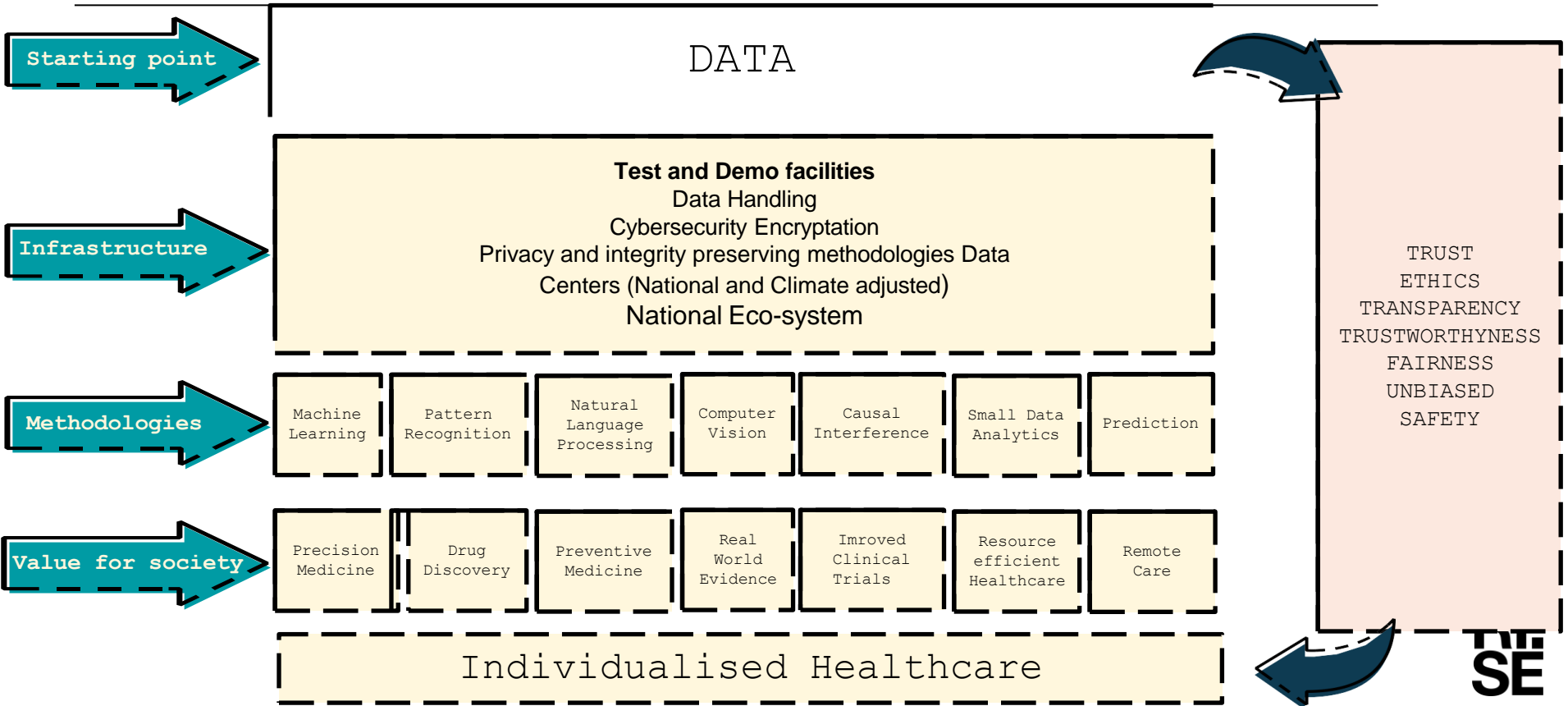
Next generation precision medicine technologies





RISE (Research Institutes of Sweden)

– national testbed facilities, expertise in AI innovation, product development





Data and Algorithms

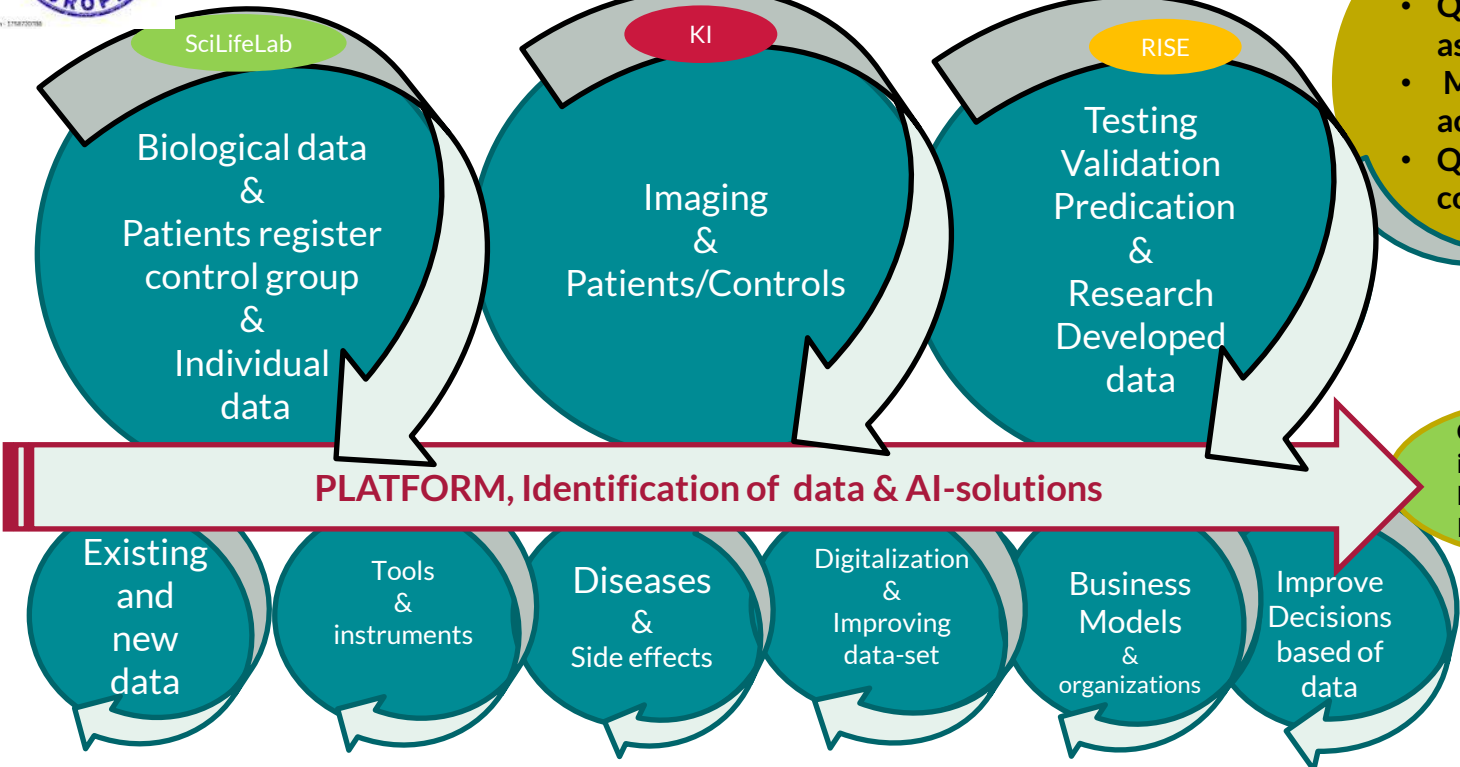
Input & output information

Prevention strategy & AI based solutions

"Kvalitetssäkring
Marknadstillträde"

By RISE
ISO 17025

- Quality assurance
- Market access
- Quality control



Concrete implementation
Relevance
Impact

Network analysis applied to large amounts of data of different nature (e.g., different biological parameters, medical imaging, information of patients register, lifestyle factors, Business models etc.)



Based on our ongoing survey, SMEs are mainly looking for the following services:

Product requirements validation

- Clinical strategy
- Adoption hurdles
- Technical requirement
- Intended use
- Competitive landscape
- Regulatory affairs pathway

Health technology assessment

- Willingness and ability to pay for product
- Current clinical practice process mapping
- Reimbursement strategy & assistance in design of clinical program to support reimbursement goals
- Hypotheses of value based outcome with input from key opinion leaders

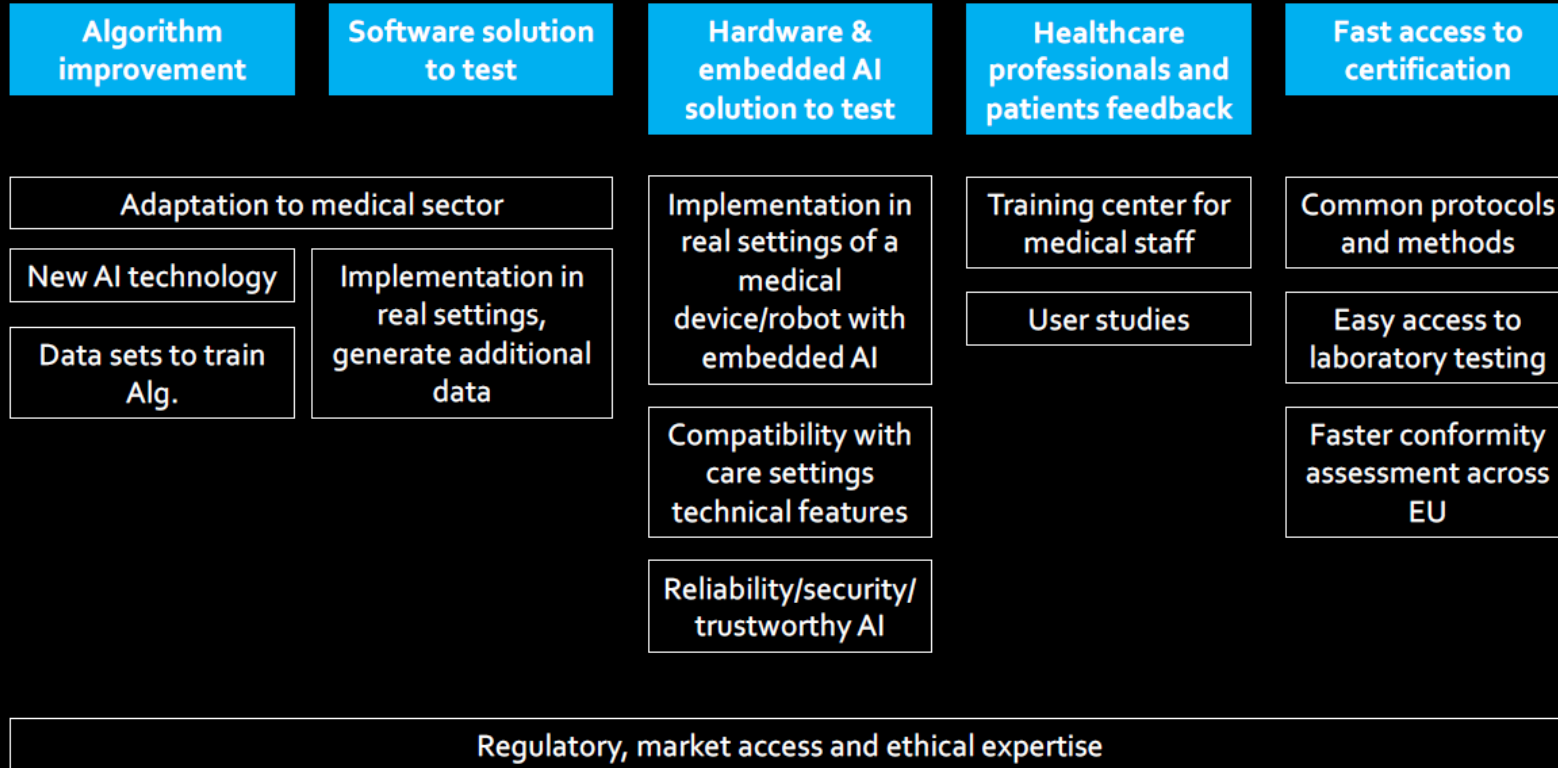
Development and design review

- Design Reviews supported by Key Opinion Leaders & Clinicians
- Evaluate prototypes
- Determine if user needs are fulfilled

Product verification and certification

- Ensure the HW/SW design execute on the design concept
- Clinical evaluation of prototypes
- Clinical trial
- Confirm intended medical benefit
- Functional test
- Integration test
- System Level testing
- IT security testing
- Interoperability experiments and interoperability support services
- Risk analysis
- Demonstrate value based outcome
- Conformity assessment and certification services

Service Offerings



Use Case Domains

- Excellent market potential

Brain Health



Cardiovascular



Cancer

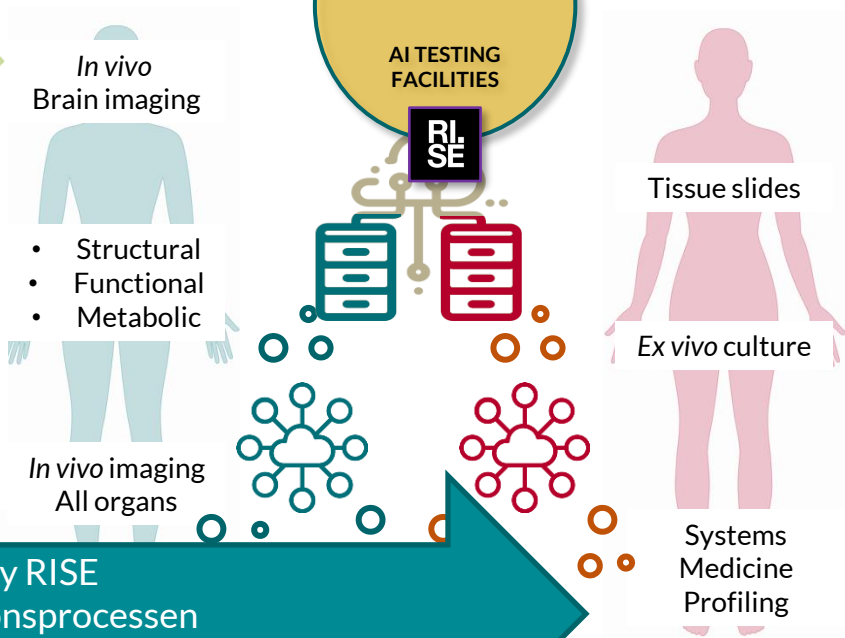
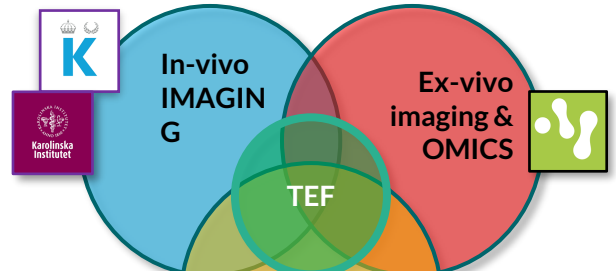


Intensive care



Node goals/deliverables

<p>EHDS Genomics</p> <p>European Health Data Space – Federated European Infrastructure for GENOMICS DATA</p> <p>GDI - Genomics Data Infrastructure</p> <p>Coordinator: ELIXIR</p> <p>Sweden co-leads pilar II and leads WP3 (ELIXIR Sweden = NBIS, SciLifeLab Bioinformatics platform)</p>	<p>EDIH</p> <p>European Digital Innovation Hub</p> <p>EDIH Health Data Sweden</p> <p>Coordinator: KTH</p> <p>National Hub with 3 regions, many stakeholders, SciLifeLab included</p>	<p>EHDS Cancer Imaging</p> <p>European Health Data Space – Federated European Infrastructure for CANCER IMAGING</p> <p>EUCAIM</p> <p>Coordinator: EIBIR (European Institute for Biomedical Imaging Research)</p> <p>Sweden node: Umeå University, Region Västerbotten, UIU (Elixir, BigPicture, B1MG), LIU (BigPicture, AIDA Data Hub SciLifeLab), KI (Breast cancer imaging) + Vinnova associate partner (GDI + B1MG)</p>	<p>TEF Health</p> <p>Testing and Experimentation Facility – HEALTH</p> <p>TEF-Health (Testing and Experimentation Facility for Health AI and Robotics)</p> <p>Coordinator: Petra Ritter, Charité Universitaetsmedizin Berlin</p> <p>Sweden node: KI, SciLifeLab (KI), RISE</p>
--	--	--	--

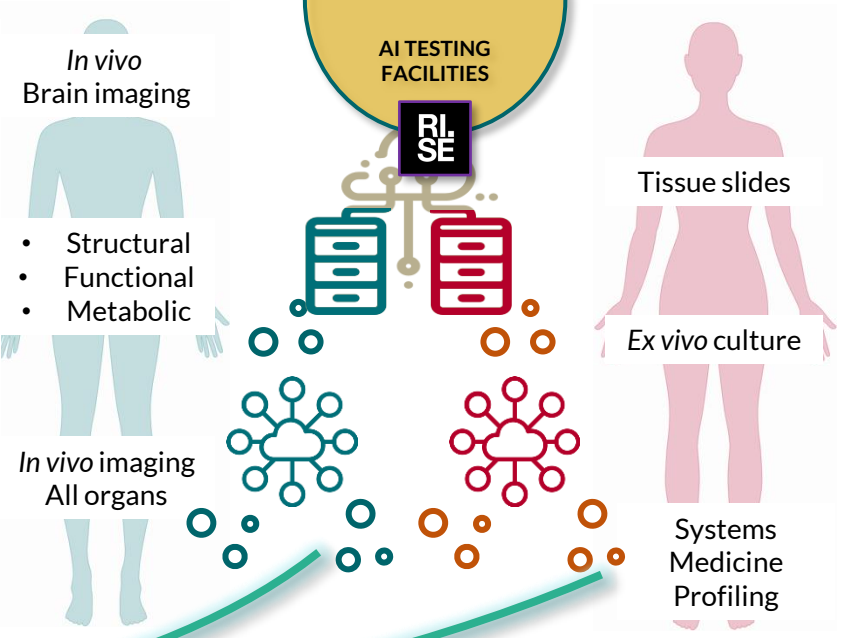
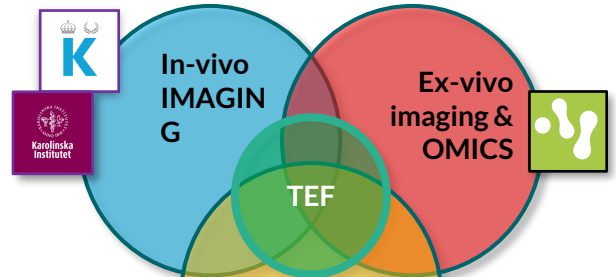


Certification, Verified by RISE
 1-5 år att utveckla certifikationsprocessen
 verifikationsprocessen

Node goals/deliverables



EHDS Genomics	EDIH	EHDS Cancer Imaging	TEF Health
European Health Data Space – Federated European Infrastructure for GENOMICS DATA	European Digital Innovation Hub	European Health Data Space – Federated European Infrastructure for CANCER IMAGING	Testing and Experimentation Facility – HEALTH
GDI - Genomics Data Infrastructure	EDIH Health Data Sweden	EUCAIM	TEF-Health (Testing and Experimentation Facility for Health AI and Robotics)
Coordinator: ELIXIR	Coordinator: KTH	Coordinator: EIBIR (European Institute for Biomedical Imaging Research)	Coordinator: Petra Ritter, Charité Universitaetsmedizin Berlin
Sweden co-leads pillar II and leads WP3 (ELIXIR Sweden = NBIS, SciLifeLab Bioinformatics platform)	National Hub with 3 regions, many stakeholders, SciLifeLab included	Sweden node: Umeå University, Region Västerbotten, UU (Ellixir, BigPicture, BIMG), LIU (BigPicture, AIDA Data Hub SciLifeLab), KI (Breast cancer imaging) + Visnova associate partner (GDI + BIMG)	Sweden node: KI, SciLifeLab (KI), RISE



Tack för uppmärksamheten!



alireza.salehi@ri.se

Ref: Presentation-foto av Okänd författare licensieras enligt [CC BY-ND](#)