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TIER2Project

TIER2 Project

Results from the Future Studies Performed by TIER2

The results highlight not only the need for change but also **provide a concrete direction** for stakeholders to work towards.

The enablers presented help stakeholders **enhance the implementation** of reproducibility practices, while understanding the barriers can reduce their potential impact.

Funded by the European Union

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The Preferred Future of Reproducibility in Research

Consists of

Culture

Definition and Standardisation

Definition of reproducibility established

Standards adopted by research community

Clear distinction between concepts

Standardized data sharing methods

Incentives and Recognition

Transparent funding for reproducibility

Rewards for reproducible practices

Collaboration and networking opportunities

Funding for reproducibility research

Guidelines and Infrastructure

Public infrastructures enable data sharing

Stakeholders provide clear guidelines

Feasible guidelines are implemented

Data analysis is supported

The New Norm

Reproducibility is the norm

Transparency ensures scientific quality

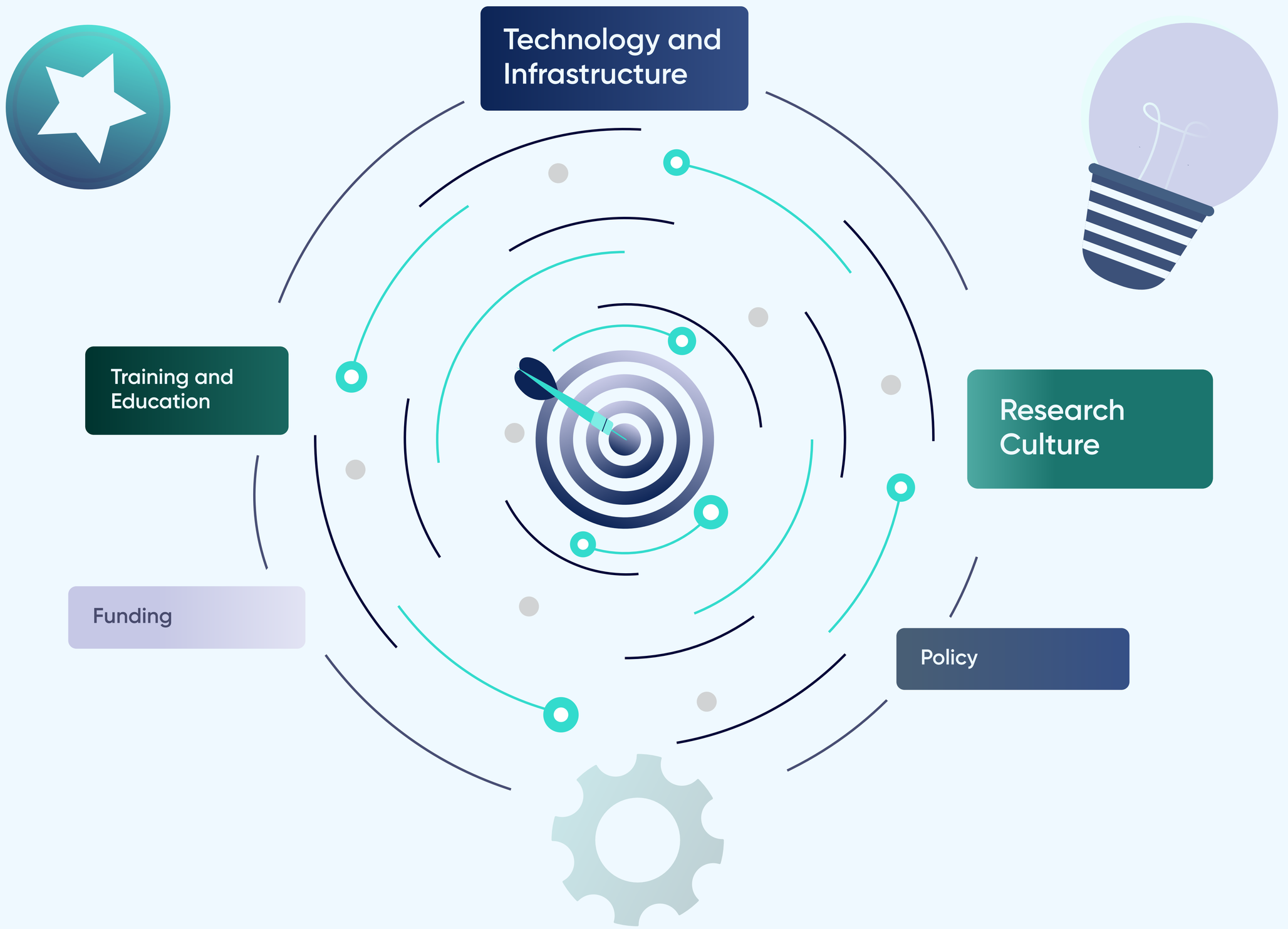
Funding includes reproducible practices

Training incorporates open science

The Preferred Future of Reproducibility in Research

Can be achieved by

Enablers



Research Culture fosters a shared understanding and incentivization of reproducibility, promoting its adoption as a mainstream, standardized practice that is widely implemented through collaborative efforts, shared projects, and community-driven initiatives.

Technology and Infrastructure provide accessible tools, platforms, and systems, including data repositories, submission guidelines, and data stewards, to support researchers in implementing reproducibility.

Training and education ensure mandatory reproducibility training for early-career researchers, support for stakeholders in assessing practices, and normalization of the idea that good research behaviour is rewarding.

Policy plays a key role in driving best practices by promoting guidelines and fostering discussions on the extent to which reproducibility practices should be made mandatory within the research community.

Funding includes dedicated resources to support reproducible research and the development and maintenance of infrastructures that facilitate it.

The Preferred Future of Reproducibility in Research

Can be obstructed by

Barriers

Cultural and Social Issues include inconsistent awareness, lack of consensus on terminology, misaligned incentives, risks of box-ticking metrics, epistemic diversity, and potential marginalisation of researchers and research institutions.

Systems and Institutions face challenges such as lack of research support services, an inadequate reward and recognition system, and inequality in resource availability.

Tools and Infrastructures face challenges such as a lack of methods to assess reproducibility, absence of rules and standards, interoperability issues, and the negative influences of AI.

Financial and Economic Costs include the extra time and resources needed for transparency, unequal access to resources, lack of funding for reproducible practices, and the absence of rewards for reproducibility within funding streams.

Policy challenges entail a lack of reward and recognition for reproducibility, misalignment of policies across institutions and disciplines, and restricted transparency in interactions between researchers, industry stakeholders, and policy makers.

Training and Education confront challenges such as missing statistics and data science skills, lack of expertise in open science, and the prevalence of bad scientific practices.

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