



# EATRIS data challenges

e-Infrastructure workshop

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# EATRIS positioning

## **Vision**

Making translation of scientific discoveries into medical products more effective to improve human health and quality of life.

## **Mission**

To support researchers in developing their biomedical discoveries for novel preventive, diagnostic or therapeutic products up to clinical proof of concept.

**Supporting academia, funders, SME & biotech/pharma**

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# Components of the translational path

- Academia
- Research /charities
- SME/biotech
- Pharma

- Nat'l governments
- Regional dev. Funds
- H2020
- Venture capital
- Pharma partnering

**Client projects**

**Funding**

**Infrastructure**

**Expertise**

- GMP manufacturing
- Licenses
- Imaging facilities
- Biobanks
- Clinical trial units
- Patient groups

- Clinicians
- Latest technologies
- Project management
- Regulatory
- Partnering

# EATRIS: archeologists of biomedical research



AREAL SURVEY

DEEP EXCAVATION

# Typical EATRIS IT processes

Secure, multicenter acquisition, processing and sharing of high-quality **clinical data**

Secure & efficient de-identification and sharing of **clinical images**

Secure, multicenter **biosample** logistics

Efficient creation, analysis, and dissemination of **molecular biology data**

**Translational workbench** for integration, browsing & analysis of project data



**Common foundation:** compute services, data storage & archival, ethical & legal procedures, data security/protection, secure data transfer, etc.

# Some aspects are quite typical to EATRIS...

Secure, multicenter acquisition, processing and sharing of high-quality **clinical data**

Secure & efficient de-identification and sharing of **clinical images**

Secure, multicenter **biosample** logistics

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**Common foundation:** compute services, data storage & archival, ethical & legal procedures, data security/protection, secure data transfer, etc.

# ...but also many problems are shared

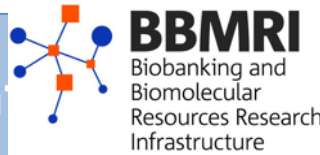
Secure, multicentred processing and sharing of **clinical data**



Secure & efficient and sharing



Secure, multicentred **sample logistics**



Efficient creation, dissemination of **molecular data**



**Common foundation** legal procedures, **storage & archival, ethical & secure data transfer, etc.**



BioMedBridges

**Translational workbench** for integration



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# Specific EATRIS IT challenges

- Secure & efficient multi-center data sharing in compliance with all EU, national, and local regulations (*patient data & ip protection*)
- Harmonization and pooling of heterogeneous data sets created with various local standards (*translational workbench*)
- Maintain and raise data processing quality standards as required for clinical research (*deep excavation view on biomedical data*)
- Social engineering: create a culture of **collaboration** and data sharing between translational scientists
- Give clinical domain experts **direct access** to complex molecular biology results in a meaningful manner

Key words: quality, security, social engineering, data sharing, i.e. professional research IT

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# Generic EATRIS data challenges

- Large data sets: clinical images and DNA, RNA, and protein data sets: **storage** and (secure) transfer issues
- Data processing issues: **compute** for image processing, DNA/ RNA sequencing processing pipelines
- Samples are often quite unique (e.g. tumor samples); data cannot easily be re-generated. Data storage is therefore crucial.
- EATRIS is an European network of collaborating expert centers; data are therefore produced in a very **distributed** manner
- Anticipated **growth** is phenomenal: sequencing will become the method of choice in cancer research (and other domains)
- Data is typically secure, but needs to be accessible to project partners across the continent
  - **Accessible**, but **not open** data