



Global Networking of Collections WFCC and GBRCN perspectives

EMbaRC Seminar

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Cantacuzino Institute, Bucharest, Romania

8-9 March 2010





- **Challenges need collaboration**
- **Networks**
- **The WFCC**
- **The GBRCN**
- **The new (revitalised) dimension in life sciences research**

Provision of Microbial Resources



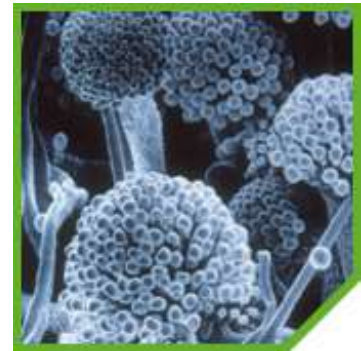
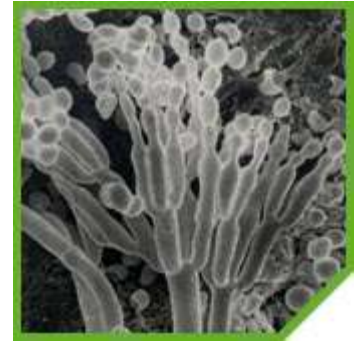
- **Collections must provide the basic tools for research and development**
- **Biotechnology depends upon our ability to harness the potential of biodiversity and all it has to offer**
- **Understanding the microbe; accessing their chemistry for humankind**
- **Comprehensive coverage needs a strategy and networking**
- **Characterisation needs partnerships**
- **International access needs common policy**



Operating environment – policies and strategies



- **Authenticated and well-managed organisms are essential**
 - to guarantee quality and safety in areas of application
 - to allow controlled access to potentially hazardous organisms
 - to ease and improve their utilisation
- **Facilitating policy from Governments is needed**
- **Need a legal operational framework and strategies to**
 - Encourage deposit
 - Encourage adding value
 - Encourage data and material sharing
 - Encourage development – and environment of improvement
 - Encourage innovation



Why do we need networks



- **Biodiversity challenge is enormous**
 - Need to focus – 1400 years to describe the 1.4 million fungi
 - Need to share task – limited expertise – co-ordinated effort
- **Human Resources**
 - Taxonomist: the endangered species
- **Modern technologies**
 - Genomics, metabolomics, proteomics – high through put characterisation and sequencing – Need partnerships
- **More demands**
 - Quality; Legislation; Biotechnology – common approaches
- **Capacity building**
 - Facilities; Technologies; Skills; Knowledge; Protocols; Policies

Opportunity for networking



- **National Organisations – 20 countries**
- **European Culture Collection Organisation (ECCO) – 24 countries, 66 collections similarly ACM in Asia**
- **World Federation for Culture Collections (WFCC) – 68 countries, 564 collections – 1.5 million strains**
- **More formal agreements**
 - e.g. UKNCC, BCCM, CABRI
- **Regional projects e.g. EBRCN; EMbaRC**





World Federation for Culture Collections



Meeting the challenge at the global level

The largest independent global organisation that represents professional individuals and culture collections that preserve biodiversity and enable proper use

- **Routes in 1968 founded in 1972**
- **Inter union commission of the International Union of Biological Sciences (IUBS) and the International Union of Microbiological Societies (IUMS)**
- **It seeks to promote and foster activities that support the interests of culture collections and their users**
- **WFCC web site: <http://www.wfcc.info>**
- **Member collections of the WFCC register with the World Data Center for Micro-organisms (WDCM)**

WFCC achievements



- World Data Centre for Microorganisms ; a registry for all microbial and cell culture collections
- Publications such as Technical Information sheets, Resource Books, Newsletter
- Guidelines for the establishment and operation of culture collections
- WFCC web site – an information resource
- International Conference for Culture Collections
- Contribution to international initiatives: GBIF; ECSDG (shipping); OECD; WIPO
- Training courses on all continents
- 120 affiliated culture collections
- 600 corresponding members

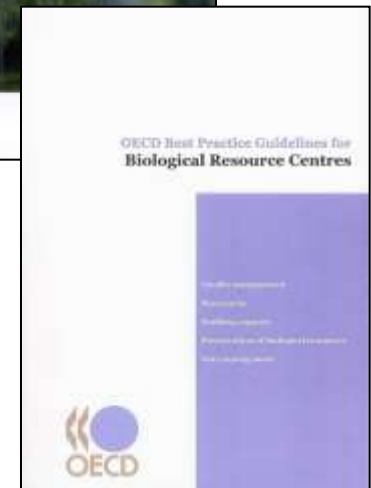
Does the WFCC deliver all that is needed: Lessons learned



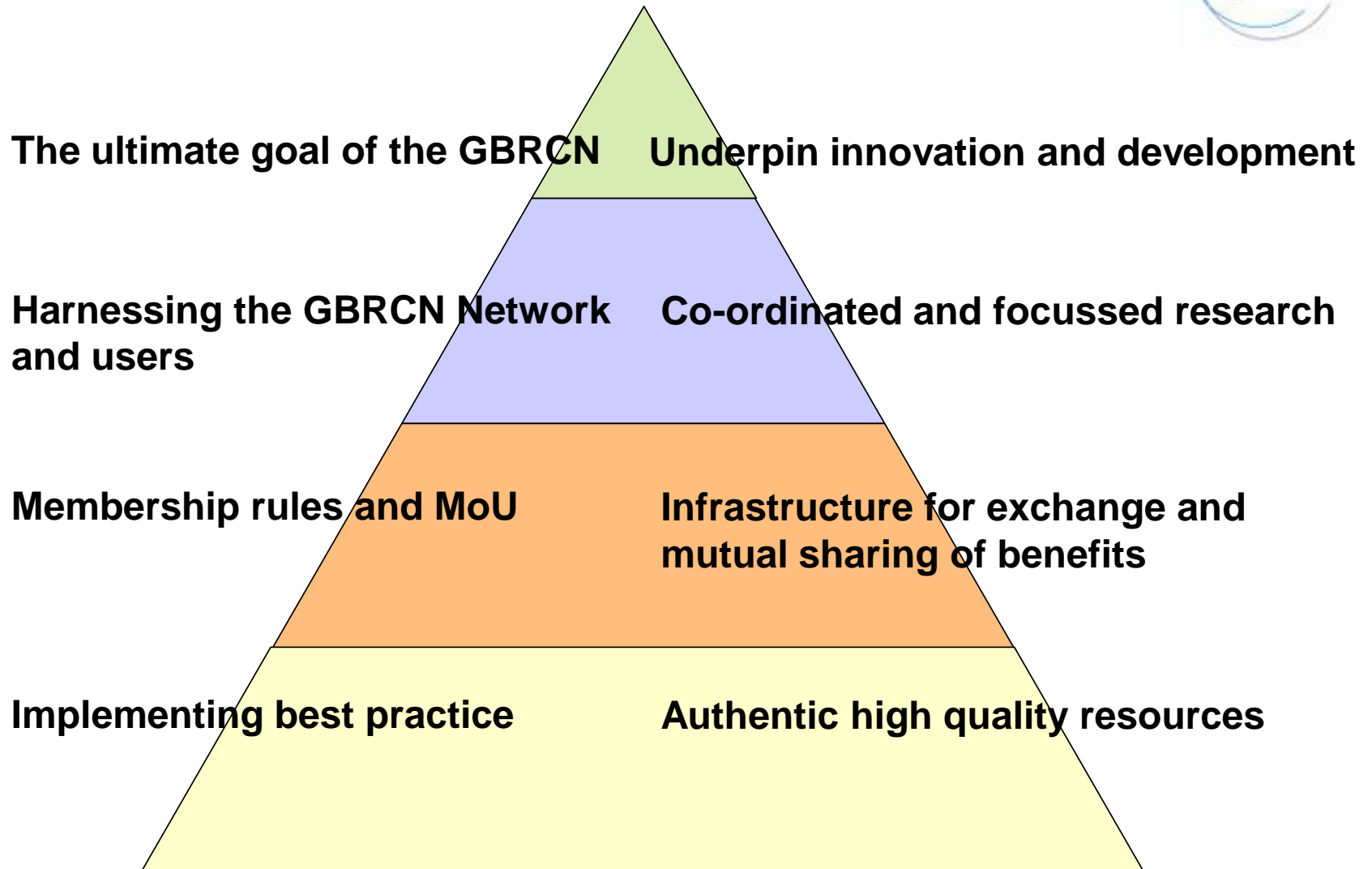
- Relies on individual voluntary input
- Needs
 - Permanent employed staff
 - Mandate to implement common standards and procedures
 - Strong Governance
 - Manageable agreed action plan
 - Adequate funding
 - Strong linkage to users and policy makers
 - A strategy to encourage deposits
 - Co-ordination of tasks

The GBRCN Demonstration Project

- Builds upon the OECD BRC initiative to address all organism domains, Animal; Plant; Microbes; Human derived material
- Initial focus on microorganisms
- Global co-ordination of laboratory-based microbial resource collections
- The German Government BMBF funds a small Secretariat to co-ordinate activities
 - Demonstrate that the GBRCN will deliver something new
 - A network to give better access to high quality materials
 - 22 candidate microbial domain BRCs in 15 countries contributing at their own cost



Underpinning life science research



Demonstration Project Partners and key activities



Brazil Belgium Canada China Finland
France Germany Italy Japan Kenya
The Netherlands Portugal Spain Uganda

- **Microbial culture collections at different stages of development with different remits**
- **Developing a common operational framework**
- **Implement best practice**
- **Test mechanisms for third party independent review**
- **Establish governance structures and membership requirements**

Establish the Global BRC Network 2012

European Microbial Resources Consortium – EMbaRC

European platform of future GBRCN

Improved protocols,
authentication,
preservation

Biosecurity code

Information resource

Capacity building tools

DNA banking

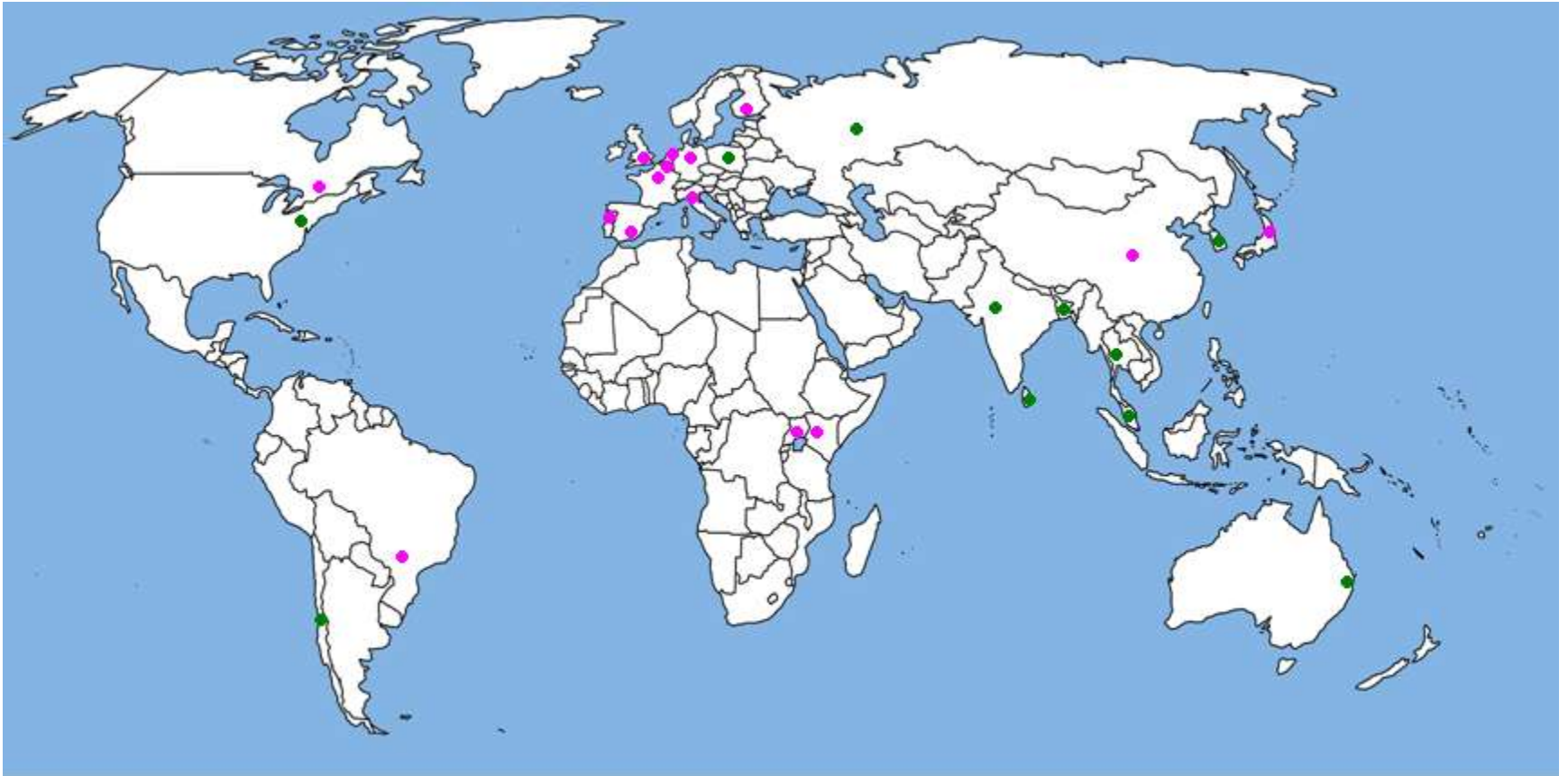
Enzyme screening



INRA, FR
Institut Pasteur, FR
CABI, GB
KNAW-CBS, NL
BCCM, BE
(3 legal entities:
SPP-PS, UGent &
UCL)
DSMZ, DE
UEVG-CECT, SP
UMinho-MUM, PT



Candidate BRCs



● GBRCN partners

● Interested in joining GBRCN

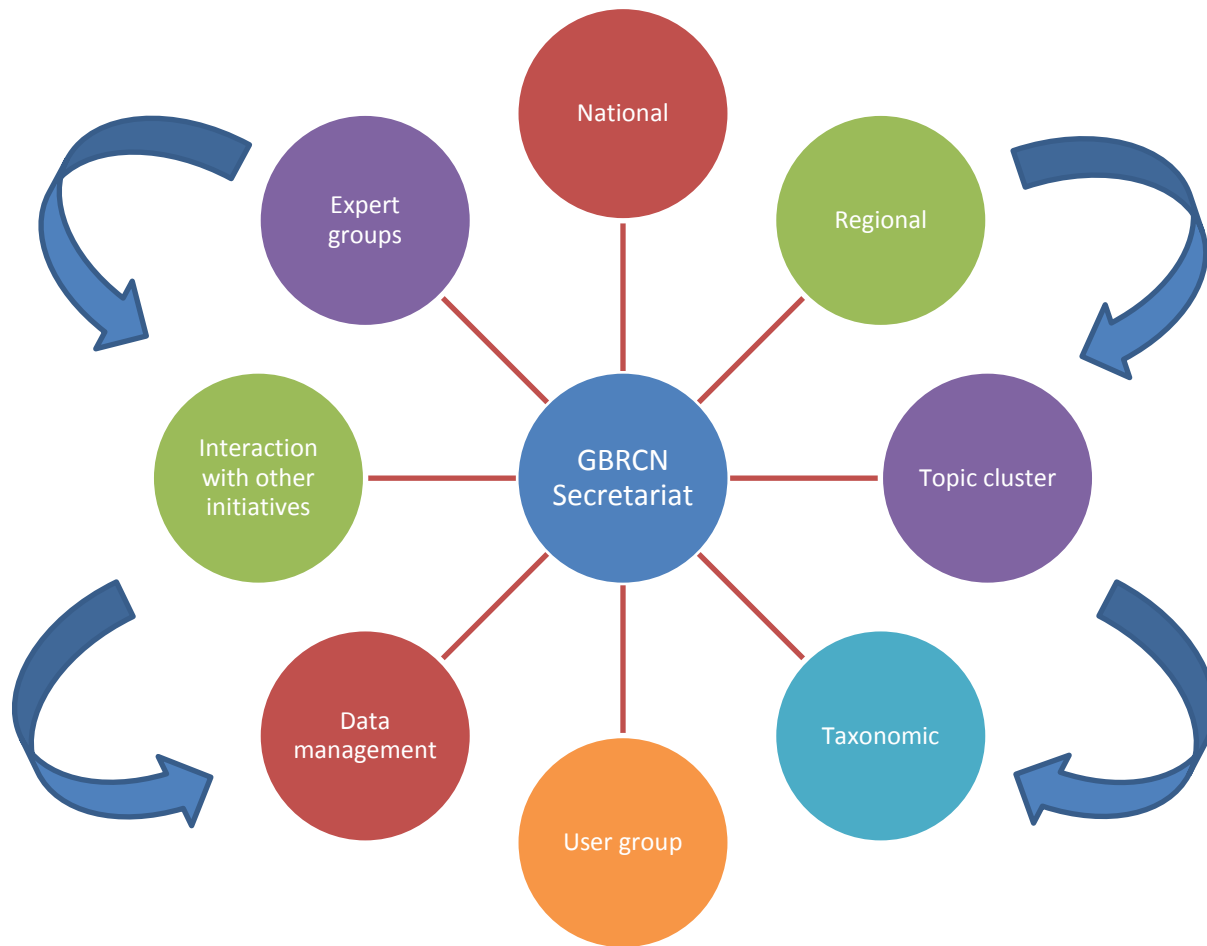
The future GBRCN goals:



- A network facilitating legal access to microbial resources
- User interface to develop improved output
- Common operations delivering best practice
- Harmonised mechanisms for compliance with legislation e.g. biosafety and biosecurity
- Common rules for materials and data exchange; user and member confidence
- A single voice to facilitate input to international initiatives
- A mechanism for capacity building
- A shared work programme to address key challenges

The aim to provide better defined resources and services with broader coverage to facilitate innovative research

GBRCN cluster operation



Transition of culture collections to BRCs



- Implement Best Practice to deliver authentic materials, preserved by state of the art techniques with validated information
- Assessment programme
- Share GBRCN protocols
- Training and facility enhancement
- Participation in research programmes to add value



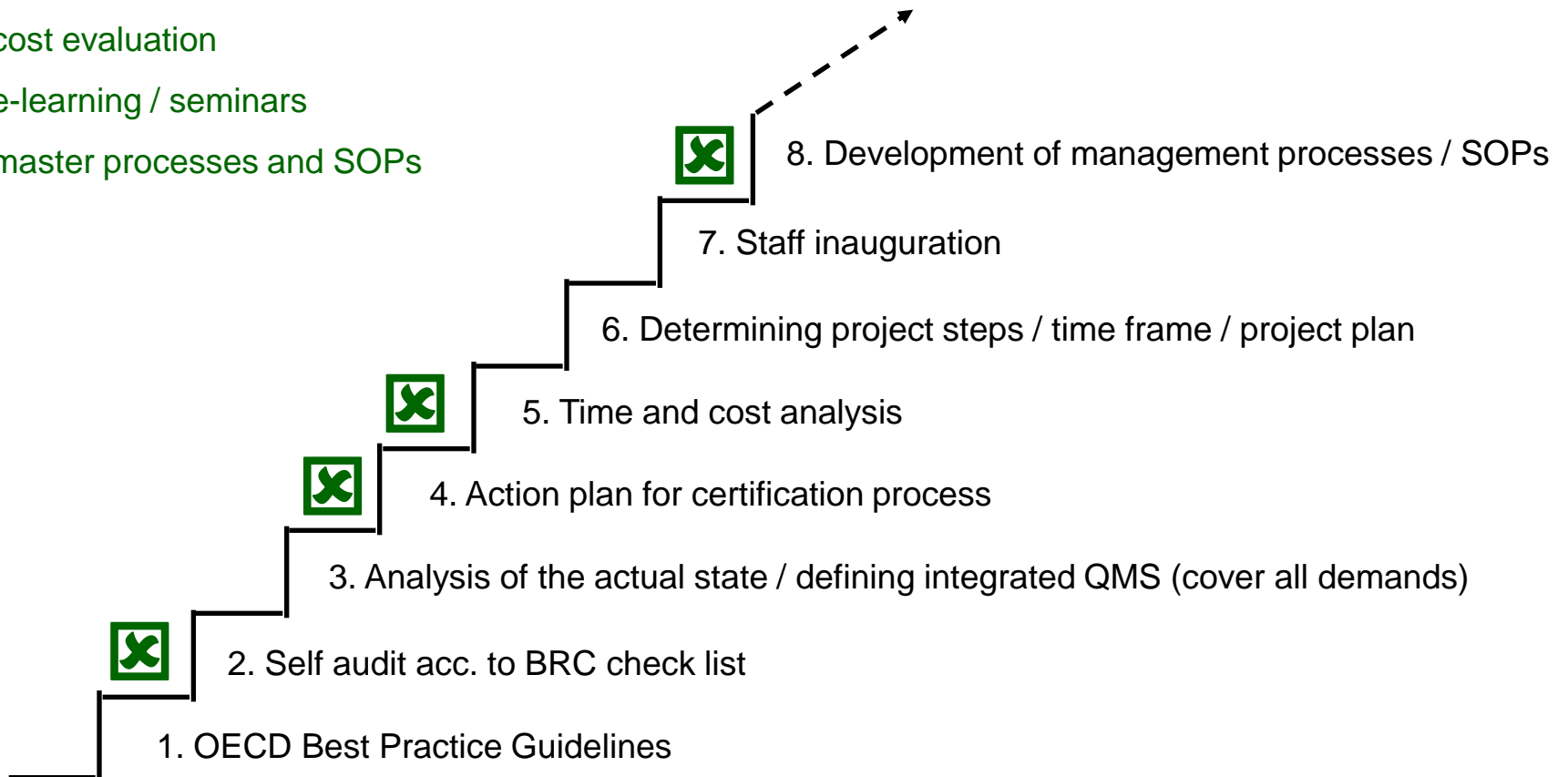
The BRC - the next generation culture collection

Steps for implementing and auditing the OECD BRC Best Practices



possible assistance by GBRCN

- checklists
- master project plan
- cost evaluation
- e-learning / seminars
- master processes and SOPs



Steps for implementing and auditing the OECD BRC Best Practices

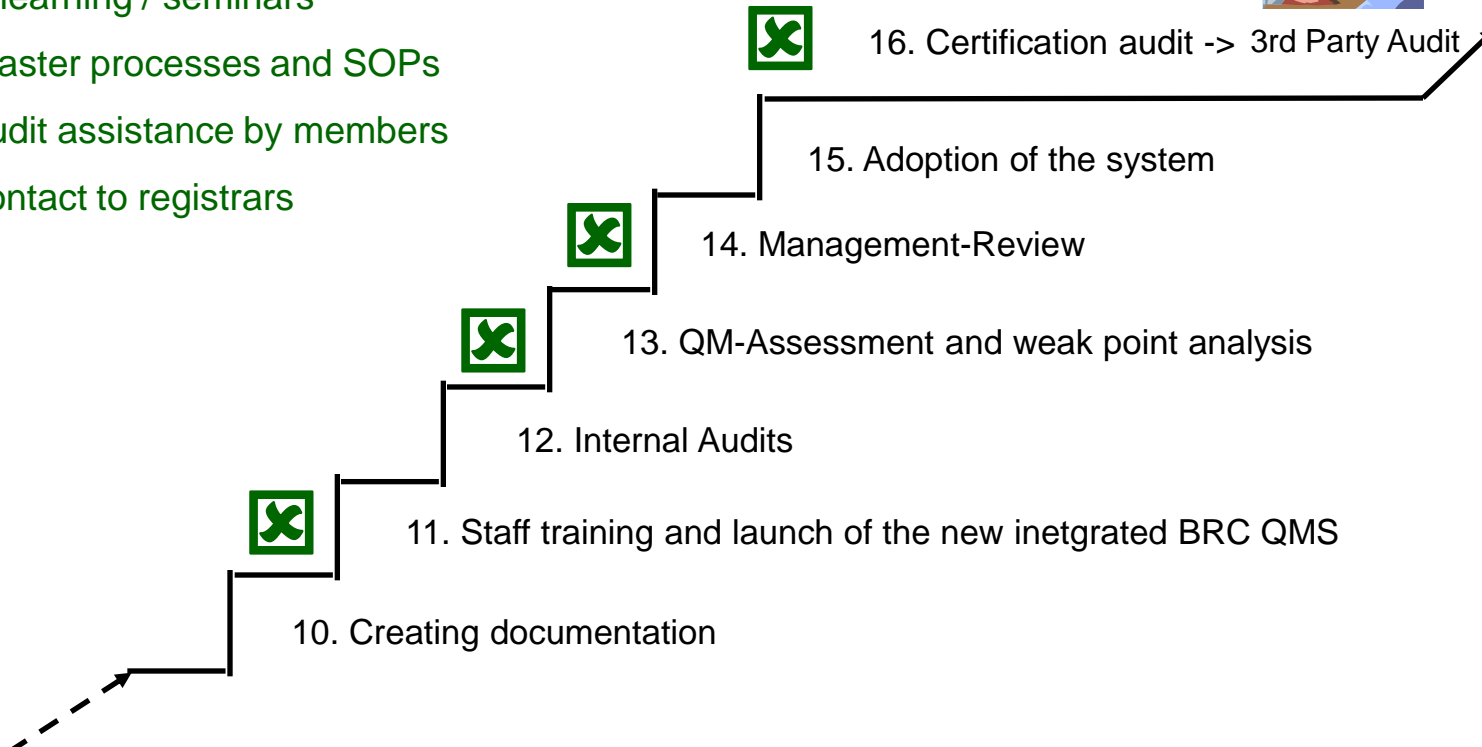


✕ possible assistance by GBRCN

- checklists
- master project plan
- cost evaluation
- e-learning / seminars
- master processes and SOPs
- audit assistance by members
- contact to registrars



Revision audits



GBRCN member collections



- Associate culture collections
- Candidate members
- Implementation of the threshold level: the ABC of BRCs
 - **A**uthentication procedures implemented
 - **B**est practice in preservation
 - **C**onfirmed and validated information
- Certified BRCs - ISO 9001, AFNOR NF 596-900 – supplemented by OECD Best Practice
- Accredited BRCs – ISO 17025, ISO Guide 34 - supplemented by OECD Best Practice

The GBRCN Capacity building programme



The elements

- The BRC - the human resources, facilities, technologies and knowledge necessary for development
- Network capacity

The programme must use existing opportunities whilst upgrading mechanisms and reducing costs

Phased implementation programme as we grow

- An initial focus on implementation of best practices
- Electronic tools e.g. an initial interactive self-check on compliance
- Information system
- A second phase could help develop network synergies

To be effective

- Engage current systems and funding mechanisms
- Requires co-ordination at an international level

Implementation through funded projects

Managing Microbes



CABI - Module 3 - Topic 7 - Fungi - Windows Internet Explorer

http://test.lms.e2train.com/CABI/SCORMPackages/ffb5acd7-a168-403c-86e4-7b38d9709fc3/Module03/Topic07/index.html

Managing Microbes: Isolation and Growth of Microorganisms

Topic 7: Fungi

Search Go [Advanced Search](#)

Mite Infestation

on organic material. They can be brought into the laboratory on fresh plant material, decaying mouldy products, on shoes, on the bodies of flying insects or in cultures received from other laboratories. The damage mites cause is two-fold:

1. They eat the cultures
2. They carry fungal spores and bacteria on and in their bodies

As mites move from one culture to another the cultures can become **contaminated** and heavily infected with other fungi and bacteria.

Prevention

General hygiene and preventative precautions are better than having to control an outbreak. All incoming material should be examined when it enters the laboratory and a separate room for checking and processing dirty material is desirable. The sealing of incoming cultures, storage in a refrigerator or some form of screening and **quarantine** system can be helpful, as it is possible for cultures with only a light infestation at the time of receipt to develop a heavy infestation later. Methods of control used by different workers are various and a combination of precautions may be appropriate.

Click each image for a method of prevention of mite infestation.



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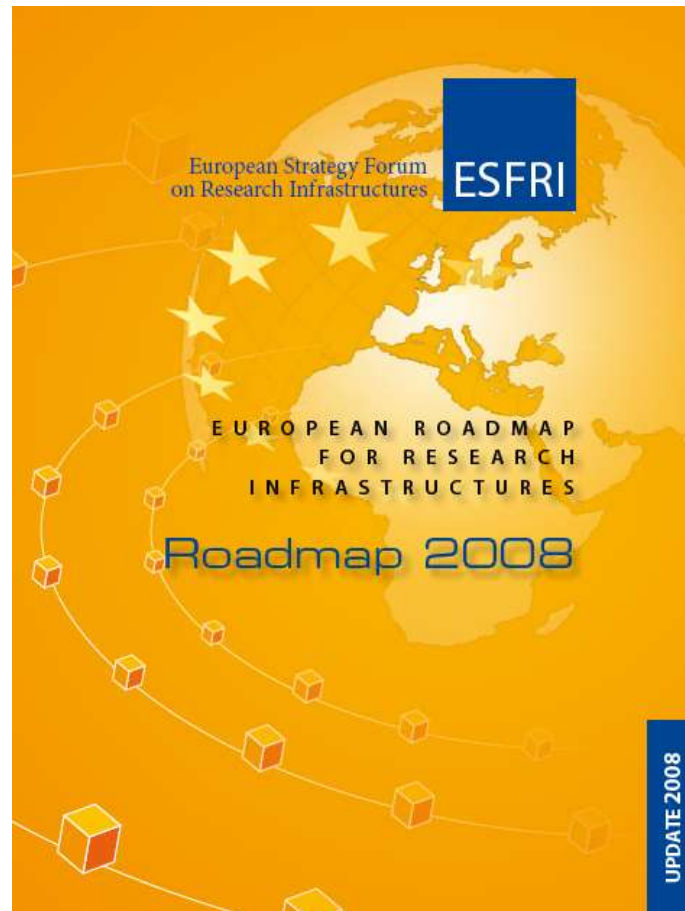
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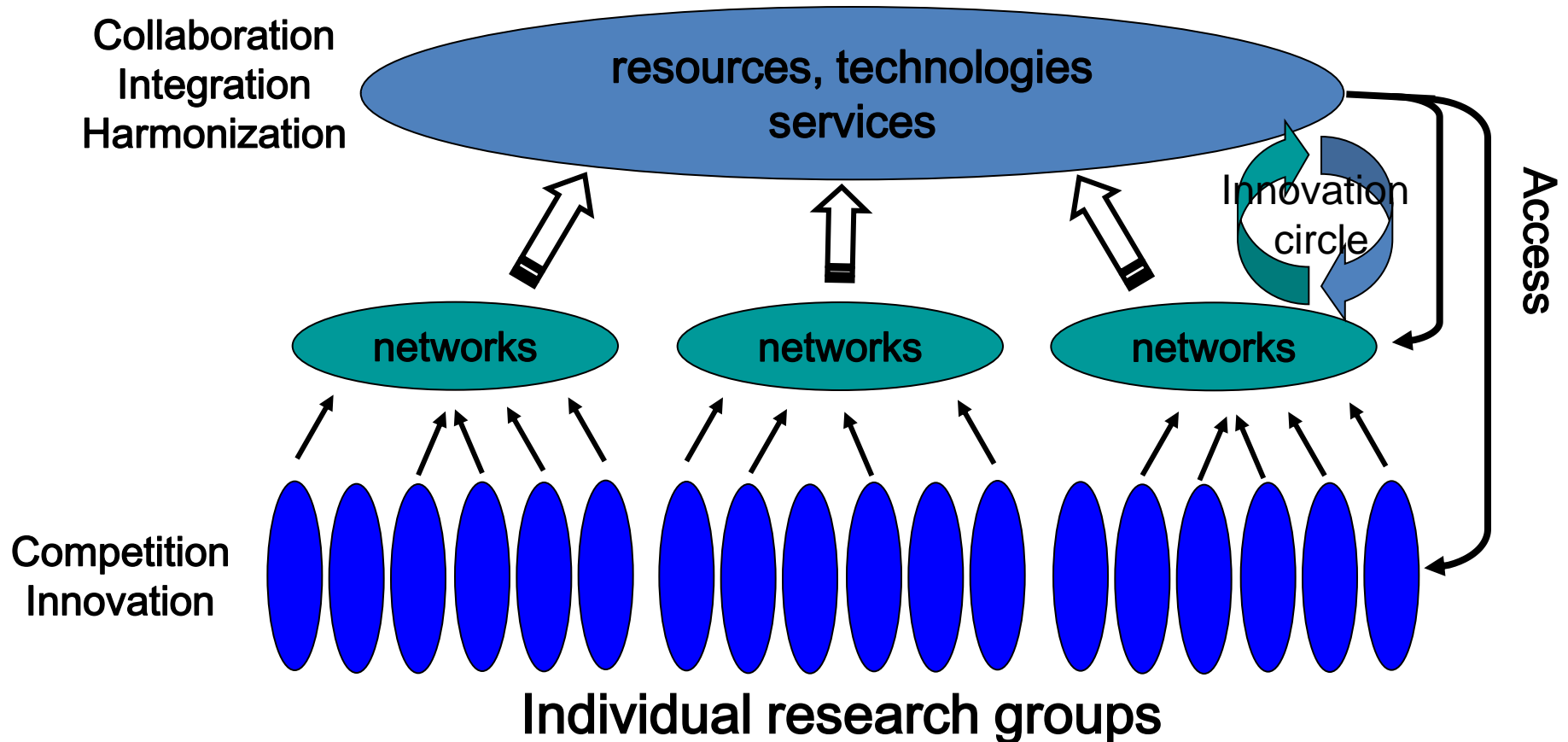
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Securing the future: Update of the ESFRI Roadmap

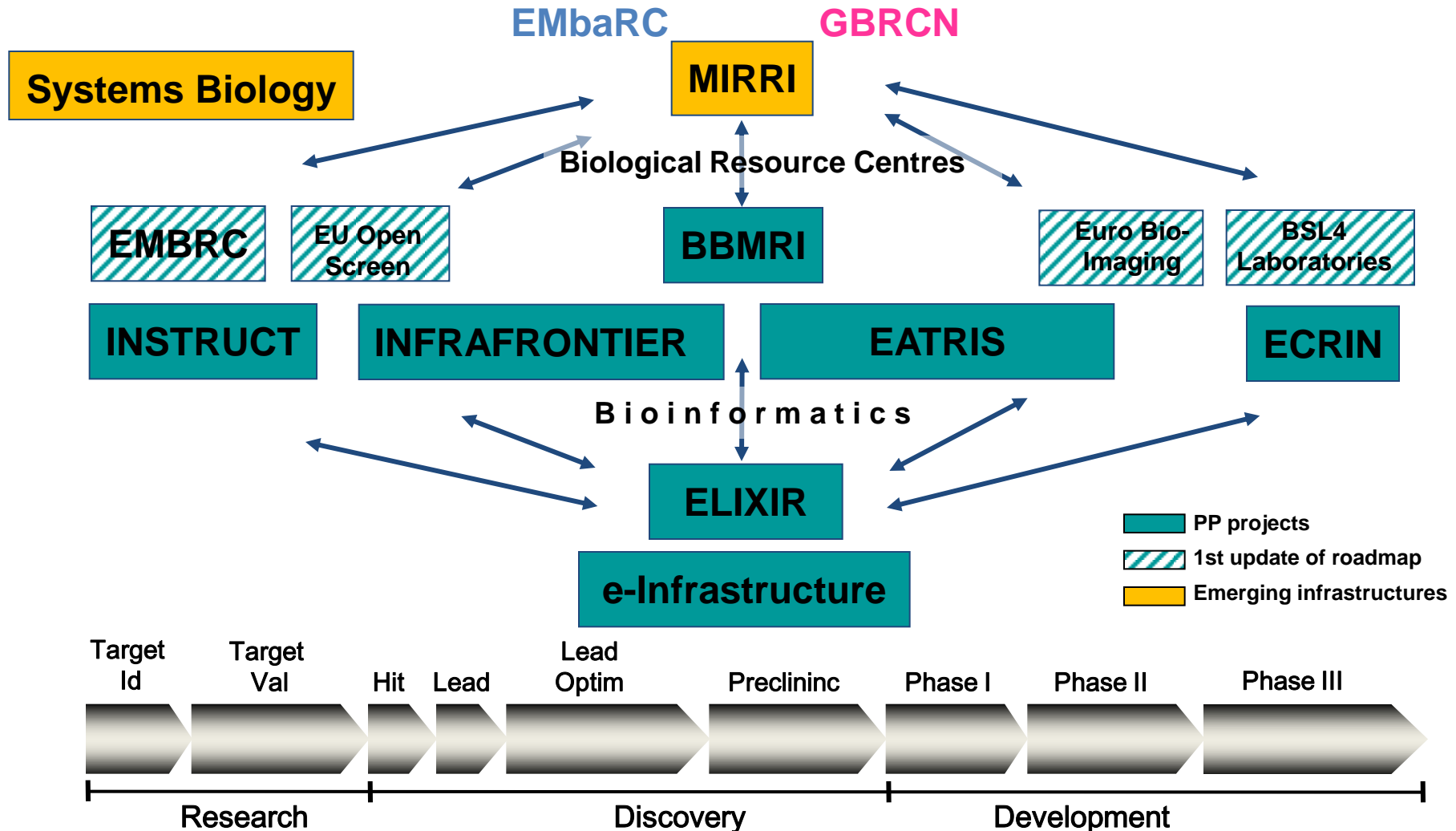


The New Dimension in Life Sciences Research

pan-European research infrastructures



Synergies of ESFRI BMS Research Infrastructures



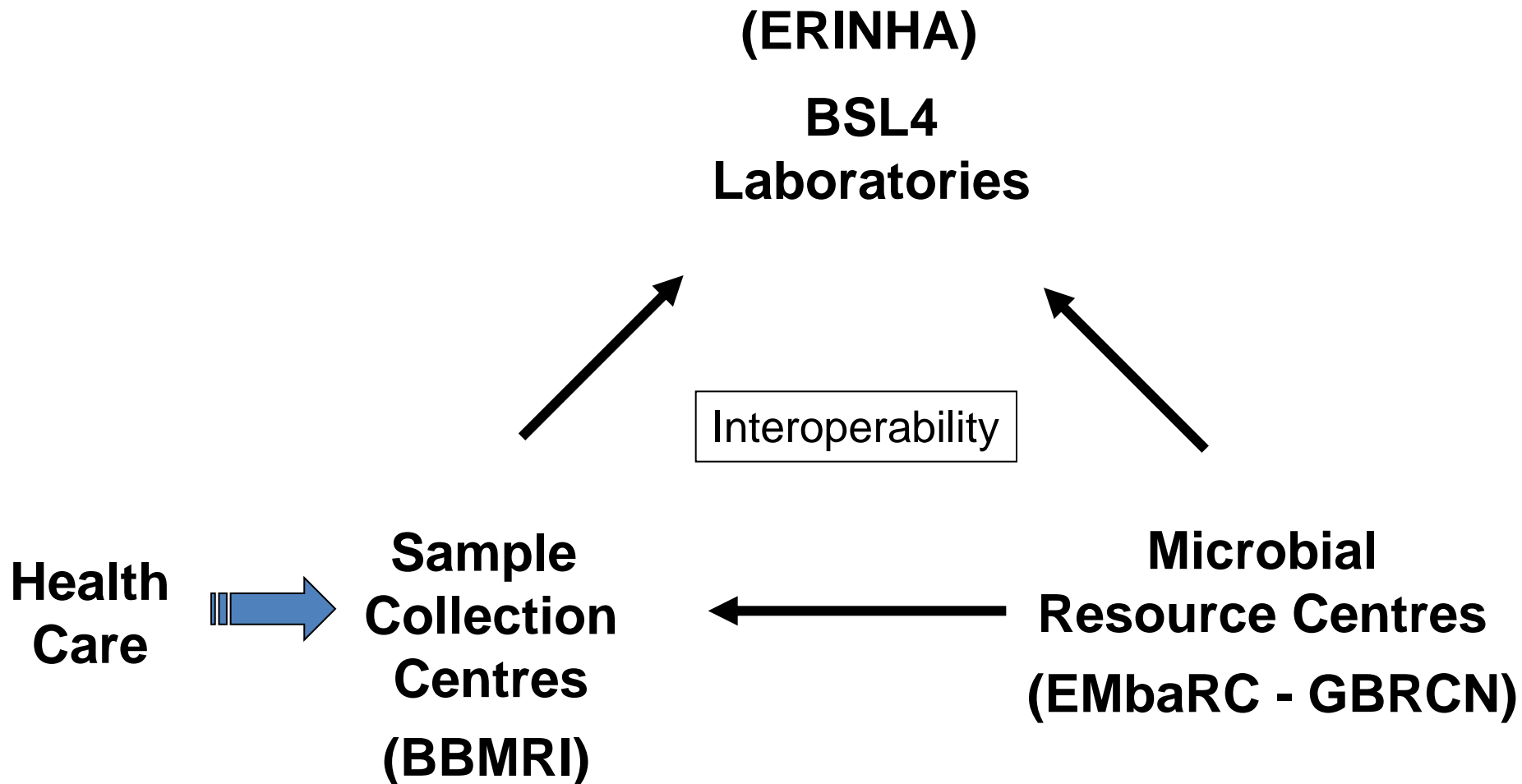
Microbial Resources Research Infrastructure

- MIRRI



- **Enhancement of BRCS and broadening of resources and information**
 - Investment by nations in facilities and human resources
- **Co-ordination and focus of activities on resource and service provision towards key issues**
 - guided by policy makers, programme funders and users
- **Common policy on key issues of biosafety, biosecurity and legislation compliance**
 - Facilitated and guided by policy makers
- **Operational framework that facilitates exchange of materials and information**
- **Partners - 66 European BRCS – addition 400 globally**
 - Policy makers, funders, International Organisations, Scientific communities, sector representatives

A Concept for Europe



What a GBRCN will do for us

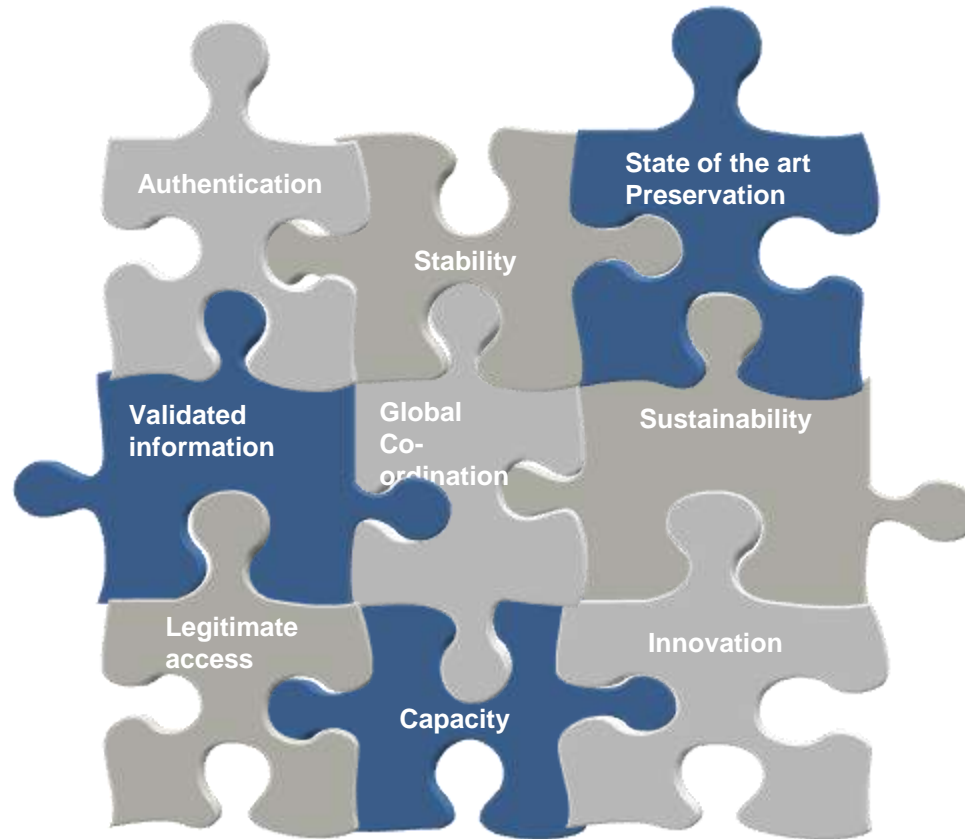


- **The GBRCN will strengthen global collaboration between collections and their users**
- **Prepare the resource centres**
 - **To be engines of innovation and burden sharing for efficiency and help deliver innovative solutions**
 - **To enable targeted action to global challenges**

Bringing it all together



WFCC as a scientific forum for discussion and advice representing collections, collection staff and users



GBRCN as an implementor and coordinator of common practice and standards

<http://www.gbrcn.org>



**Bundesministerium
für Bildung
und Forschung**

**BRCs underpin
the life sciences**



**Need to work
together to
address the
challenges**

Thank you



- Come to the International Conference for Culture Collections Brazil 2010
www.iccc12.info

