



BBMRI

Biobanking and
Biomolecular
Resources Research
Infrastructure

Biobanking and Biomolecular Resources Research Infrastructure

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Biobanks and Biomolecular Resources

- Most of our current knowledge on diseases as well as available diagnostic assays and drugs are based on systematic investigation of human biological samples and medical data



From „Eigenschaften der Dinge“
Bartholomäus der Engländer 15.Jh



C. Zeiss
1879



HIV Bank
Fraunhofer Saarland



BGI 2009
Shenzhen, China

What Has Changed?

- New medical challenges (ageing population, personalized medicine)

➔ More samples, different genetic backgrounds

- New analytical technologies

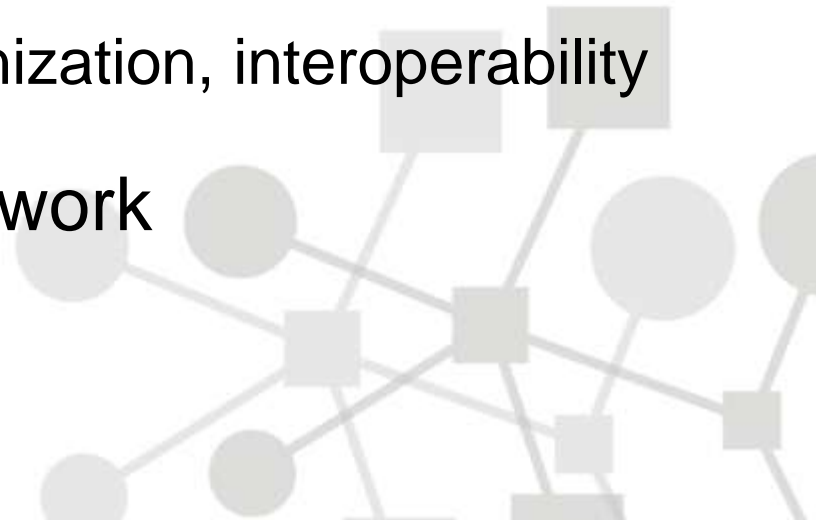
➔ Specific quality requirements

- Need for international collaboration

➔ Standardization, harmonization, interoperability

- Complex regulatory framework

➔ Institutional biobanks

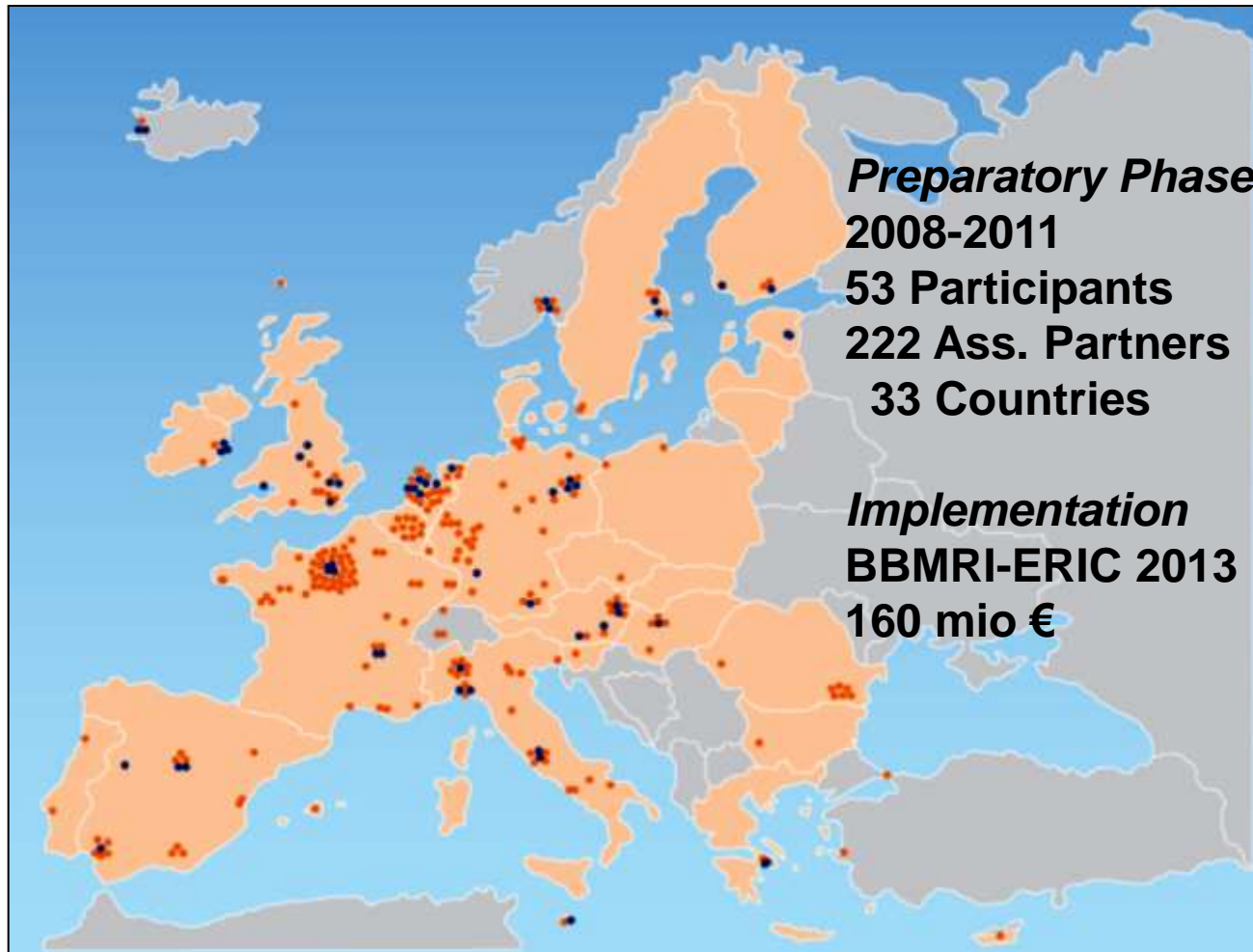


The European Research Infrastructure for Biobanking and Biomolecular Resources

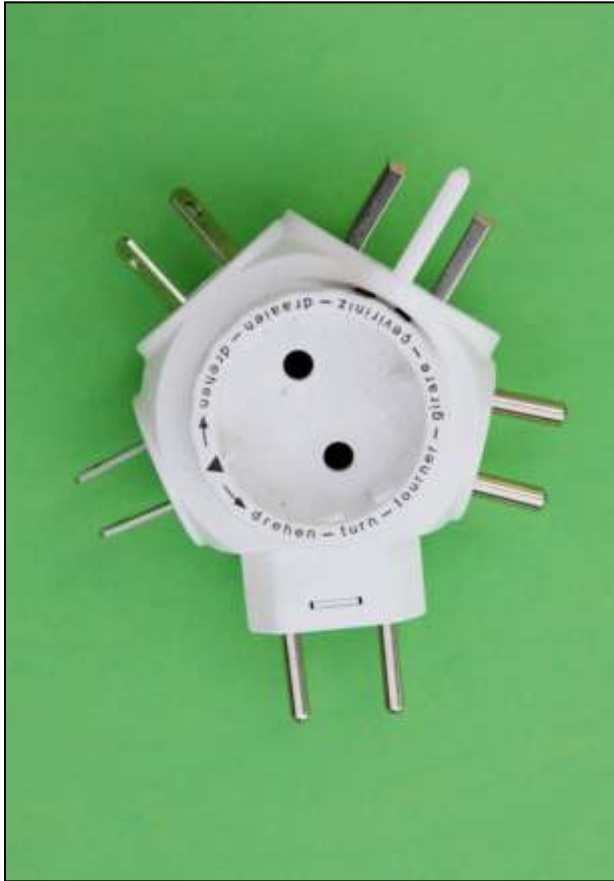
- **Access to high quality human biological samples and associated data**
- **Access to biomolecular resources (antibodies, gene clones, model organisms, pathogens)**
- **Data management infrastructure**
- **Ethical and legal services**
- **Research services**

- **Long-term sustainability**
- **Pan-European implementation**
- **International integration**

BBMRI: A pan-European Infrastructure



The Adaptor Approach of BBMRI to Achieve Interoperability



- Define criteria
 - Which samples and data can be combined?
 - Evidence-based quality indicators
- Develop tools
 - Data exchange
 - Intl. transfer of samples
 - Ethical and legal compliance
 - Interoperability!

Hurdles and Roadblocks for International Collaboration

- Lack of common quality criteria for biological samples and data
- Different languages, developing taxonomies
- Current disease taxonomies are not appropriate for precision medicine
- Heterogeneous ethical and legal frameworks
- Societal issues
 - How to share finite resources
 - Balanced win-win scenarios



Tissue Sample Quality: Pre-analytical Issues



Medication
Surgical procedure
Warm ischemia



Fixation
Fixative
Time



Transport
Temperature
Cold ischemia



Embedding
Temperature



Sample processing
Mech. alteration
Selection+annotation



Diagnosis
Disease codes



Aliquotting



Storage
Time
temperature



Freezing
Freezing rate
Temperature



Sample preparation

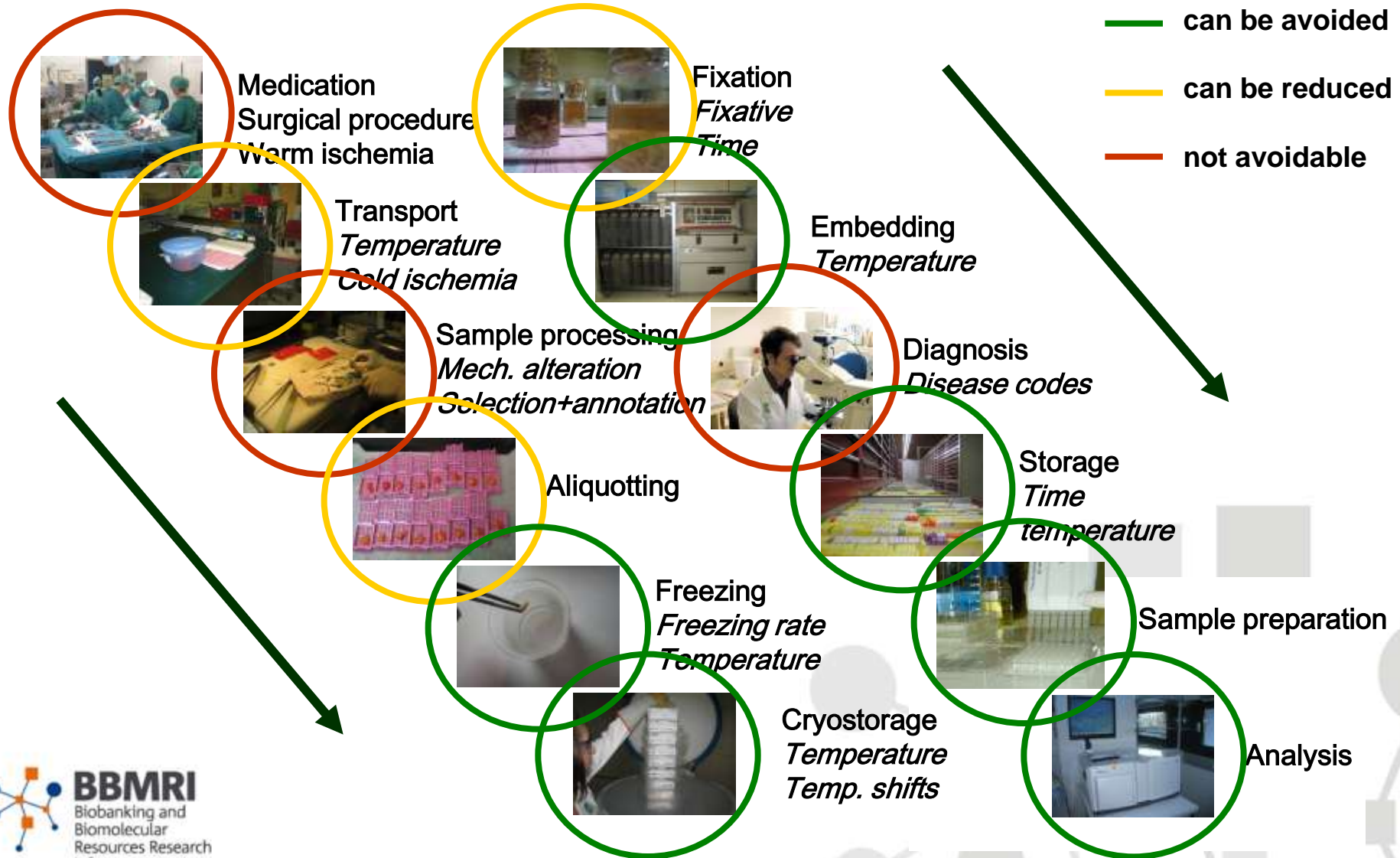


Cryostorage
Temperature
Temp. shifts



Analysis

Sources of Diversity

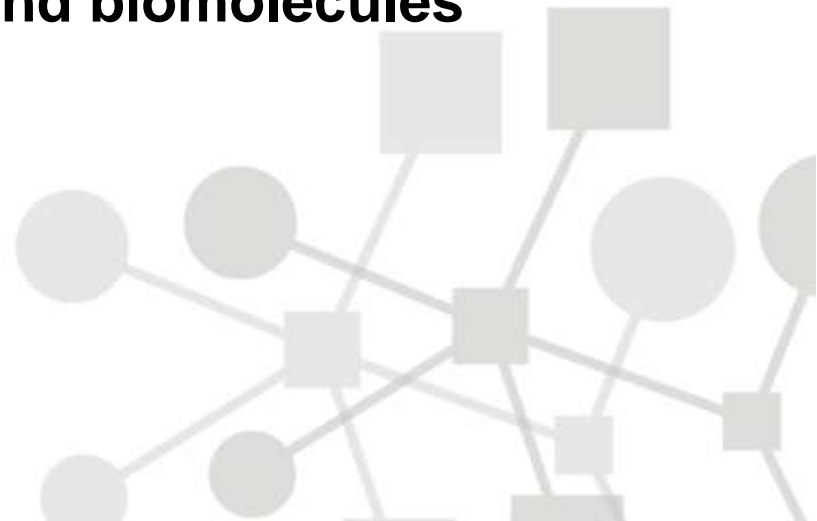


European FP 7 Large Integrated Project

- **Evidence-based European standards and norms for pre-analytics in molecular diagnosis**



Comprehensive investigation of pre-analytical factors impacting on sample quality and biomolecules

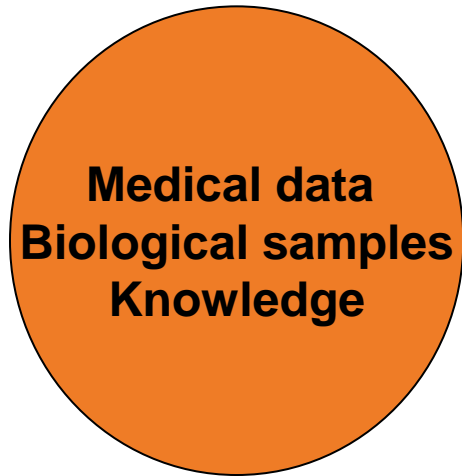


The translation of biological samples into data, knowledge and innovation

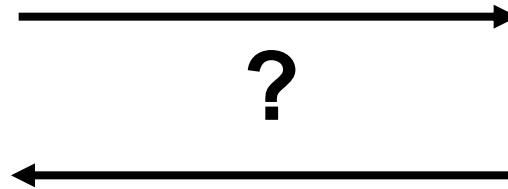


Access for Industry

Common good
(donations)



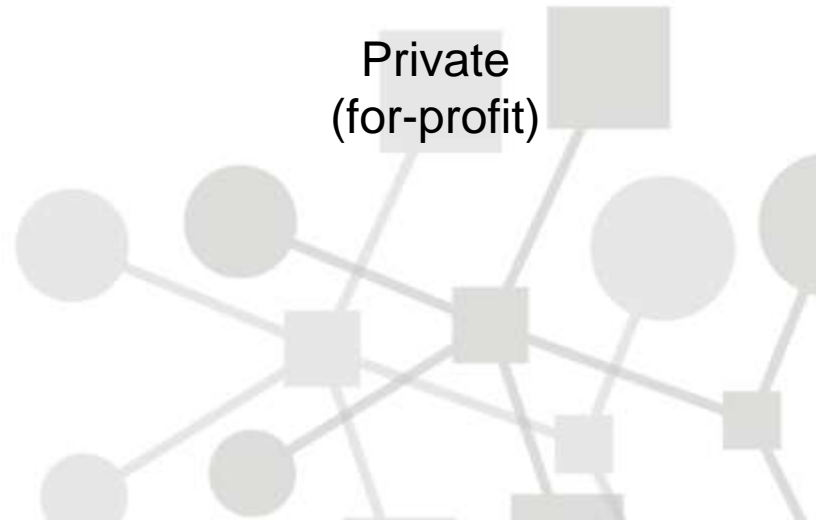
Public
(not-for-profit)



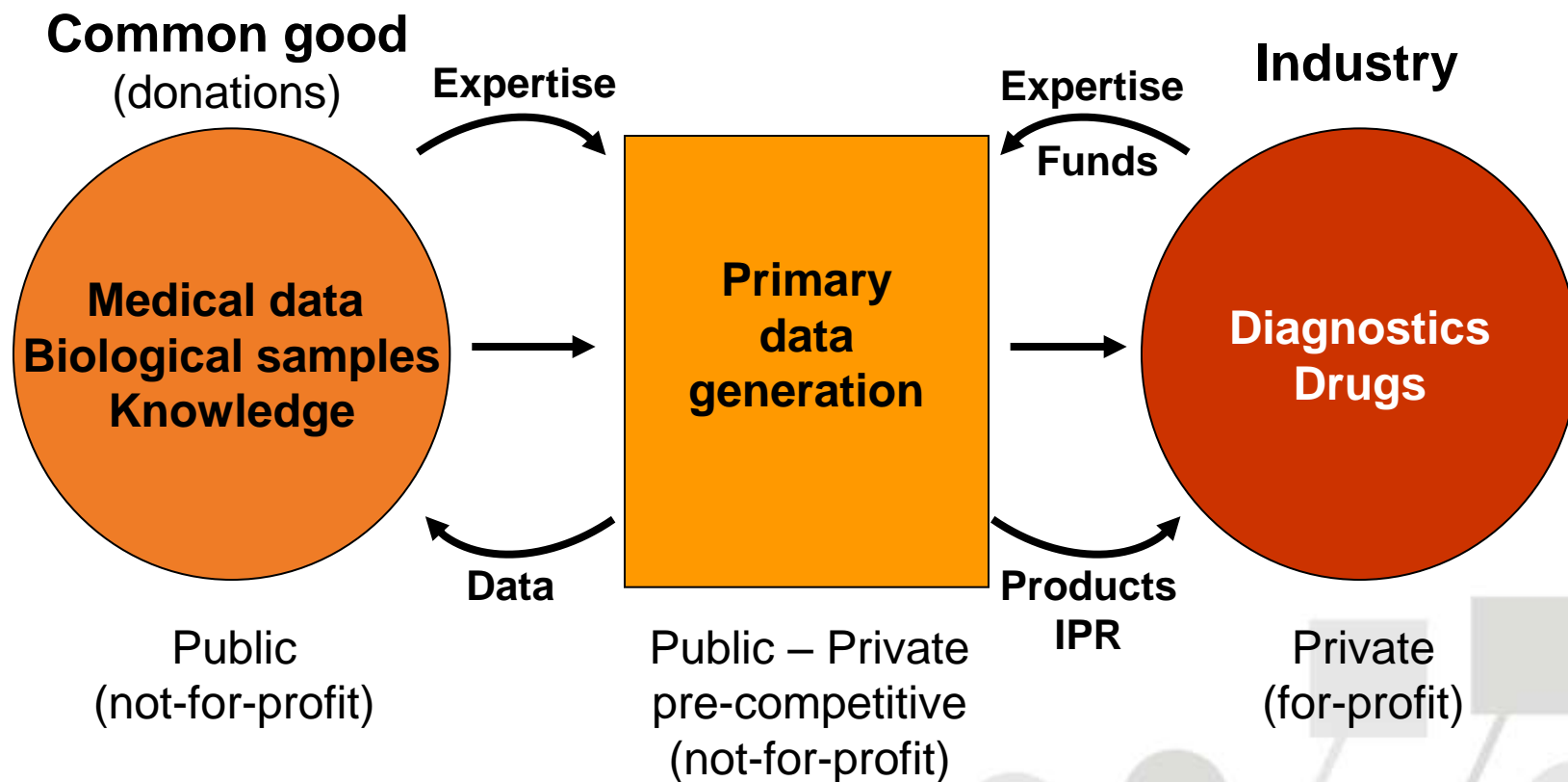
Industry



Private
(for-profit)



Expert Centres: Win-Win for Public and Private Sectors



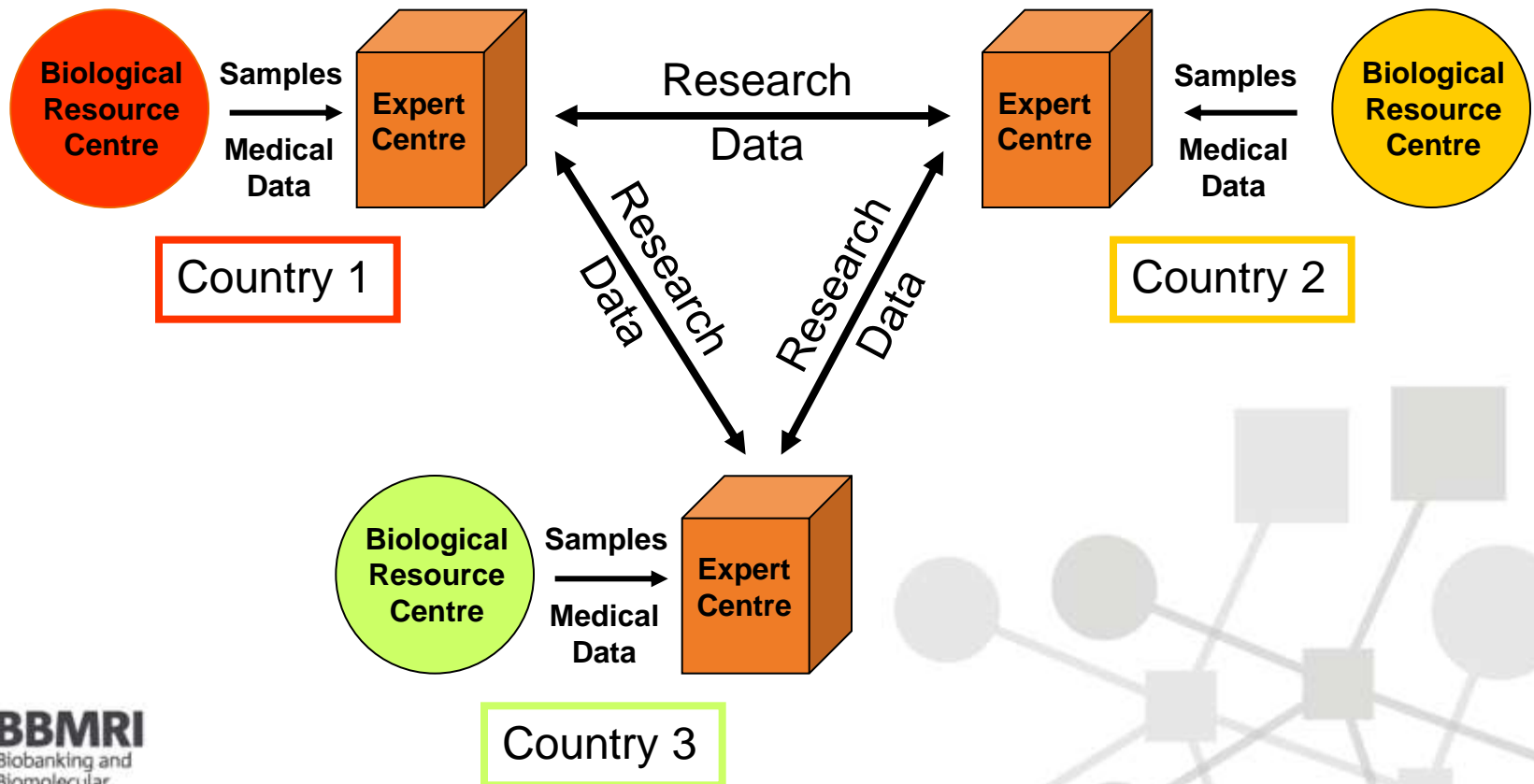
Standardisation of data generation

Basis for data sharing

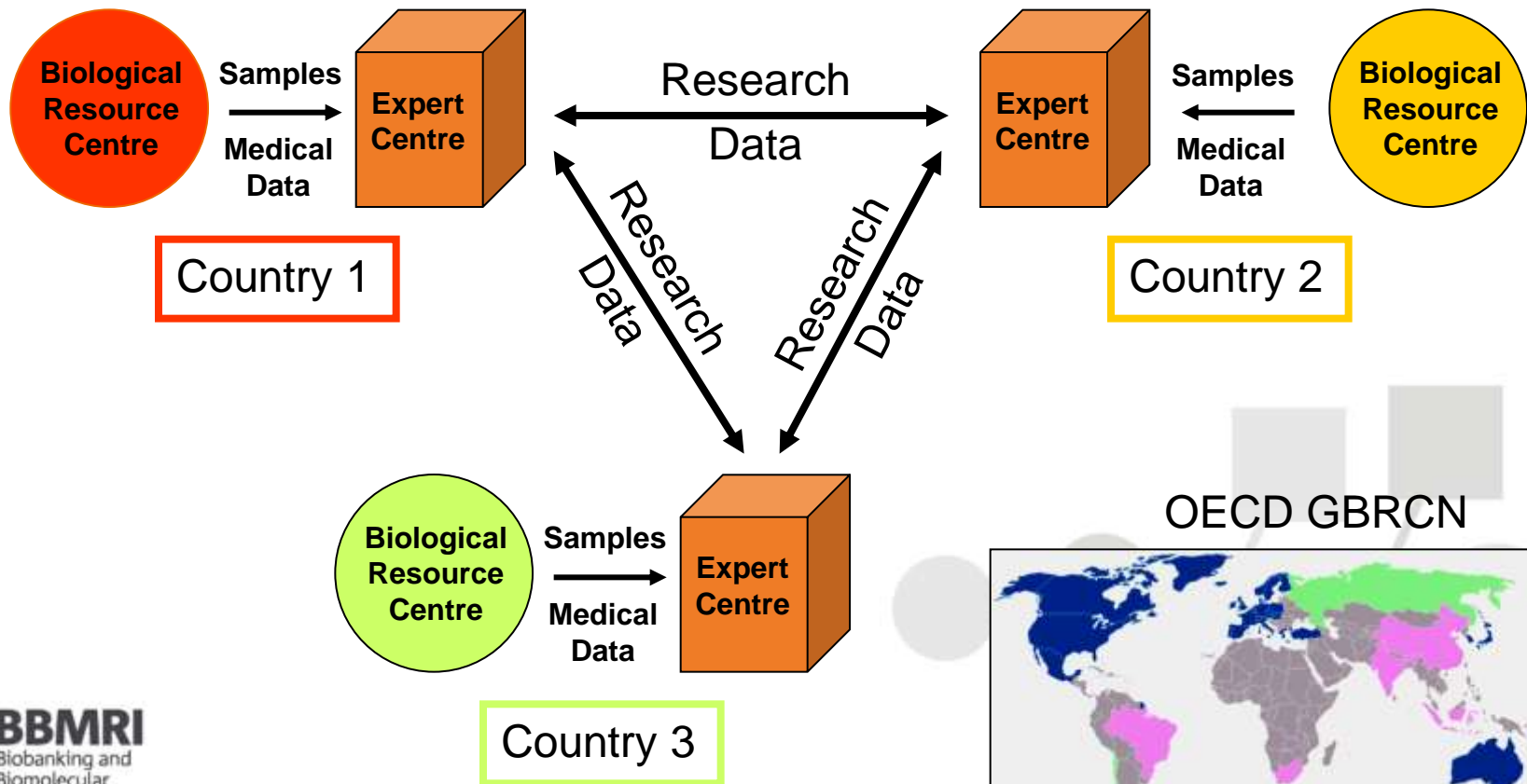
Better usage of finite resources

Collaborative research to improve innovation

(public) Expert Centres as Highways for International Research Collaborations

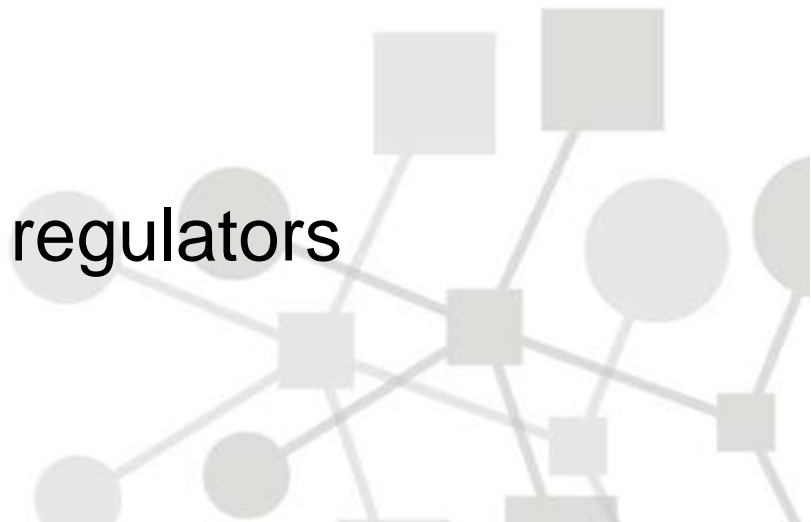


(public) Expert Centres as Highways for International Research Collaborations



Why is there a Need for Trans-Atlantic Policy Support?

- Global socio-economic impact beyond research
- Increasing role of collaborative pre-competitive research
- Repositioning of intellectual property rights
- Legislation: e.g., privacy – data protection
- Biosecurity
- Standardization
- Biomaker/drug approval by regulators



Possible Next Steps

- Agreement on a joint science policy process
- Linking up with established initiatives
 - e.g.: US National Research Council: Precision medicine
 - Impact assessment
- Matching EU and US initiatives
 - e.g.: SPIDIA - BRN
 - BBMRI - ?
- Coordinated strategy
 - Matching initiatives: Avoid duplication, increase capacity
 - No matching initiatives: Explore collaboration instead of duplication
- Standardization
 - Commitment towards evidence-based standards

The BBMRI Team: WP Leaders and Chairs

Coordination/Executive Mgmt.

K. Zatloukal, AT; E. Vuorio, FI

M. Yuille, UK; M Pasterk, FR

Population-based Biobanks:

L. Peltonen+, FI/UK; M. Perola, FI

A. Metspalu,EE

Disease-oriented Biobanks:

E. Wichmann, GER, T Meitinger, GER

Biomolecular Resources:

U. Landegren, SE; M. Taussig, UK

Databases & Biocomputing:

J-E Litton, SE

Ethical, Legal and Societal Issues:

A. Cambon-Thomsen, FR

Funding and Financing:

G. Dagher, FR; J. Ridder, NL

C. Brechot, FR;

Governance Council Chair:

L. Peltonen+; E. Vuorio, FI

Advisory Board Chair:

G-J van Ommen, NL

Coordination Board Chair:

K. Zatloukal, AT

Stakeholder Forum Chair:

M. Griffith, IR

53 Participants (6 Ministries, 18 Funding Organizations)

222 Associated Organizations 33 Countries

Thank you

www.bbmri.eu

