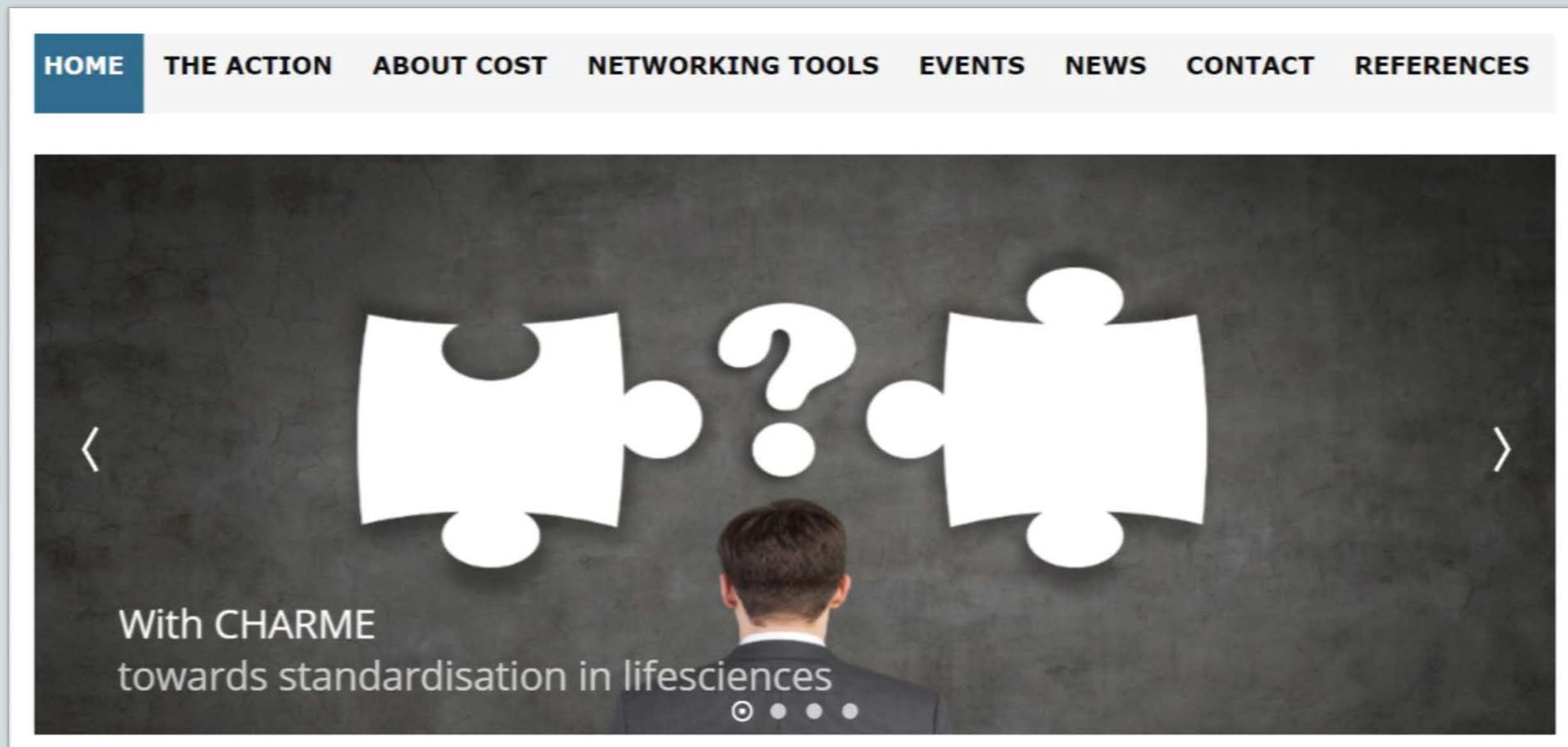




# The COST Action CHARME

## A European Initiative for the Harmonisation of Standards for Life Sciences Research (CA15110)

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<https://www.cost-charme.eu/home>

### About CHARME

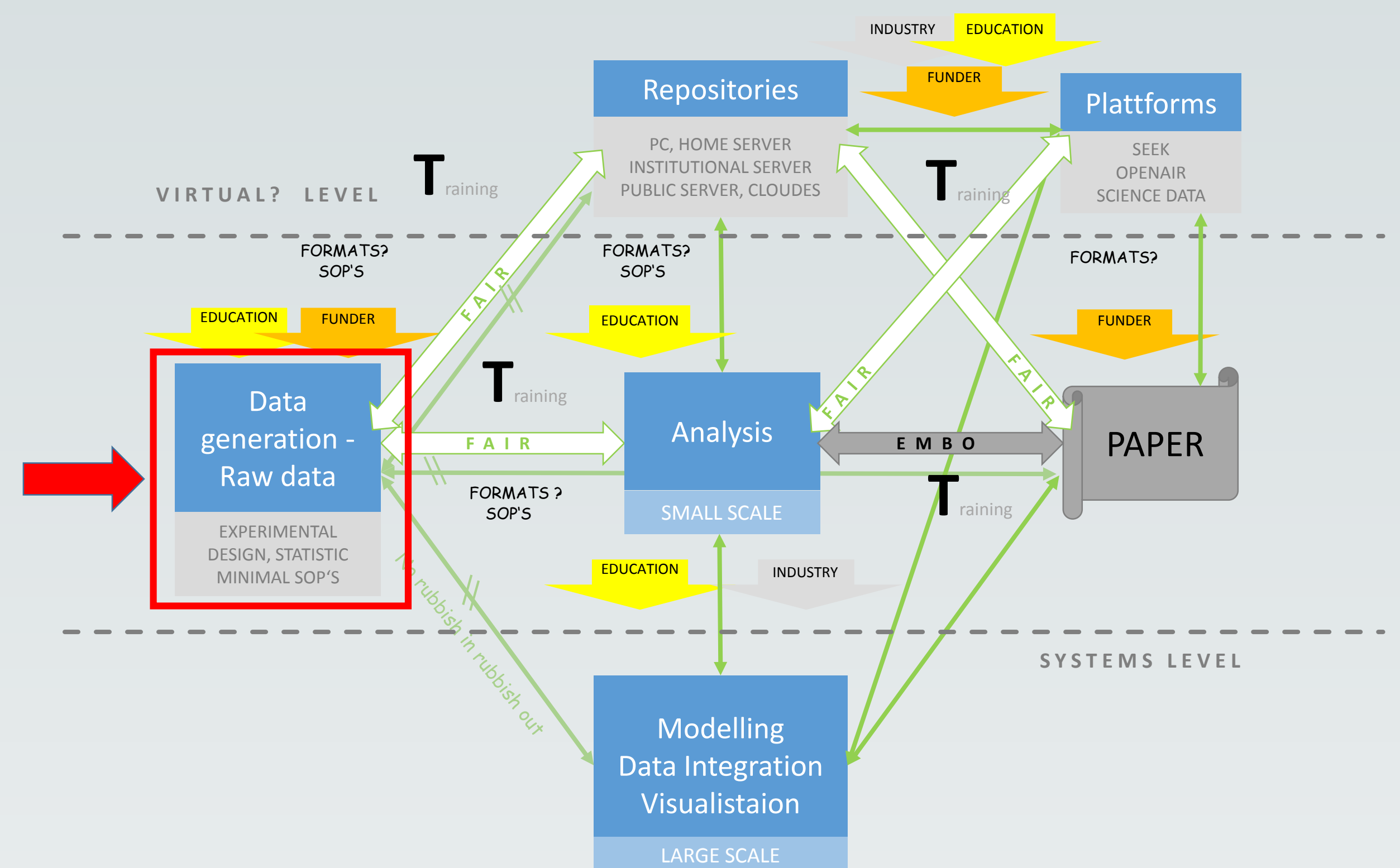
Standardisation and quality management are important drivers in the life sciences and biotechnology, as only data generated with minimum quality assurance can be easily implemented into industrial applications. Standards assure and ensure that data become easily accessible, shareable and comparable along the value chain. Reproducibility, standards and standard operating procedures (SOPs) in data generation and analysis are challenging topics of the modern research and bioinformatics. Only by the use of common standards life science research will improve its efficiency and competitiveness.

**CHARME aims to identify needs and gaps in standards, teaming up with other initiatives and organisations, and proposing new strategies for successful assimilation of standards into the daily work-flow of researchers.** Currently 30 EU countries are involved in this initiative, which makes it one of the most widely recognised Actions among all COST initiatives.

### Life Sciences Digitalisation Challenges

- ✓ High-throughput technologies, such as Next Generation Sequencing (NGS), have turned the **Life Sciences** into a **data-intensive discipline** and require that the analysis of data is performed using **high-performance computing** resources.
- ✓ These approaches require the integration of data from different types of sources and of different levels of biological information.
- ✓ To achieve interoperability is therefore mandatory and the only way to make data and resources available for their easy exchange and integration is the use of standards.
- ✓ Working across scales and (biological) systems demands also the harmonisation of existing standards - including a common language - between particular fields or analytical technologies.
- ✓ The quality of the data provided is an issue of fundamental importance for re-use and reproducibility.
- ✓ Quality Management Plans and Standardisation in context with Open Science (OS) efforts are crucial for a reproducible and reliable research.
- ✓ FAIR (findable, accessible, interoperable and reusable) data principles implementation is mandatory.

### Along the pipeline of acquisition of data to (re)use



### Major Barriers

- ✓ Lack of experts who understand and possess knowledge of FAIR principles and relevant tools.
- ✓ Insufficient and unequal education on standards and SOPs in Life Sciences.
- ✓ Resistance to use standard and SOPs in the lab:
  - It requires more time for the people initiating SOPs (indicating more documentation and more quality controls)
  - No incentive system (funding and/or papers)
  - No convincing documents that benchmark the works with or without SOPs
- ✓ Lack of formal **Quality Systems** in wet and dry life sciences research.
- ✓ Lack of guidelines for data-management linked to FAIR principles.

### Future needs - today's requirements

- ✓ Education in Data Management, Standardisation and Quality Management.
- ✓ Definition of the minimal skills that students should acquire within their Bachelor studies and Master's programme.
- ✓ Possible basic CV with flexibility to adjust to different application areas and local research strengths.
- ✓ Involvement of teachers, principal investigators and lecturers to increase awareness in these groups.
- ✓ Mechanisms for collaborative preparation and sharing high quality teaching materials and methods among education professionals.

### CHARME's Main Objectives

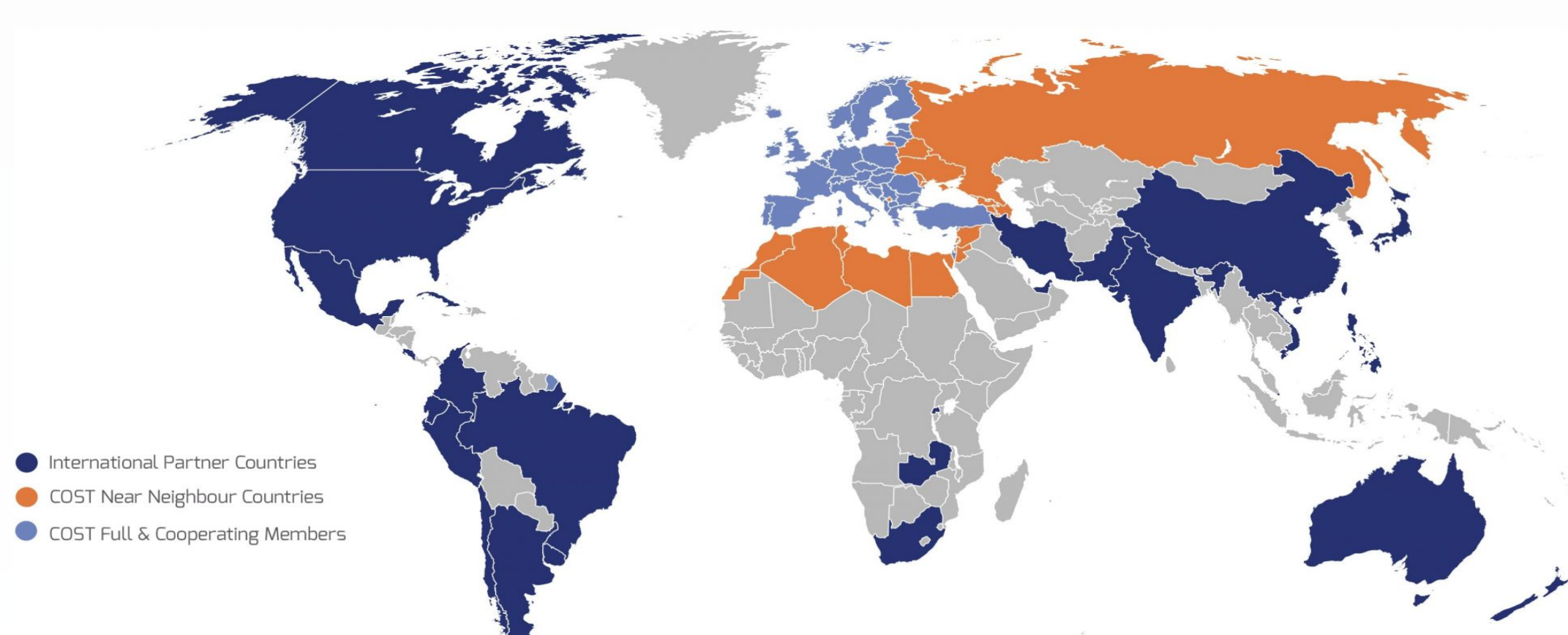
CHARME's pan-European network unites experts from all areas of scientific research and strategic development (academia, industry, policy, legal, ethical, etc.), joining their expertise to address needs and challenges along the value chain for life sciences across Europe.

To achieve the Action's 4-year vision, an integrated project strategy has been designed to ensure de-centralised decision-making and enhanced cooperation between the different stakeholders and partners.

The leverage of the COST Action CHARME relates to four pillars



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#### COST International Partner Countries (IPC)

COST Actions are open to global cooperation and allow researchers from International Partner Countries to participate on the basis of ascertained mutual benefit subject to approval.

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