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Socio- economic impact
Biobanks & BRCs infrastructure

GBRCN

Structure of the presentation

The growing interest in assessing/monitoring the impact of R&D activities

What are the impacts of R&D? How does they relate to Research Networks or Research Infrastructures (BBMRI, EMbaRC/MIRRI)?

How can we assess these impacts?

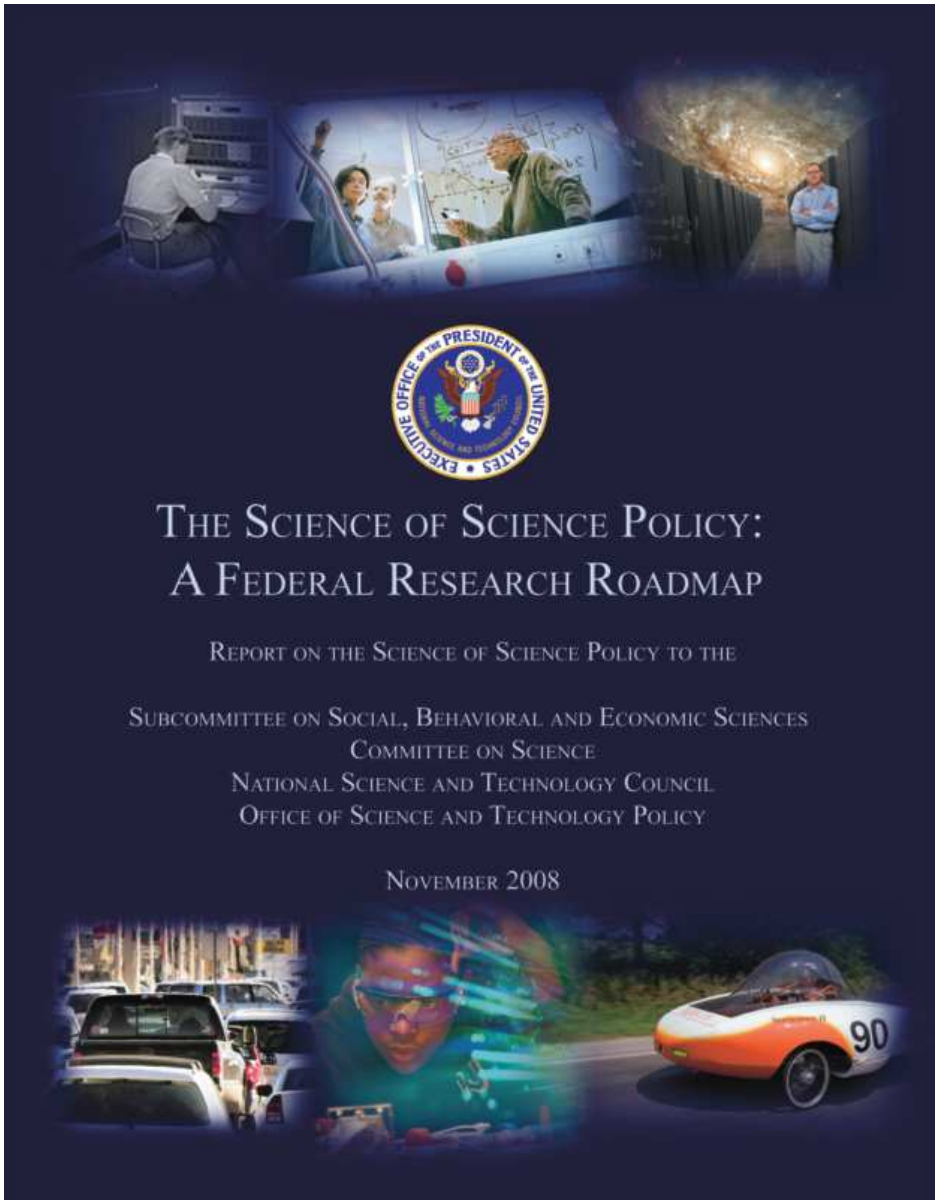
What needs to be done to take this work forward?

What lies behind the growing interest in measuring the impact of R&D activities?

- Competition for scarce resources
- Interest in promoting innovation – regarded as a product of R&D
- The public engagement agenda – more accountability required given the scale of public expenditure on R&D
- The growth of large scale research infrastructures and the variety of funding mechanisms now available

To meet these aims DG research EU

- **INFRA-2010-1.1 + 1.2** (integrating activities and e-infrastructures): impact studies within projects
- **INFRA-2010-3.2**: development of new or enhanced methods and indicators to measure the social, economic, environmental, direct and indirect impacts, including of scientific data repositories; another action for forward-looking and retrospective case studies
- **INFRA-2010-3.3** (e-Infrastructures): evaluation of the impact of the programme including establishment of appropriate indicators



USA – the National Science Foundation

Science of Science and Innovation Policy Programme (SciSIP)

http://www.scienceofsciencepolicy.net/uploads/SoSP_Report.pdf

The importance of this challenge derives from the magnitude and centrality of the contribution that science and technology make to the U.S. economy. In 2007, the U.S. Federal government R&D budget totalled $139 billion, affirming the importance of Federal investments in science and technology. It is imperative to advance the scientific basis of science policy so that limited Federal resources are invested wisely. **Scientific models must be developed, along with methods of collecting real-time quantitative and qualitative data so that future policy decisions are based on sound science and informed by meaningful metrics. Retrospective analysis is also needed, to analyze the impact of Federal investments on scientific discovery and innovation, the economy, and society**. In this way, past investments may help inform future decisions, refine the accuracy of models, and maintain the nation's dominance in the scientific arena.

The Science of Science Policy: a Federal Research Roadmap (p3)

UK National Endowment for the Arts, Science and Technology (NESTA)

The Department Innovation, Universities and skills White Paper on innovation (March 2008) states that NESTA will develop an Innovation Index to measure UK innovation

NESTA's Innovation Index project aims to create a new set of indicators which measure the innovation that previously went uncounted in both the public and private sectors.

http://www.innovationindex.org.uk/

The need for appropriate evaluation procedures

- Cost/recovery models are not the best answer to funders and governments expectations.

- We need to develop appropriate evaluation procedures to assess outputs and impacts of our research, nertworks and infrastructures.

Assessing ‘impacts’ of Research and Development

Scientific: Contribution to scientific theory, knowledge; development of our understanding of processes

Technological: Development of new products, services; ‘spin-offs’ from R&D...

Economic: Contribution the economic growth; redistribution of resources at individual, local, regional national and global levels...

Social : Contribution to health care, individual, family, community well being, generating changes in behaviour

Political: Contribution to political stability; national and supranational cohesion

Environmental: Contribution to improved environmental systems, sustainability

Assessing outcomes & impact

Impacts can be generated …

- **Short term**, i.e. procurement market, gains in scale and scope
- At **medium term**, i.e. capacity building, employment opportunities, regional impacts
- At **longer term**, i.e. organizational / societal changes, creation of spin-offs, knowledge and data for further (still unexpected) use

Who has an interest in these impacts?

Interest from	Scientific impact	Technological impact	Economic impact	Social impact	Political impact	Environ-mental
Scientific community	***	**	*	*	*	*
Funding Bodies	***	***	*	*	*	*
Policy makers	**	**	***	***	***	***
Business community		***	***			*
General public	**	***	***	***	***	***

Assessing outcomes & impact

To analyse impacts, there is a need for:

- Coherent evaluation strategy
  - Definition of an appropriate methodology and indicators.
  - Implement indicators
- Representative Case Studies and datasets

Retrospective analysis (Ex-post) is only possible if data is collected

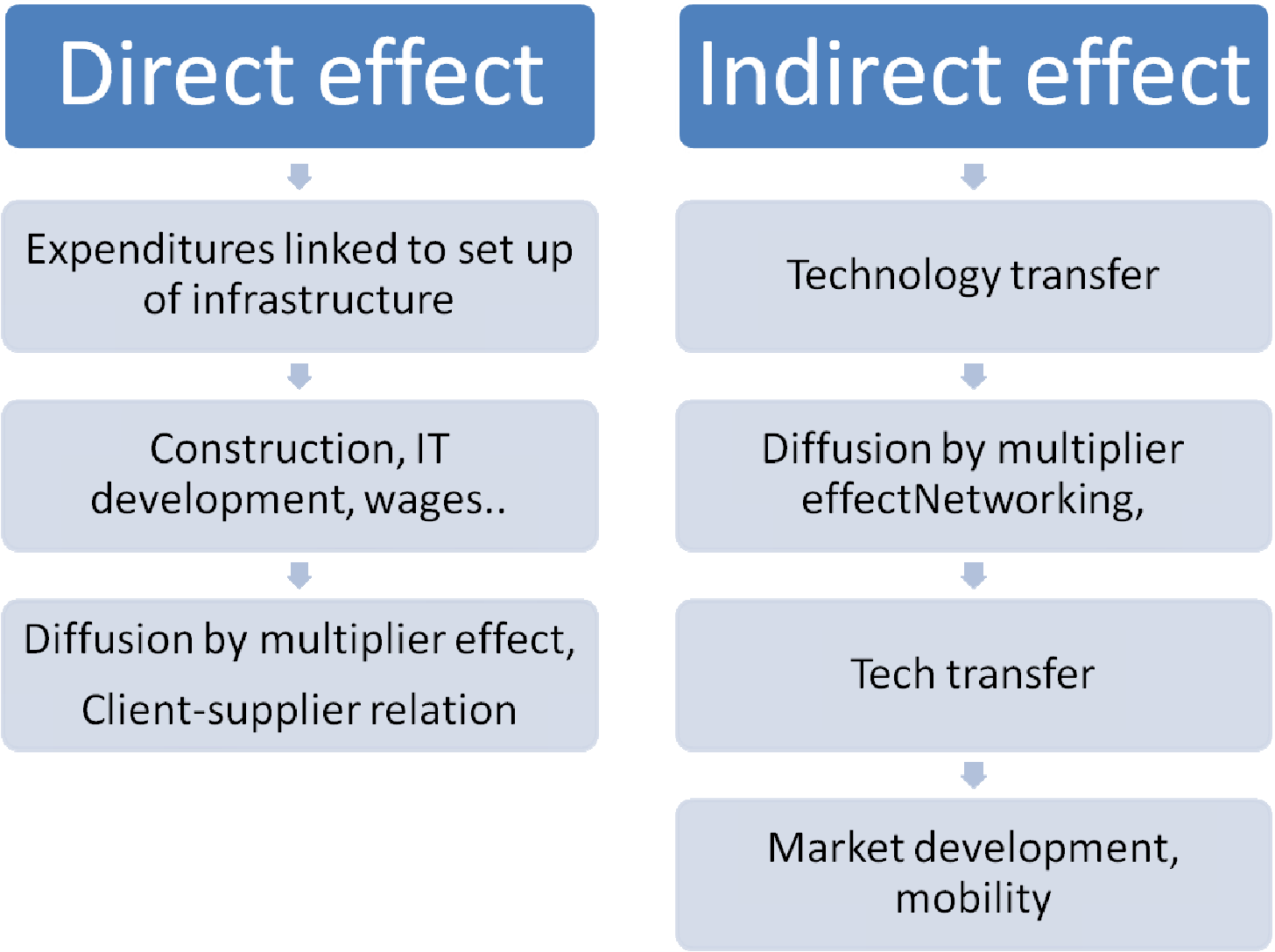
Evaluation of the socio-economic impact of BBMRI

- Technopolis (final report spring 2010)
- Ex-ante evaluation of economic and health impact of BBMRI
  - develop logic model :
    - objectives - activities
    - Set of indicators to be implemented to assess outcome and impact
- BETA (final report spring 2010)
- Ex-post evaluation focusing on 5 network of biobanks.
  adaptation/evolution of an existing evaluation method.
- FhG-IBMT (Institut Biomedizinische Technik) Saarbrücken
- Impact on cryo-industry one case study of the biobank "EuroCryoSaar"

BETA & BBMRI

- **INFRA-2010-3.2**: development of new or enhanced methods and indicators to measure the social, economic, environmental, direct and indirect impacts, including of scientific data repositories; another action for forward-looking and retrospective case studies

Impact of setting an ionfrastructure

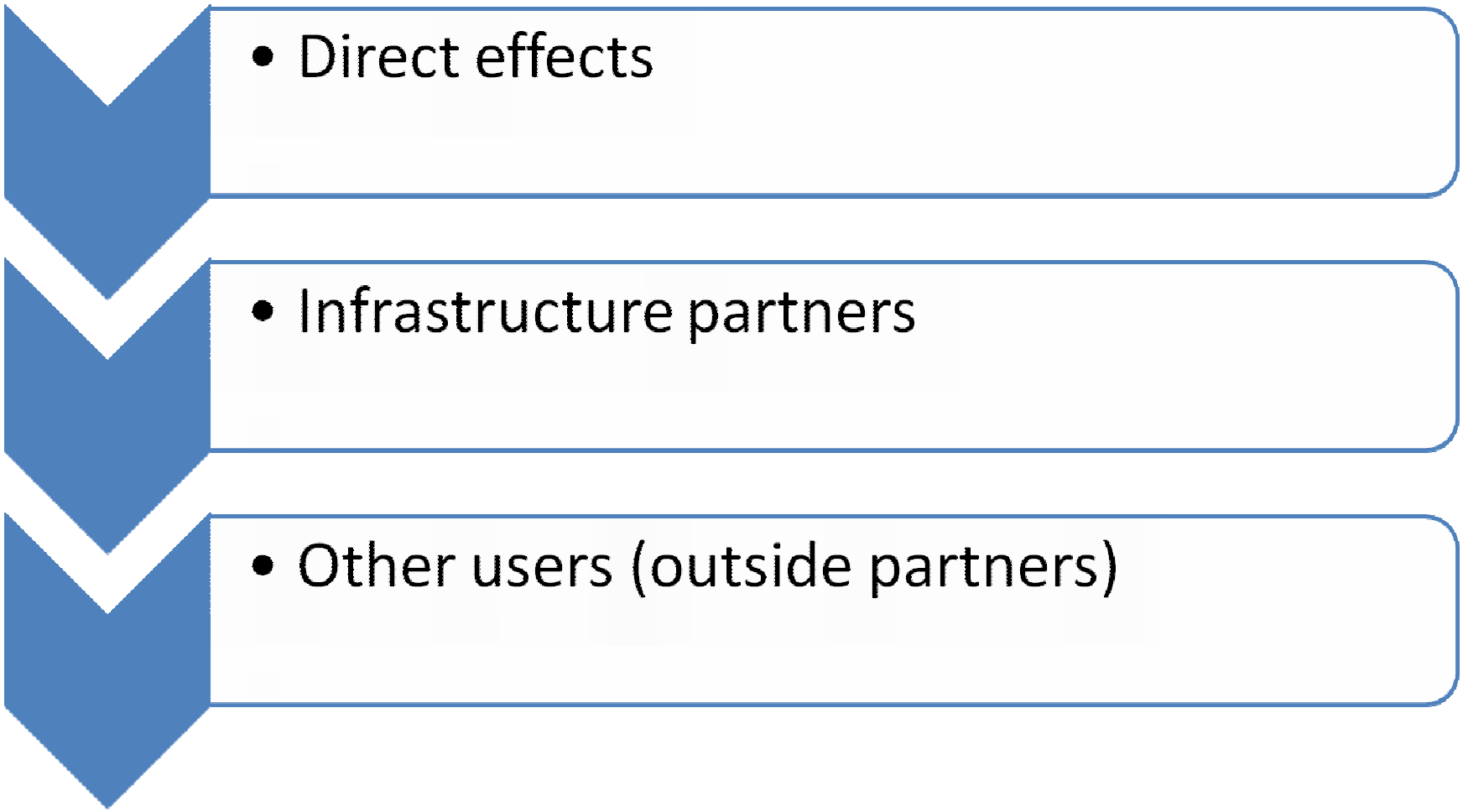


Example of setting a Biobank : EuroCryoSaar

- Impact Study delivered by FhG-IBMT (Institut Biomedizinische Technik) Saarbrücken

- Impact on cryo-industry
  - Employment
  - Investment
  - Economic development

Impact of Infrastructure use



Standard research outputs,

- number of scientific publications and most cited publications / bibliometrics
- number of other scientific outputs (scientific prizes, keynotes speech in top level conferences,…)
- number of patents at the European and US patent offices (applications/granted, ownership regimes…)
- other IPR (Copyrights, trademarks, etc.)

Knowledge generation & transfer

- new pipelines
- new or improved drugs
- new or improved therapy protocols,
- new or improved diagnosis methods,
- new or improved prevention guidelines
- new or improved experimental design
- new or improved analytical tools

Knowledge generation & transfer (2)

- new standards
- new knowledge of relation between disease and various factors (life style, nutrition, environment,…)
- human resources with specific attention on multidisciplinary expertise (like medical doctors in research, biologist with ICT, pathologist and epidemiology), including
  - new competences
  - training (PhDs awarded and new PhDs started)

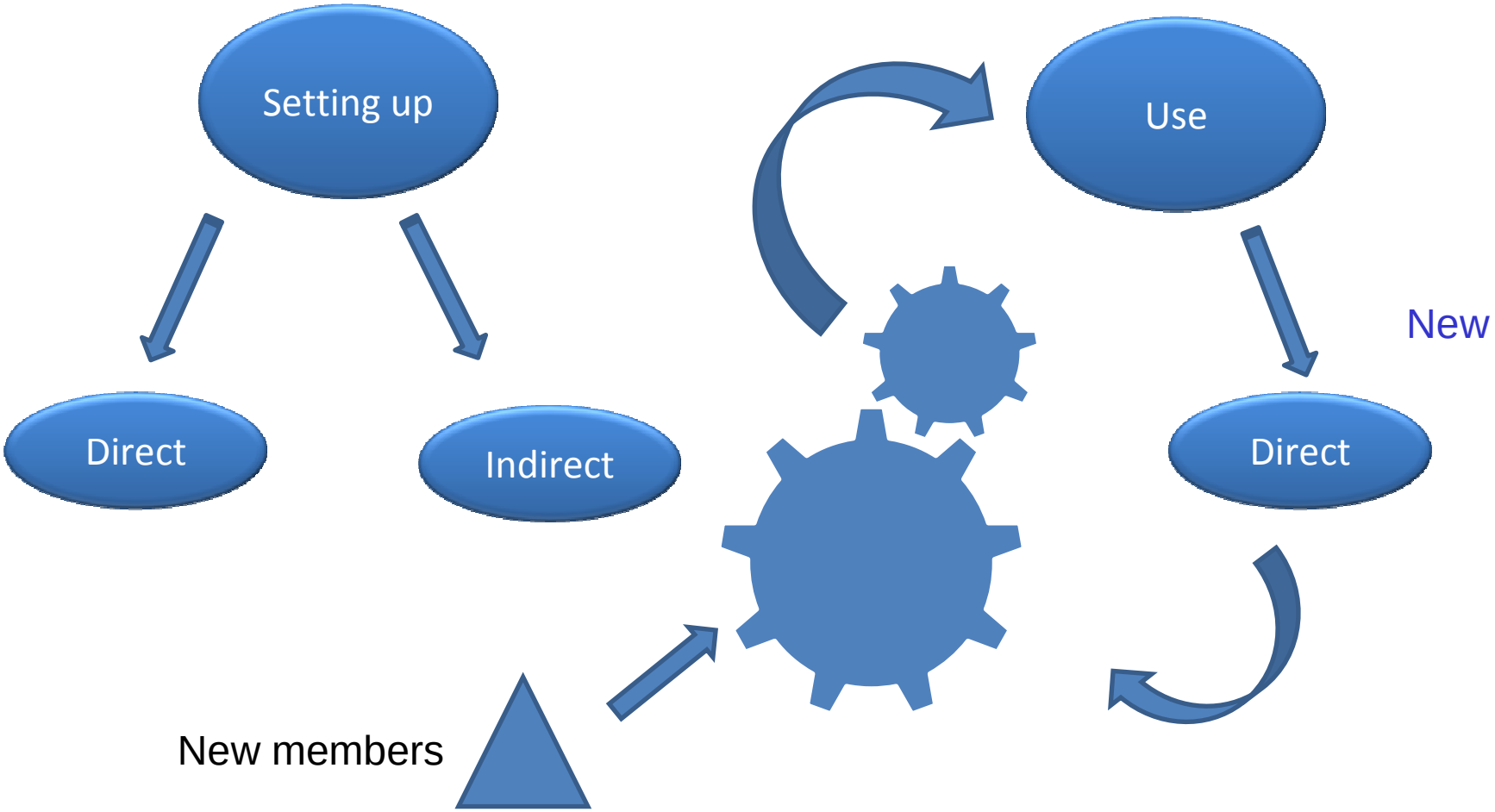
Knowledge generation & transfer (2)

  - recruitment (additional researchers employed on research programmes, including young researchers, and researchers from non-European countries
- new training programmes (academic and long life training)
- exploitation of IPR (licensing)
- creation of new firms, including spin-off companies

Partnering and collaboration

- Importance / proportion of scientific output and knowledge generation & transfer made in collaboration (ex. Co-publications, co-application of patent,…)
- MTA (Material Transfer Agreement)
- New research projects in cooperation (distinguishing private/public, local/national/international) with: BBN partners

Assessing the effect of the Enrichment process



Conclusions

- A better understanding of the outcome and impact of biobanking networks and Research Infrastructure is a major requirement to ensure sustainable funding from agencies and governments

- Proposal:
- GBRCN Joint effort to develop and implement appropriate evaluation strategies