EMbaRC, an european consortium of microbial resources centers for science and innovation

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ICCC12 Meeting, Florianopolis, september 2010

EMbaRC

CAPACITIES

FAO official texts

background study paper n°46 + Commission on genetic resources for food and agriculture session oct. 2009

It is the historical mission of culture collections to organize the collection, the authentication, maintenance, distribution of strains of microorganisms

The use of certified materials from culture collections

diminishes the costs from mistakes in cumulative research (Furman and stern, 2006)

and decreases the search costs for finding appropriate materials (Visser et al., 2000)

Agricultural production (plants and animal growth) depends heavily on µorg biodiversity + broad range of beneficial services in food processing + emerging use in forestry and fishery sectors; some non beneficial

Resources of high quality are crucial for high quality research

Situation in Europe until 2008 ?

Numerous collections (191 listed) in the field of agriculture, health, biotechnology, fermented food …covering a large biodiversity

Several "historical " collections, Pasteur, DSM, CBS…

One organization : « ECCO » European Culture Collections Organisation

24 countries – 66 collections – existing since 1981

Stimulates exchanges between collections

Some projects MINE, CABRI, and electronic Catalogues

Session 14A – Dagmar Fritze

cc : the European µpatrimony is not well structured and linked; moreover, collections do not cover 100% of the biodiversity described

EMbaRC

CAPACITIES

2008 topic FP7 « Microbial BRC » ……strong signal of the EC ……

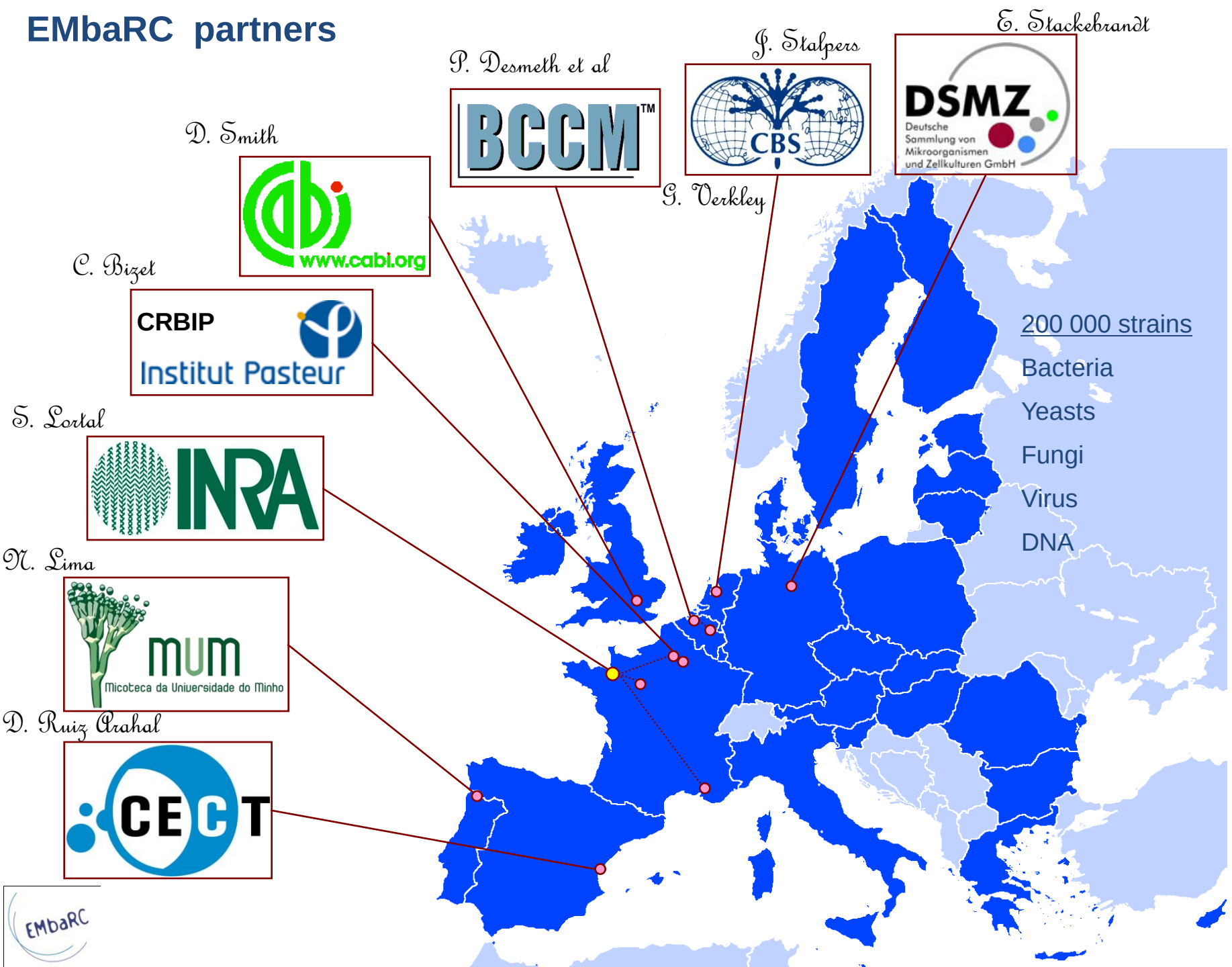
EMbaRC, European Consortium of Microbial Resource Centres

A project to make accessible, authenticated, and «complete», the European microbial resources, to reinforce European research and stimulate innovations

2009-2012 / 7 countries / 4,2 M€ / FP7 Infrastructure project

www.embarc.eu

EMbaRC partners



Network of INRA collection = CIRM

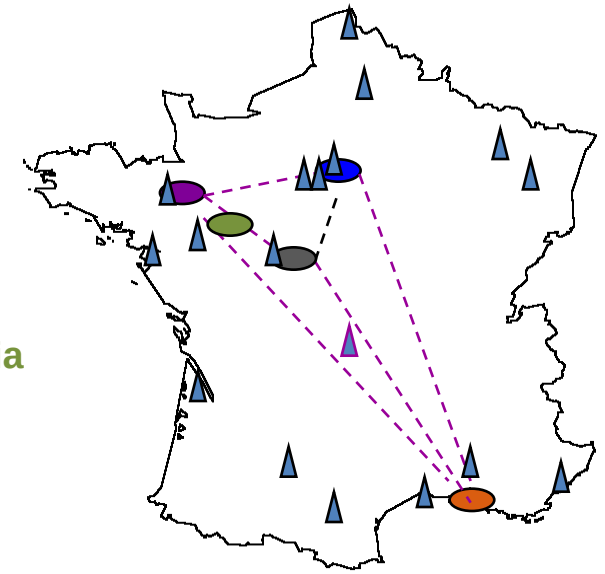
Second largest agronomic research institute / BRC located within research laboratories

5 places
20 000 strains

All certified
ISO 9001-2000

Rennes
Bacteria of food interest

Grignon
Yeasts



Angers
Phytopathogenic bacteria

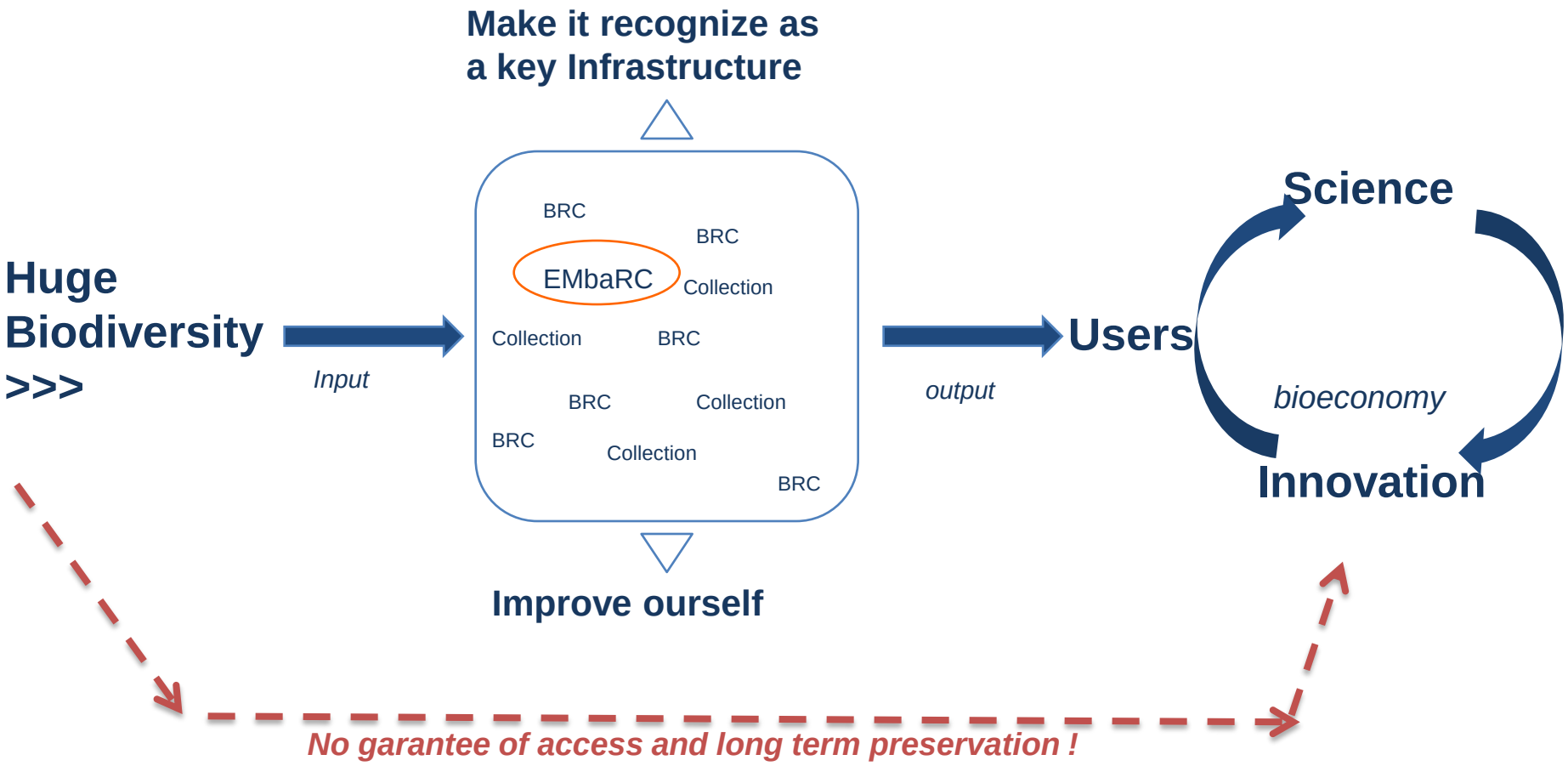
Tours
Pathogenic bacteria

Marseille
Filamentous fungi

Centres de recherche INRA

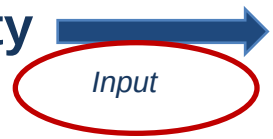
General aim of EMbaRC action

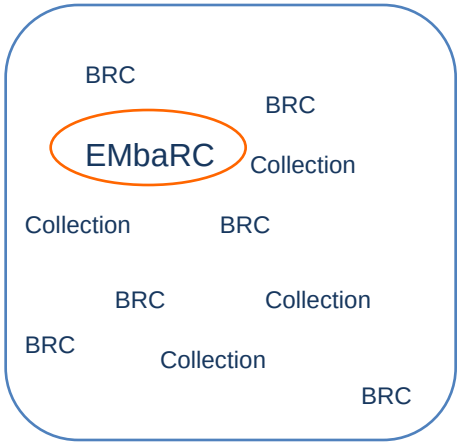
Networking activities
Transnational access
Joined research activ;



1.

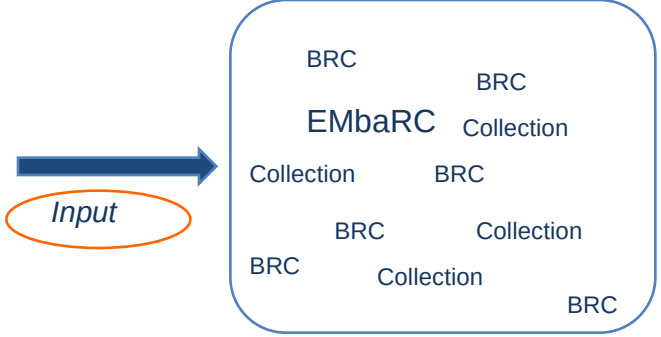
Huge Biodiversity >>>





Mapping the situation

Huge Biodiversity >>>



Survey of 835 articles in 8 European journals* in 2008 included 20 200 non-type strains.

Of these only 0.9% were deposited in public collections

Cc : Authors feel no obligation to deposit non-type strains....

*Antonie van Leeuwenhoek
Archives of Microbiology
Environmental Microbiology
Extremophiles
FEMS Microbiology Letters
International Microbiology
Microbiology (Reading,UK)
Systematic and Applied Microbiology

Diversification and focusing: strategies of microbial culture collections by Erko Stackebrandt, *Trends in Microbiology, 18, 283-287….*



Strains isolated by scientists…in the real life

In an anonymous request to obtain strains from 100 randomly selected authors, o**nly 19% indicated their willingness to provide strains**

New species → Collection / BRC

New strains of species already described

- 0.9% → « Laboratory collection »
- 99.1% → Freezer somewhere…
- 99.1% → Can simply disappear… !

Very varied situations

- Accessibility ?
- Traçability ?
- Quality ?

Many publications dealing with microbial diversity, isolation, characterization.. the corresponding bioresources are not accessible, not secured for the future

Strategy & actions

Convince journal editors
Research Funding agencies

Meeting Editors in february, 2011
On going contacts with agencies

Convince scientists either to deposit or
to secure In the right way
at a laboratory scale *

Workshop in Turin, Italy, may 2011

ITALY - University of Turin – 14 & 15 june 2011

“Secure the future of microbial resources at a laboratory scale”

Main target: laboratory research collections.

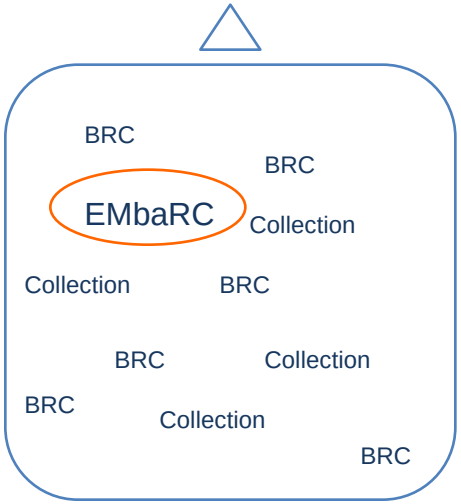
Aim: Change their mind ! Reasons for securing … and tools
make sure that all lab will be addressed a set of criteria, they need to know what to do (WFCC guidelines); foster them to establish a collection on the right way.

More info soon on www.embarc.fr

Register to the project newsletter to receive up-to-date information, ask for subscription to embarc@rennes.inra.fr

2.

Make it recognize as a key Infrastructure



Act already as an infrastructure !

Means receive scientists in our BRCs using EC grants after a selection process

« Transnational access »

Try to join the ESFRI road map

MIRRI - Microbial Resource Research Infrastructure
Submitted to the executive board by Fr ESFRI delegation
New RI with panEuropean importance
Build the European platform within the future Global Biological Resource Centre Network (GBRCN) for microorganisms.

EMbaRC

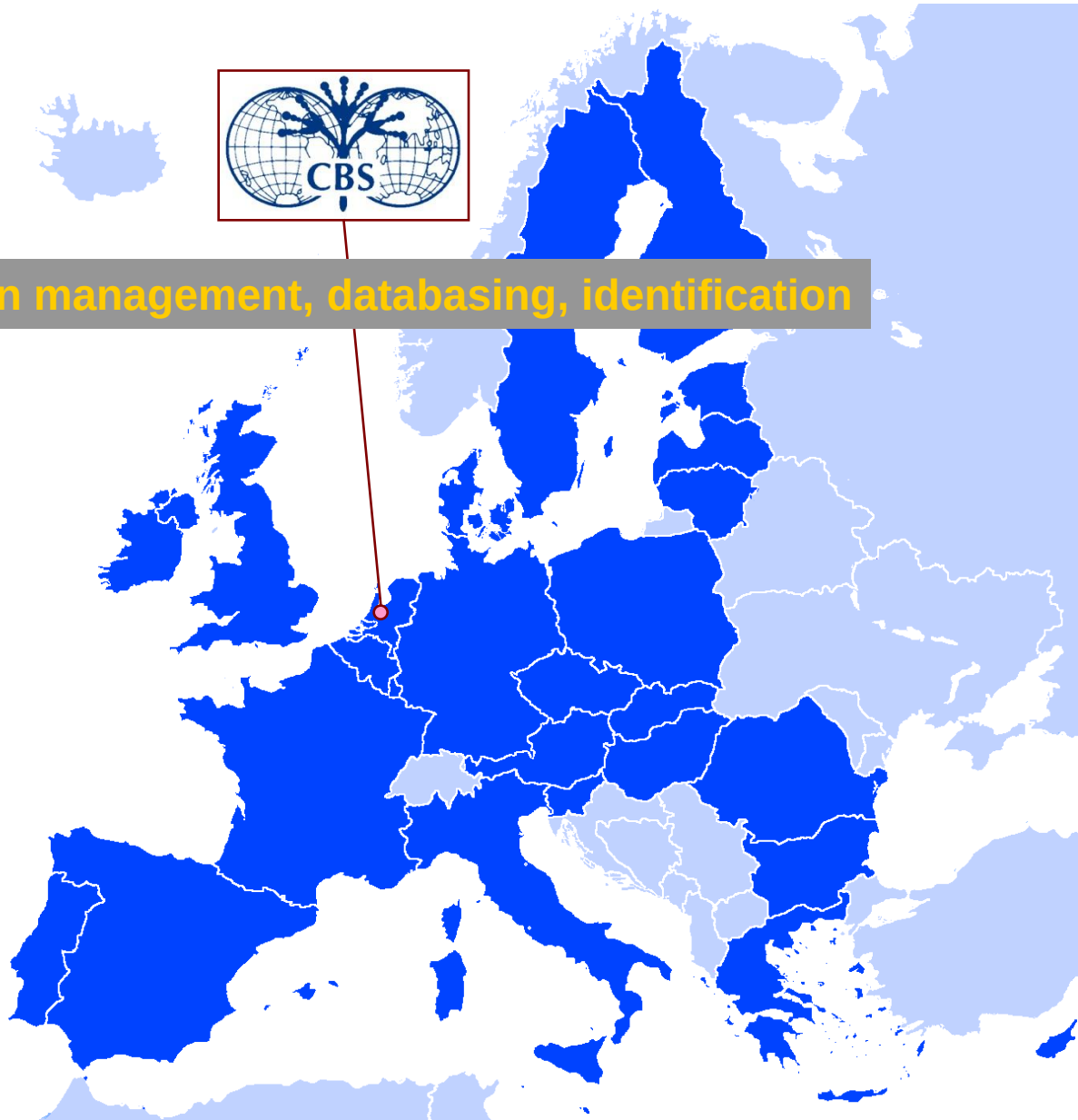
Transnational Access

- An opportunity for scientists to **stay at one of EMbaRC laboratories** and benefit from expert advice and advanced equipment
- **15 different options** in collection management, identification of bacteria and fungi by state-of-the-art techniques or phenotypic screening of a collection of strains
- **Grants:** EMbaRC will cover the bench fees, travel and subsistence costs

TOP is organised with the support of the
7th Framework Programme, Research Infrastructures Action

- **Fungal identification, preservation techniques and collection management**

- **Preservation, collection management, databasing, identification**



Visit www.embarc.eu

Eligible Countries….

European Consortium of Microbial Resources Centres

- Home
- Project
- Structure
- Partners
- Events
- Contacts
- News
- Expected impact
- Information Resource
- Database access
- Access Grants

All necessary information

Access Grants

EU-funded opportunities for study visits and training at partner collections

Preserving authentic materials for the future

EMbaRC brings together key microbial resource centres in Europe to improve, coordinate and validate microbial resource delivery to European and International researchers from both public and private sectors.

The conservation and utilisation of microorganisms aim to help deliver a knowledge-based bioeconomy

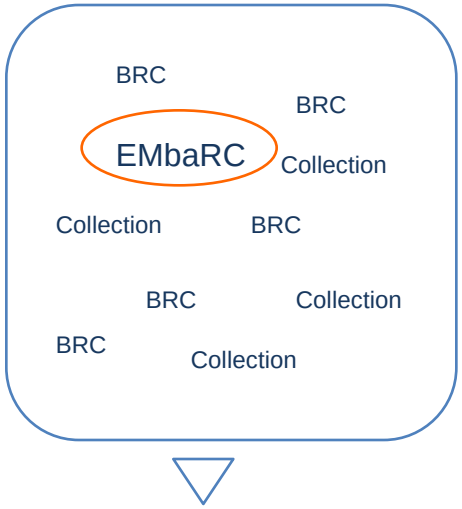
(c)CABI

Members Area

Login

Contact the Co-ordinator

3.



Improve ourselves

Networking

Harmonizing methods for strain identification and validation of type/reference strains

Contribution to standards : make national standards emerging to the international level (from OECD best practices to ISO)

Propose a Code of Conduct for Biosecurity

One-stop-shop to the EU collections via a web portal for users

Mapping of the training offer within partners and filling gaps

Define a sustainable strategy / outreach strategy

Joined research activities

Strain & DNA preservation

harmonize extraction and DNA characterization/storage protocols

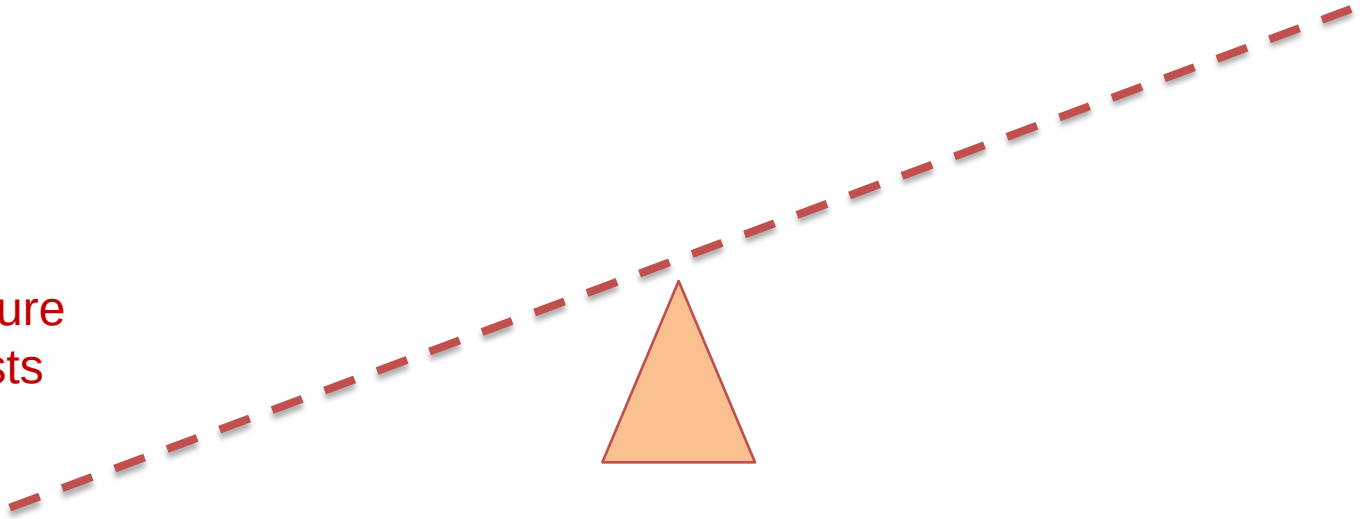
Explore new methods for accurate species identification :

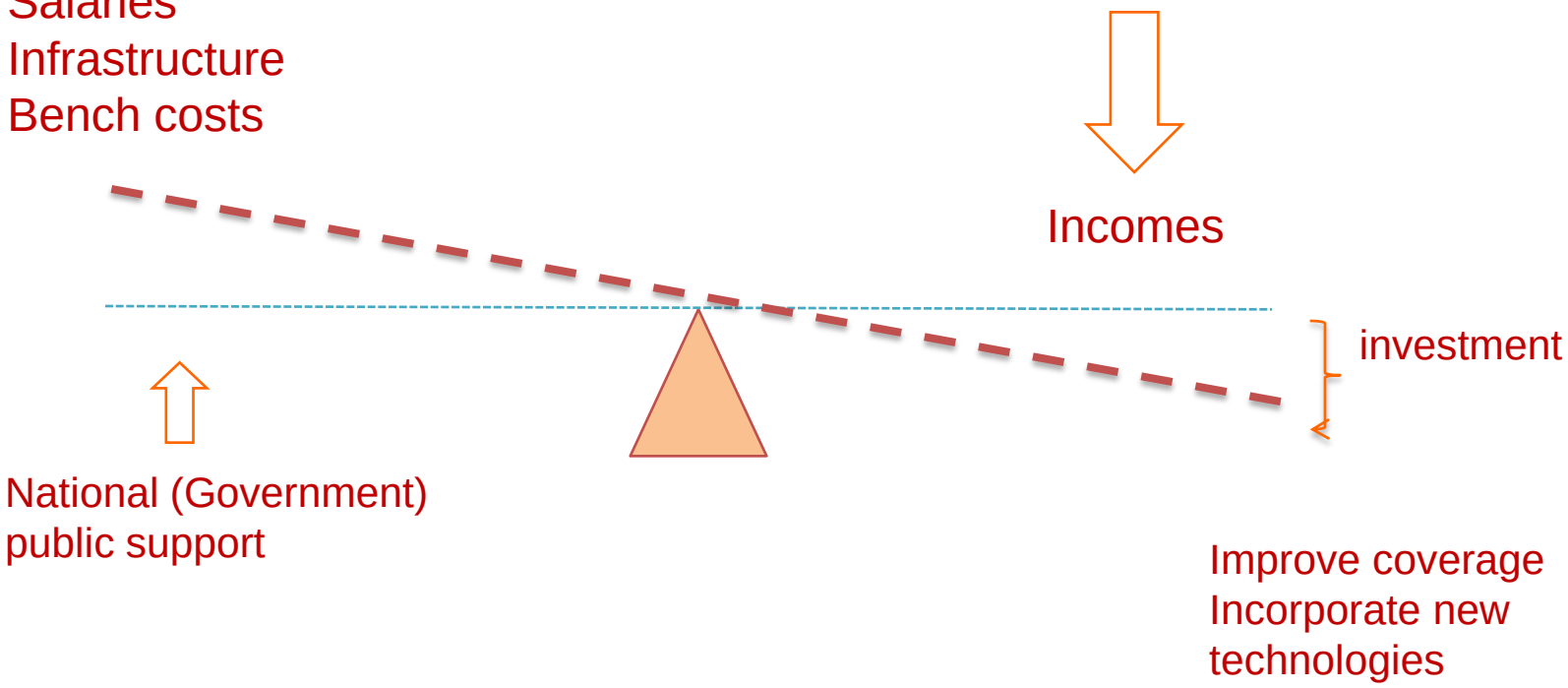
- **New molecular markers (pro and eucaryotes)**
- **Mass spectrometry**

Financial challenge for most BRC

Incomes

Salaries
Infrastructure
Bench costs




Salaries
Infrastructure
Bench costs
Incomes
investment
National (Government)
public support
Improve coverage
Incorporate new
technologies

BRC are funded in very different models depending on the country. Despite they represent crucial bioresources, a long term vision of how BRC should or coud be supported financially has never been done.

To increase alternative funding sources, to mobilize behind BRC European institutions and companies is crucial for the future of BRC.

Costs

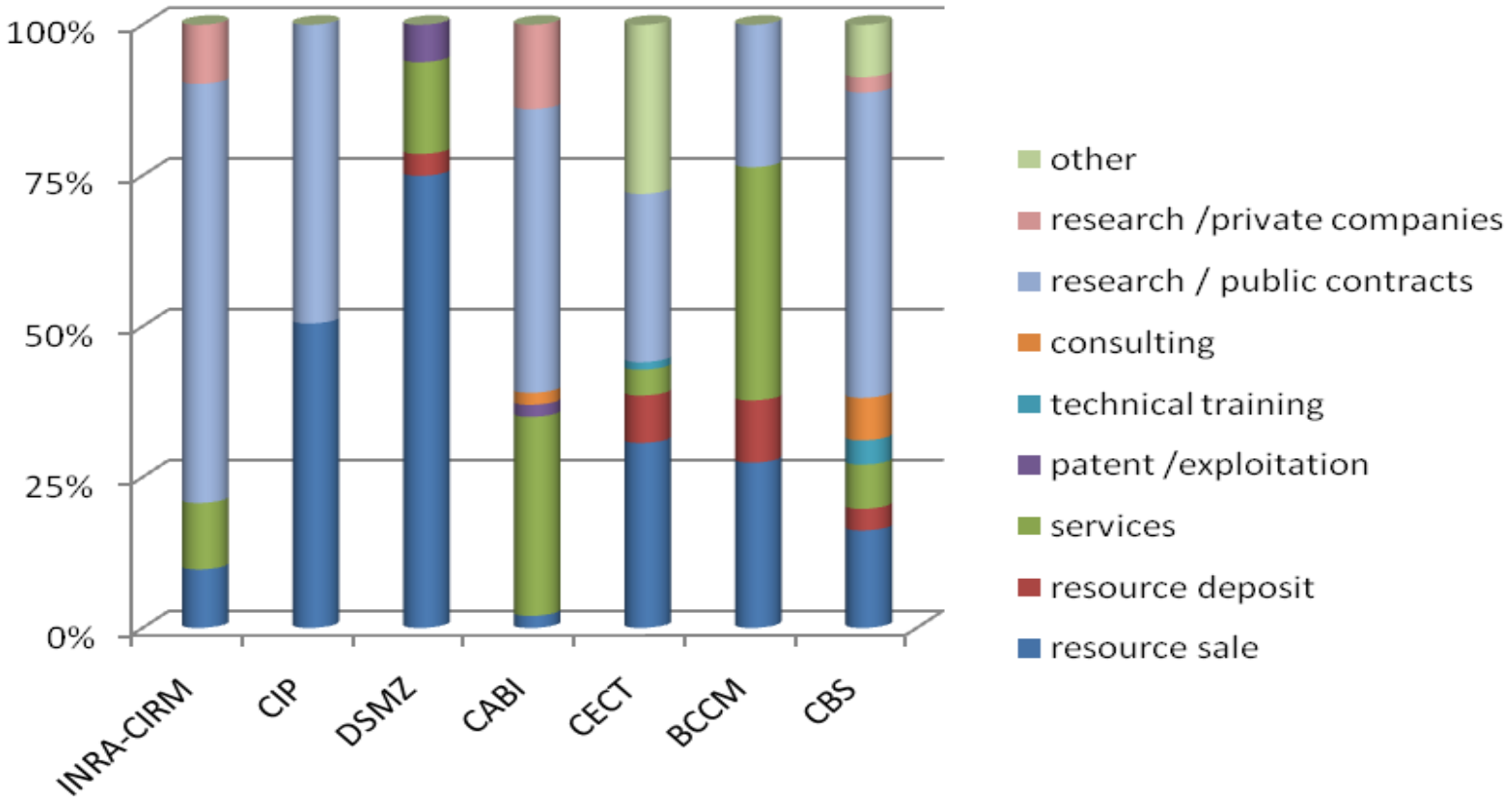
Salaries
(curator, technicians,..)
Infrastructure maintenance
Bench fees

Different kinds of income streams

Sales of resources (strains, DNA, …)
Services (safe deposit, identification, ..)
Research incomes (grants research agency, contracts)
Technical courses / training / Consulting /expertise
Public and private fundations
Exploitation of genetic resources biodiversity (IP, patents)

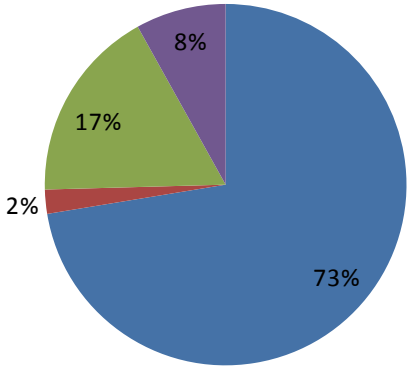
first : MAPPING ! …Questionnary covering 2 years of activity

External sources of funding of some EMbaRC BRCs in 2009



These external resources can provide
from 20 to 90% of the total funding of the considered BRC

External funding in 2008 at DSMZ (DE)



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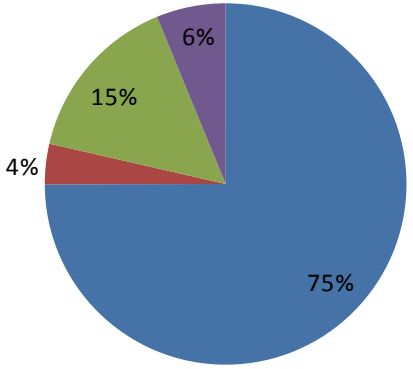
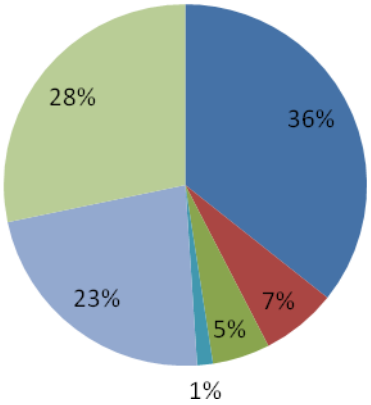


External funding in 2008 at CECT (SP)



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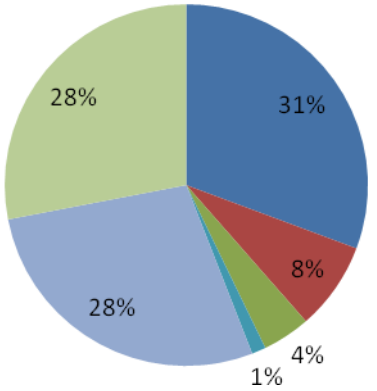

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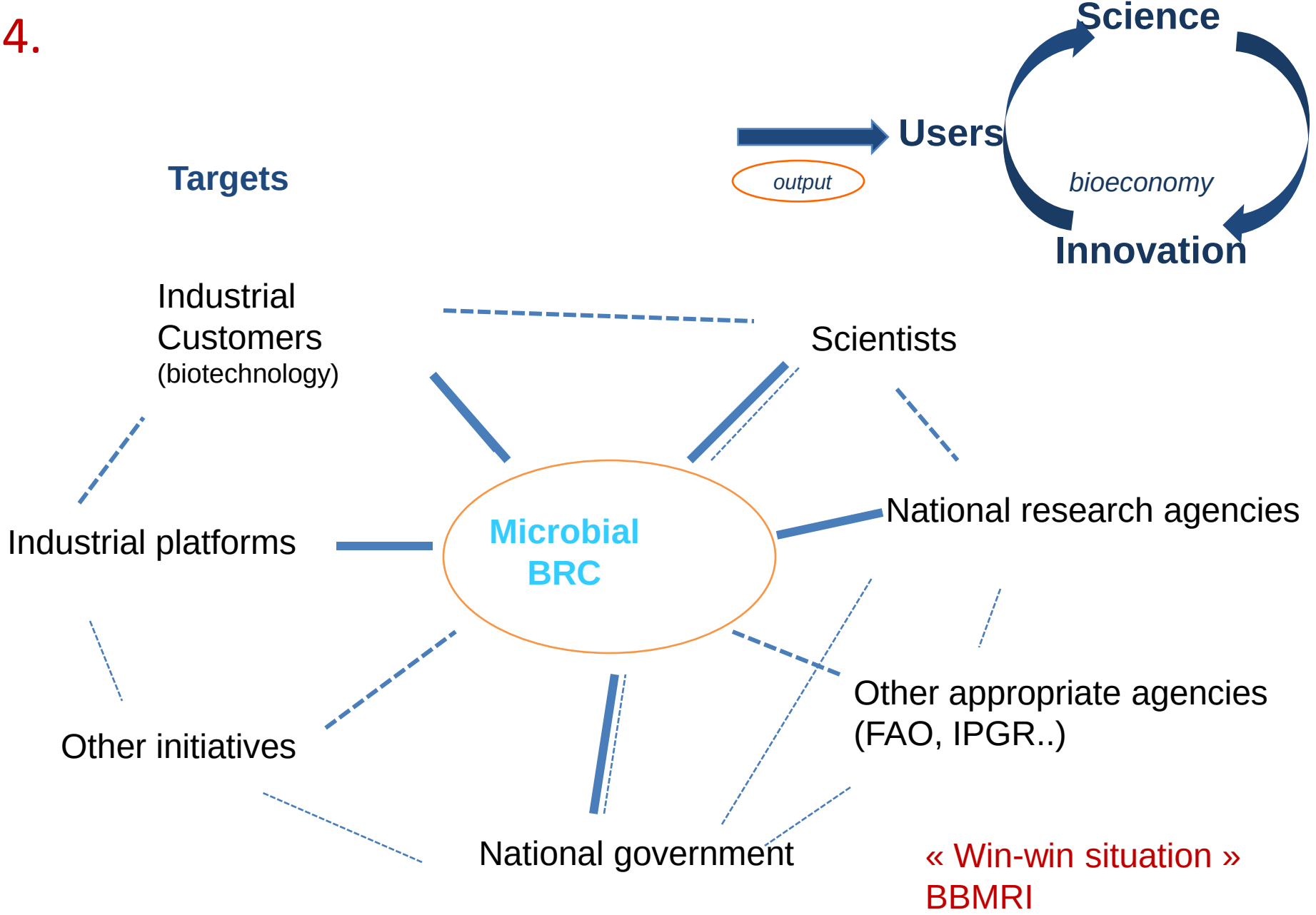

« Win-win situation »
BBMRI

Action Plan

TARGETS	Objectives	Tools & actions
Users- Scientists	i) Stimulate participation call for access;	e-letter and direct to mailing list advertising in Journals, Newsletters, seminars
	ii) Disseminate main results of JRA	Papers Conferences and symposia Websites, e-letter
Users -Bioindustry	Convince them to use and support BRCs	- identify - feedback on needs
Funders	Convince of importance of funding BRCs	- identify - persuasive argument -meet them
Policy makers	Demonstrate impact of BRC output	Identify
Other bioresource projects	Improve the link and complementarity	Identify ; Collaborative plan if appropriate
Journals editors	Convince them to recommend deposit of key bioresources	- specific workshop dedicated to Journals editors; invite them to Workshops
Other collections or BRC	i) Stimulate participation call for access	e-letter + specific mailing; culture collection events (ECCO, etc.) specific EMbaRC workshops (Brazil; Italy)
	ii) diffuse results from NA and JRA	e-letter ; culture collection events (ECCO, etc.) specific EMbaRC workshops (Brazil; Italy) Conferences
	iii) help when endangered	Prepare strategy Identify -Contact
Press	Make use of Year of Biodiversity Identify opportunity	- press conferences -invite them to the Work shops

Thank you for your attention

New giant Microbes « teddy bears »…