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The background of the slide features a hand holding a transparent cube. Inside the cube is a blue, liquid-like structure that resembles a DNA double helix or a complex molecular model. The background is dark with faint, light-colored technical drawings and lines, suggesting a scientific or technological theme.

**Large Infrastructures  
for Research, Experimental  
Development and Innovation  
in the years 2016 – 2022**

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## **Contents**

- 1. Large Infrastructures for Research, Experimental Development and Innovation**
- 2. Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation**
- 3. International Evaluation of Research Infrastructures of the Czech Republic**
- 4. Large Infrastructures for Research, Experimental Development and Innovation – highest / high priority**
- 5. Large Infrastructures for Research, Experimental Development and Innovation Multiannual Financial Framework 2016 – 2022**
- 6. Large Infrastructures for Research, Experimental Development and Innovation in ERA Legal Networks**
- 7. Large Infrastructures for Research, Experimental Development and Innovation Roadmap update 2018**

# 1. Large Infrastructures for Research, Experimental Development and Innovation

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- The definition of a **“Research Infrastructure”** has been fixed by the Framework for State Aid for Research and Development and Innovation (2014/C 198/01) and Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty
- The definition of a **“Large Infrastructure for RDI”** is set by the Act No 130/2002 Coll. on the Support of Research, Experimental Development and Innovation from the Public Funds
- **“Large Infrastructure for Research, Experimental Development and Innovation”** = *a unique research facility, including its acquisition and related investment costs and the costs of ensuring its activities that are essential for comprehensive research and development with heavy financial and technological demands and which is approved by the Government of the Czech Republic and established by one research organisation for the use of other research organisations*



- **User-defined necessity**

- Large infrastructure for RDI emerges and is operated in direct response to the socio-economic demand in order to face and address socio-economic challenges

- **Uniqueness and nation-wide impact**

- Large infrastructure for RDI presents a unique facility and capacity for performing research, technological development and innovation in a scientific field or multidisciplinary area and has at least nation-wide impact within the Czech research and innovation eco-system

- **Open access to facilities**

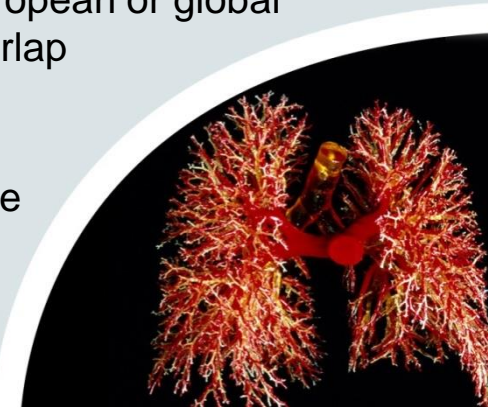
- Large infrastructure for RDI is operated by a research organisation for the use of the whole RDI community and provides external users with RDI services on the basis of tenders evaluated by experts

- **International overlap**

- Large infrastructure for RDI is usually inter-linked with research infrastructures within macro-regional, pan-European or global networks and has significant international overlap

- **Excellence**

- Results reached by using a large infrastructure for RDI are high-quality and highly relevant from the “value for money“ point of view





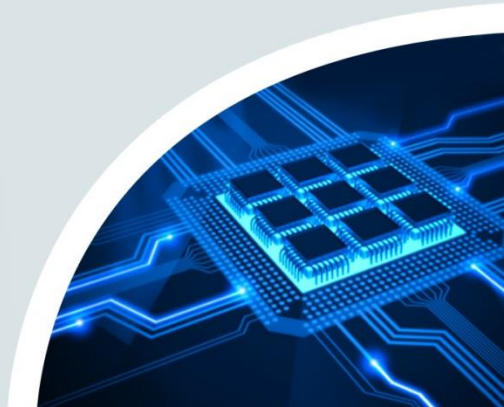
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a) Large Infrastructure for RDI located in the Czech Republic having an significant international impact

- **CEITEC Nanotechnologies**
- **CESNET** – Czech Education and Scientific Network
- **COMPASS** – Tokamak for Thermonuclear Fusion
- **ELI Beamlines** – Extreme Light Infrastructure
- **IT4Innovations** – National Supercomputing Centre
- **Research Reactors** LVR-15 and LR-0
- **RECETOX** – Research Centre for Environmental Chemistry and Eco-toxicology

b) Large Infrastructures for RDI of the Czech Republic located abroad

- **Polar Antarctic Station** of Johann Gregor Mendel on James Ross Island
- **Polar Arctic station** on Svalbard





- c) Large Infrastructure for RDI operated as a Czech **national "node" of a pan-European or global distributed research infrastructure**
- **CESSDA** – Consortium of European Social Science Data Archives
  - **EU – OPENSREEN** – European Infrastructure of Open Screening Platforms for Chemical Biology
  - **INFRAFRONTIER** – European Infrastructure for Phenotyping and Archiving of Model Mammalian Genomes
  - **SHARE** – Survey of Health, Ageing and Retirement in Europe
- d) Large Infrastructure for RDI in the form of the **Czech involvement in an international single-sited research infrastructure or an access point to its capacities and facilities**
- **CERN** – European Organization for Nuclear Research
  - **Fermilab** – Fermi National Accelerator Laboratory
  - **ESS** – European Spallation Source
  - **JHR** – Jules Horowitz Reactor
  - **Pierre Auger Observatory**





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## 2. Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation

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- General compliance with the **ESFRI Roadmap**
- Strategy and policy document of the Czech Republic prepared by the **Ministry of Education, Youth and Sports** and approved by the Government of the Czech Republic
- For the 1<sup>st</sup> time issued in 2010, updated in 2011, **to be updated in 2015** and after that in the same general timeframe as the ESFRI Roadmap
- General framework, evaluation and monitoring mechanisms, **landscape and gap analysis**, strategic outlook, large infrastructures for RDI overview
- **6 Science-oriented areas**
  - Social Sciences and Humanities
  - Environmental Sciences
  - Physical Sciences
  - Energy
  - Biomedicine
  - ICT / e-Infrastructures



### 3. International Evaluation of Czech Research Infrastructures in ESFRI context

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- **New methodology for research infrastructures evaluation** prepared in 2013 – 2014 in line with ESFRI assessment standards
- **International Evaluation Committee** chaired by Dr. Peter Fletcher (UK Science and Technology Facilities Council) and composed of **6 Scientific Boards** (leading experts on research infrastructures)
- The most **up-to-date overview of the Czech research infrastructures** regardless of their current life cycle phase (i.e. preparatory, implementation, operational, decommission) after ERDF intervention in the Czech Republic
- An expert basis for **decision-making on funding of the large infrastructures for RDI** during the financial framework **2016 – 2022**
- An expert basis for **decision-making on supporting of the research infrastructures with Czech participation applying for the ESFRI Roadmap** update in 2015
- An expert basis for **updating the Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation** in 2015



## Research infrastructures evaluation criteria

- **Management** structure (Executive / Scientific Board, HR / PR strategy)
- Long-term **strategy for sustainable technological development** of the research infrastructure's facilities and equipment
- **Open access policy** to research infrastructure's technologies and quality of services provided by the research infrastructure for its user community
- Potential use of research infrastructure's facilities for the development of **new technologies** and level of cooperation with the industrial sector
- **Quality of research, technological development and innovation results** achieved by external users by using facilities of the research infrastructure („value for money“)
- **Socio-economic impact** of the research infrastructure in the Czech Republic and globally (user-defined necessity and significance for addressing socio-economic challenges)
- **Cooperation** with other research infrastructures and research organisations operated in the respective scientific field or multidisciplinary area in the Czech Republic and abroad (ERA / worldwide)



## Research infrastructures evaluation outcomes

- Division of positively evaluated research infrastructures into four funding-priority groups, based on differentiated assessment results
  - A.1 **Highest priority**  $\approx 27\%$  – **17** research infrastructures
  - A.2 **High priority**  $\approx 39\%$  – **25** research infrastructures
  - A.3 **Medium priority**  $\approx 13\%$  – **8** research infrastructures
  - A.4 **Low priority**  $\approx 13\%$  – **8** research infrastructures
- Science-oriented division of total 42 positively evaluated **research infrastructures graded A.1 and A.2 to be financially supported** by the Ministry of Education, Youth and Sports
  - Social Sciences and Humanities – **6**
  - Environmental Sciences – **5**
  - Physical Sciences – **17**
  - Energy – **5**
  - Biomedicine – **7**
  - ICT / e-Infrastructures – **2**



## 4. Large Infrastructures for Research, Experimental Development and Innovation – highest / high priority

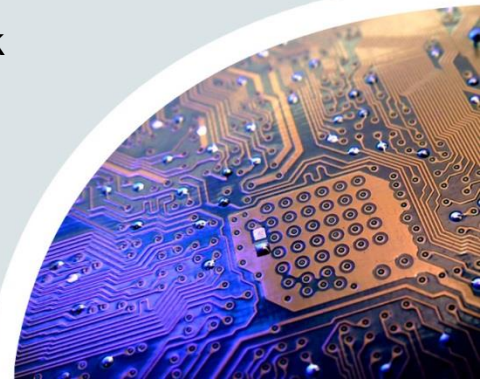
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### Social Sciences and Humanities

- **CNC** – Czech National Corpus
- **SHARE** – Survey of Health, Ageing and Retirement in Europe (CZ Node)
- **CLB** – Czech Literary Bibliography
- **CSDA** – Czech Social Science Data Archive
- **ESS** – European Social Survey (CZ Node)
- **LINDAT** – Lindat / Clarin

### ICT / e-Infrastructures

- **CESNET** – Czech Education and Scientific Network
- **IT4Innovations** – National Supercomputing Centre





## Environmental Sciences

- **ACTRIS** – Aerosol, Clouds and Trace Gases Research Infrastructure
- **CzeCOS** – Integrated Carbon Observation System (CZ Node – ICOS)
- **NanoEnviCz** – Nanomaterials and Nanotechnologies for Environmental Protection and Sustainable Future
- **RECETOX** – Research Centre for Environmental Chemistry and Eco-toxicology
- **SoWa** – National Infrastructure for Comprehensive Monitoring of Soil and Water Ecosystems in the Context of Sustainable Use of Landscape

## Energy

- **CATPRO** – Efficient Use of Energy Resources Using Catalytic Processes
- **Reactors in Řež** – Nuclear Research Reactors LVR-15 and LR-0
- **COMPASS-RI** – Tokamak for Thermonuclear Fusion
- **JHR** – Jules Horowitz Reactor
- **WCZV** – Training Reactor VR-1





## Physical Sciences

- **BNL** – Brookhaven National Laboratory
- **CERIC** – Central European Research Infrastructure Consortium
- **CERN** – European Organization for Nuclear Research
- **CTA** – Cherenkov Telescope Array
- **ESS** – European Spallation Source
- **FAIR** – Facility for Antiproton and Ion Research
- **Fermilab** – Fermi National Accelerator Laboratory
- **ILL** – Institute Laue-Langevin
- **LSM** – Laboratoire Souterrain de Modane
- **Pierre Auger Observatory**
- **SPIRAL** – Système de Production d'Ions Radioactifs Accélérés en Ligne
- **ThALES** – Three Axis Low Energy Spectrometer
- **Van de Graaff** Accelerator Laboratory







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## Physical Sciences

- **CANAM** – Centre of Accelerators and Nuclear Analytical Methods
- **CEITEC Nanotechnologies** – Central European Institute of Technology
- **ELI Beamlines** – Extreme Light Infrastructure
- **EU – ARC** – European ALMA Regional Centre
- **IPMINFRA** – Infrastructure for Study and Application of Advanced Materials

## Biomedicine

- **CIISB** – Czech Infrastructure for Integrative Structural Biology
- **CCP Infrafrontier** – Czech Centre for Phenogenomics (CZ Node)
- **CZ BioImaging** – Research Infrastructure for Biological and Medical Imaging
- **CZ OPENSREEN** – Research Infrastructure for Chemical Biology (CZ Node)
- **EATRIS CZ** – Translational Medicine Infrastructure (CZ Node)
- **ELIXIR CZ** – Elixir (CZ Node)
- **C4SYS** – Centre for System Biology

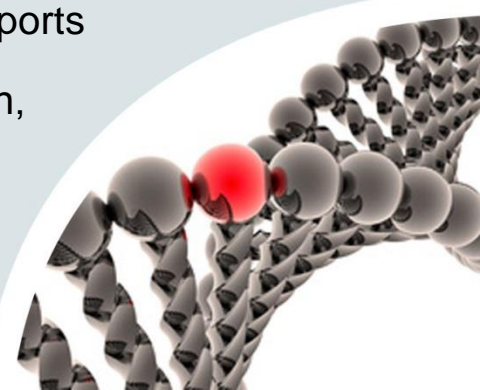




## 4. Large Infrastructures for Research, Experimental Development and Innovation Multiannual Financial Framework 2016 – 2022

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- **7-year multiannual financial framework** 2016 – 2022 ensuring stable and predictable funding enabling long-term sustainable technological development of research infrastructures and their involvement in pan-European and worldwide networks
- Total budgetary allocation for the large infrastructures for RDI over 2 billion CZK per year  $\approx$  **over 70 million EUR per year**
- Continuous **interim assessment** to be performed by an international evaluation committee, **including on-site visits** in 2017 and 2019
- Complementary and synergic use of the state budget expenditures for RDI and European Structural and Investment Funds (ESIF)
- **Operational costs**  $\approx$  Large infrastructures for RDI activity managed by the Ministry of Education, Youth and Sports
- **Investment costs**  $\approx$  Operational Program Research, Development and Education implemented by the Ministry of Education, Youth and Sports



- Operational costs

- **State budget expenditures** → activity “Large Infrastructures for RDI”
- **Operational costs** – materials, energy, services (public tenders), international mobility costs, overhead costs (flat rate / full-cost)
- **Personal costs** – costs of researchers and technicians devoted to the operation of a large infrastructure for RDI and „open access“ services provided for the user community
- **Membership fees** for participation in pan-European and worldwide research infrastructures networks
- Large infrastructure for RDI is operated as a service for its users → **“Soft money“ for “in-house research“** performed by the host institution or / and by the user community using facilities of large infrastructure for RDI **are not eligible costs**

- Investment costs

- **ESIF** → Operational Program Research, Development and Education (OP RDE)
- Further **upgrade** of technological **equipment and facilities**



## 5. Large Infrastructures for Research, Experimental Development and Innovation in ERA Legal Networks

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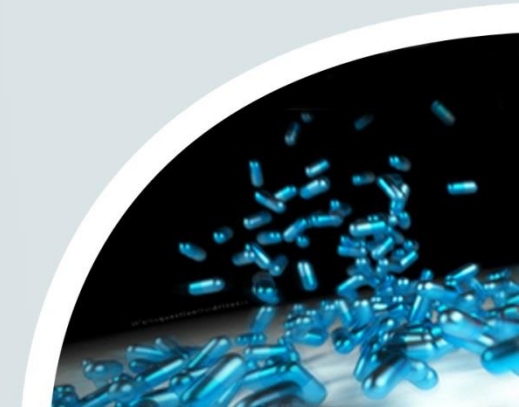
- **Membership in European Research Infrastructures Consortia (ERIC)**
  - **BBMRI** – Bio-banking and Bio-molecular Resources Research Infrastructure
  - **CERIC** – Central European Research Infrastructure Consortium
  - **CLARIN** – Common Language Resources and Technology Infrastructure
  - **EATRIS** – European Infrastructure for Transitional Medicine
  - **ESS Survey** – European Social Survey
  - **SHARE** – Survey of Health, Ageing and Retirement in Europe





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- **Membership in International Research Organisations**
  - **CERN** – European Organization for Nuclear Research
  - **JINR** – Joint Institute of Nuclear Research
  - **ESA** – European Space Agency
  - **ESO** – European Southern Observatory (including E-ELT)
  - **EMBC** – European Molecular Biology Conference
  - **EMBL** – European Molecular Biology Laboratory (including ELIXIR)
  - **VKIFD** – Von Karman Institute for Fluid Dynamics





## 7. Large Infrastructures for Research, Experimental Development and Innovation Roadmap update 2018

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- In general compliance with the **ESFRI Roadmap update 2018**
- Announcement of the call in the **1<sup>st</sup> half of 2017**
- Possible space for **4 – 6 new large infrastructures for RDI**
- **Eligible proposals**
  - **Medium and low priority large infrastructures for RDI included in the National Roadmap** since 2015 with no targeted financial support from the Ministry of Education, Youth and Sports in the years 2016 – 2017 → opportunity to being funded
  - **Large infrastructures for RDI not included in the National Roadmap** since 2015 due to **insufficient quality, readiness or maturity** → opportunity to being funded





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**Thank you for your attention!**

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