



Bundesministerium  
für Bildung  
und Forschung

# **BMBF-activities in the domain of “Universe”**

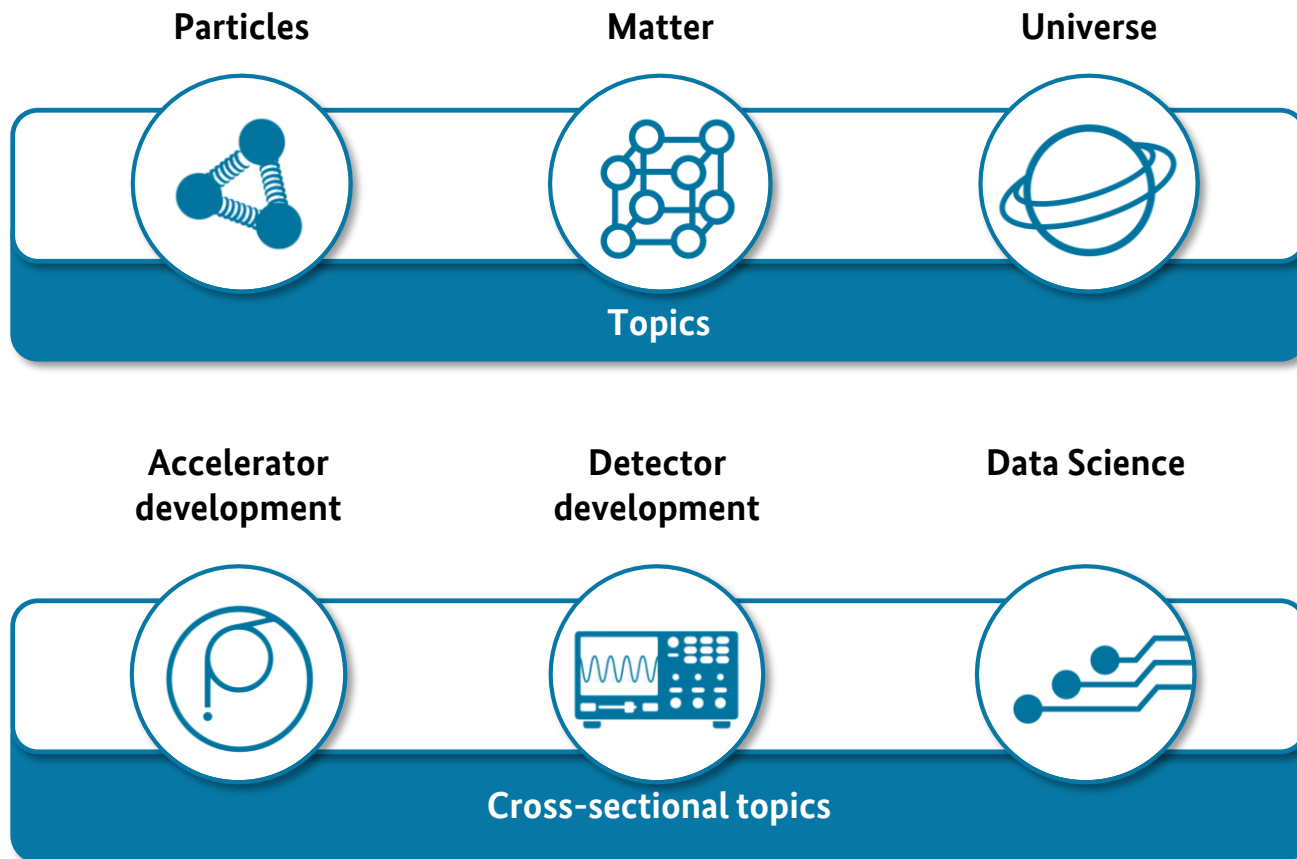
**03.12.2020, KAT-Strategietreffen**  
Eckart Lilienthal, BMBF

# Exploration of the Universe and Matter- ErUM (Erforschung von Universum und Materie)

- **Strategic and thematic framework** for fundamental research in natural sciences at research infrastructures
- Timeframe: 2017 until 2027
- Midterm Evaluation until 2022



# Thematic framework



# Strategic framework

Scientific excellence

Future technologies

Innovation seeds

Talents for science  
and industry

Participation



Large-scale  
facilities

STEM  
young scientists

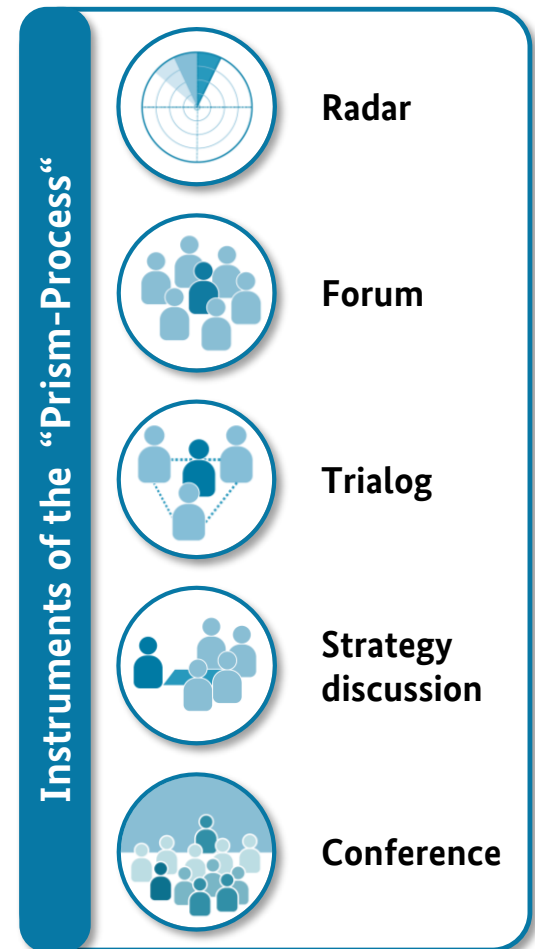
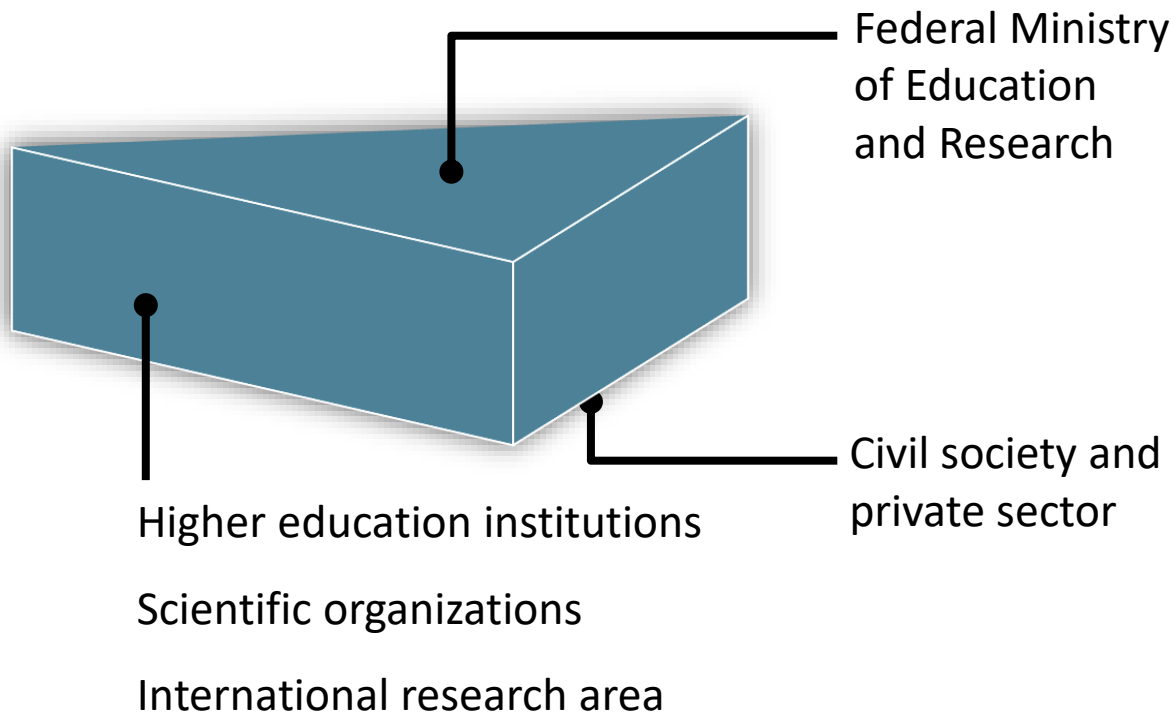
Networking

Transfer &  
participation



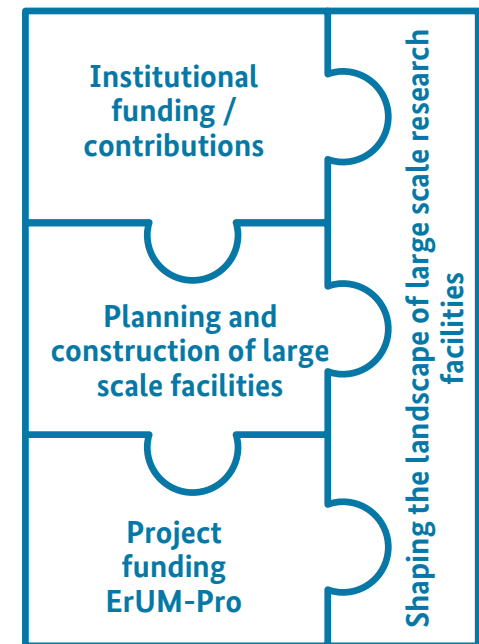
# Strategic framework – „The Prism-Process“

- Goal: creating a coherent overall strategy **by including all relevant parties**

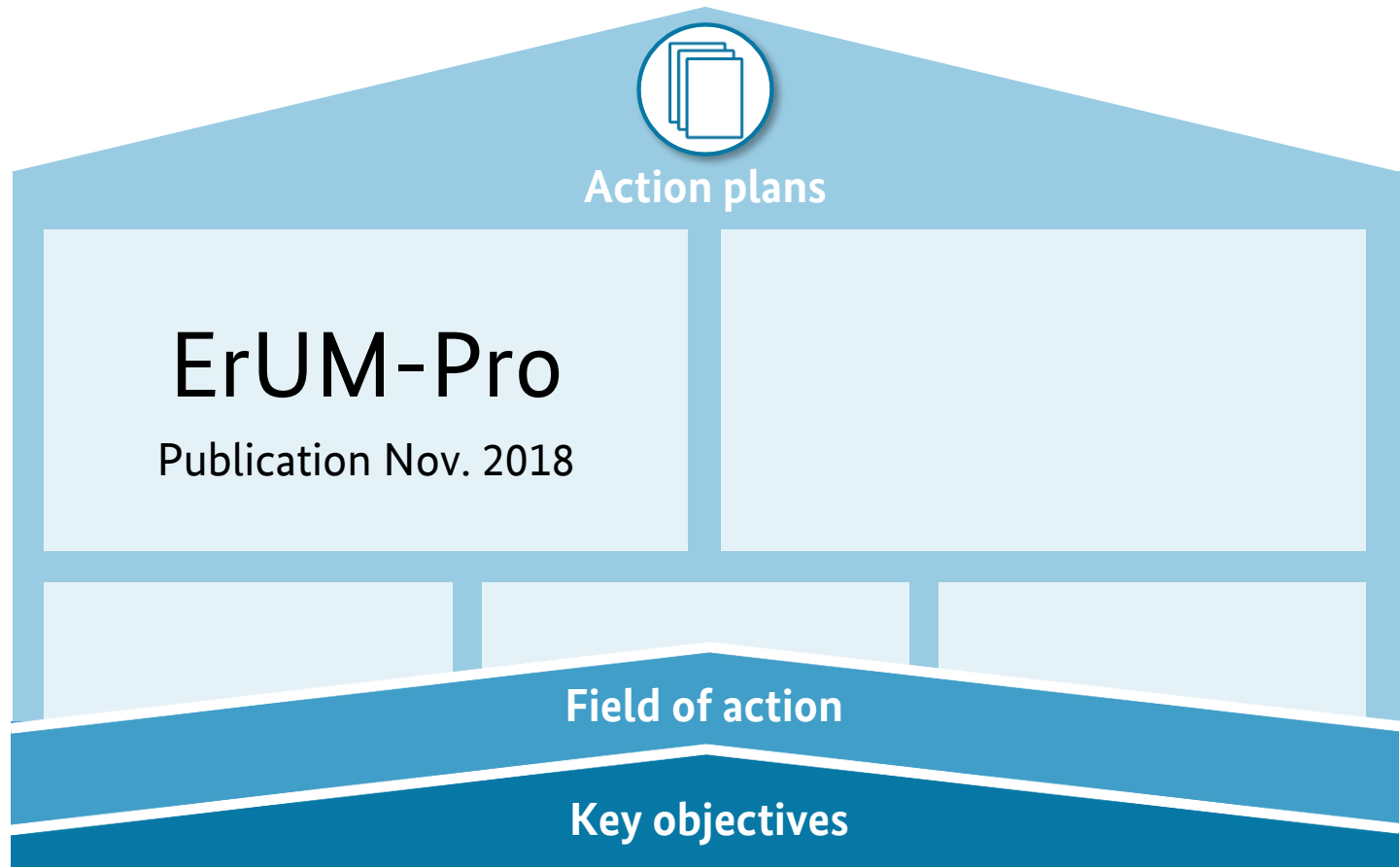


# Instruments for ErUM-funding

- Collaborative funding for non-university research centers (as well as the DFG) by federal and state governments (**institutional funding**), **payments of contributions** to international research infrastructures.
- **Contributing to planning and construction** of national and international research infrastructures
- **Project funding ErUM-Pro** (“collaborative research”)



# Strategic framework – action plans



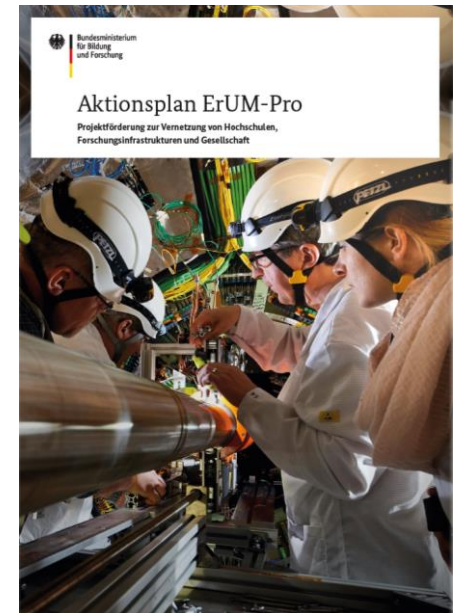
# ErUM-Pro

## Goal of the action plan

- Enabling cutting-edge research
- Strengthening cross-cutting initiatives
- Securing Germany's excellent position in science and industry

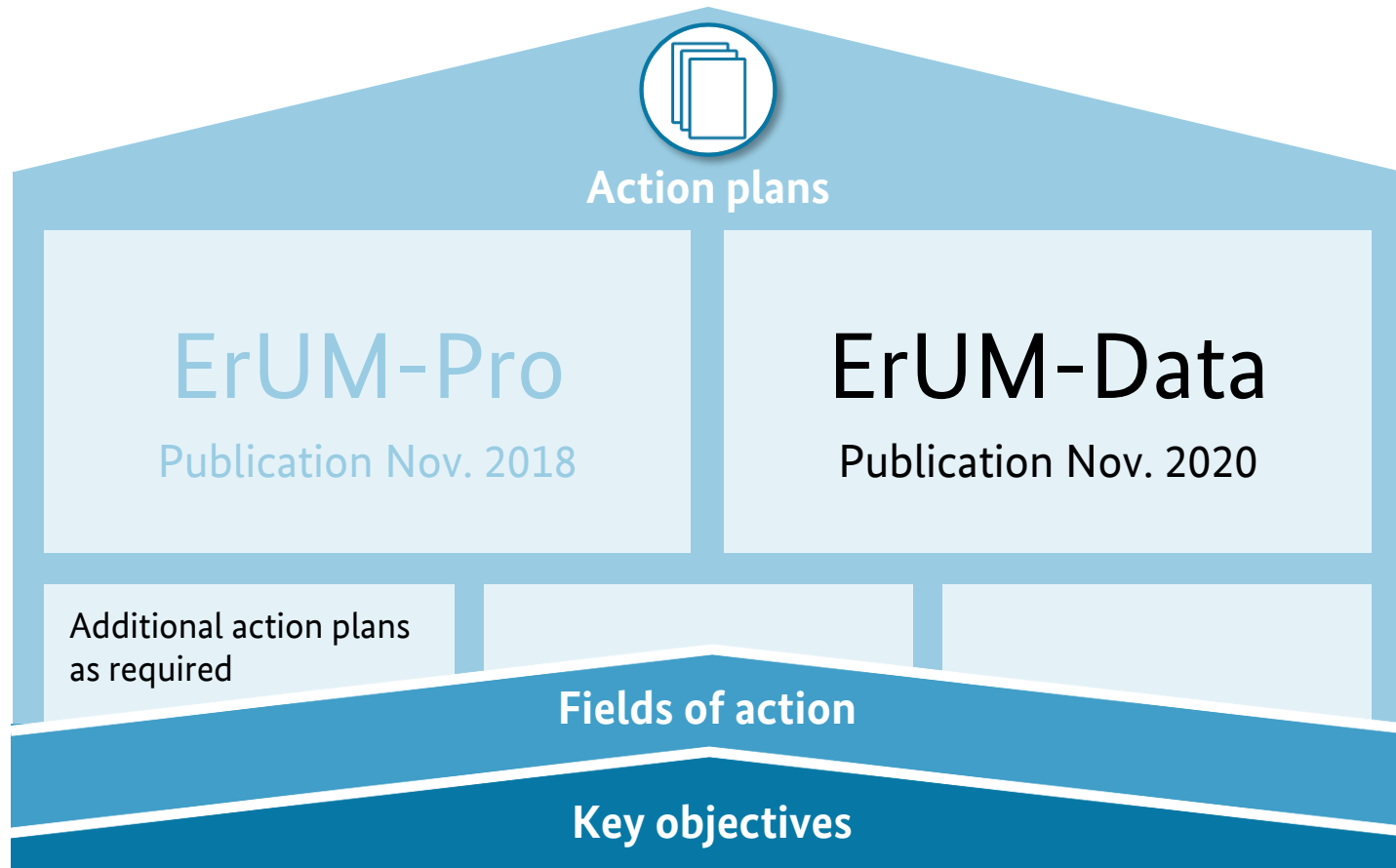
## Main emphasis of funding measures

- **Including universities**  
Developing instruments and methods at large scale facilities
- **Strengthening cross-cutting initiatives**  
Developing and testing new methods and technologies
- **Networking between interest groups**  
Establishing research focuses, qualifying STEM talents, strengthening transfer and participation.





# Strategic framework – action plans



# Digitalization in ErUM

## Challenges

- **Enormous, constantly growing amounts of raw data** at research infrastructures for the research of particles, matter and the universe
- Key factors in the digital transition: Efficient organization of data, data-handling and open access

## Opportunities

- **New fields of development and application** based upon new digital technologies, methods and competencies
- New potential for **added values**
- Accelerated creation of **scientific insights**



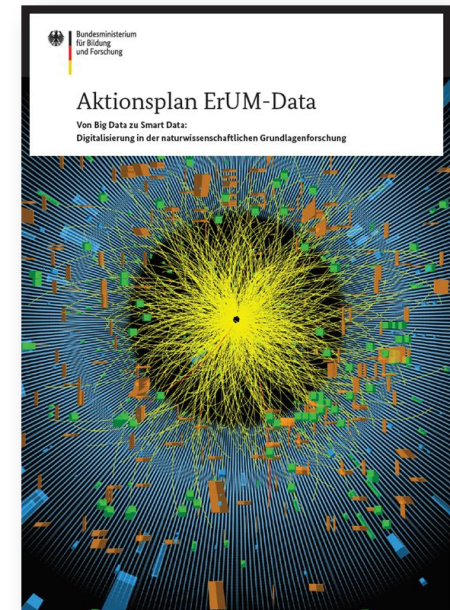
# Action plan ErUM-Data

## Parameters for a coordinated approach and a broader understanding

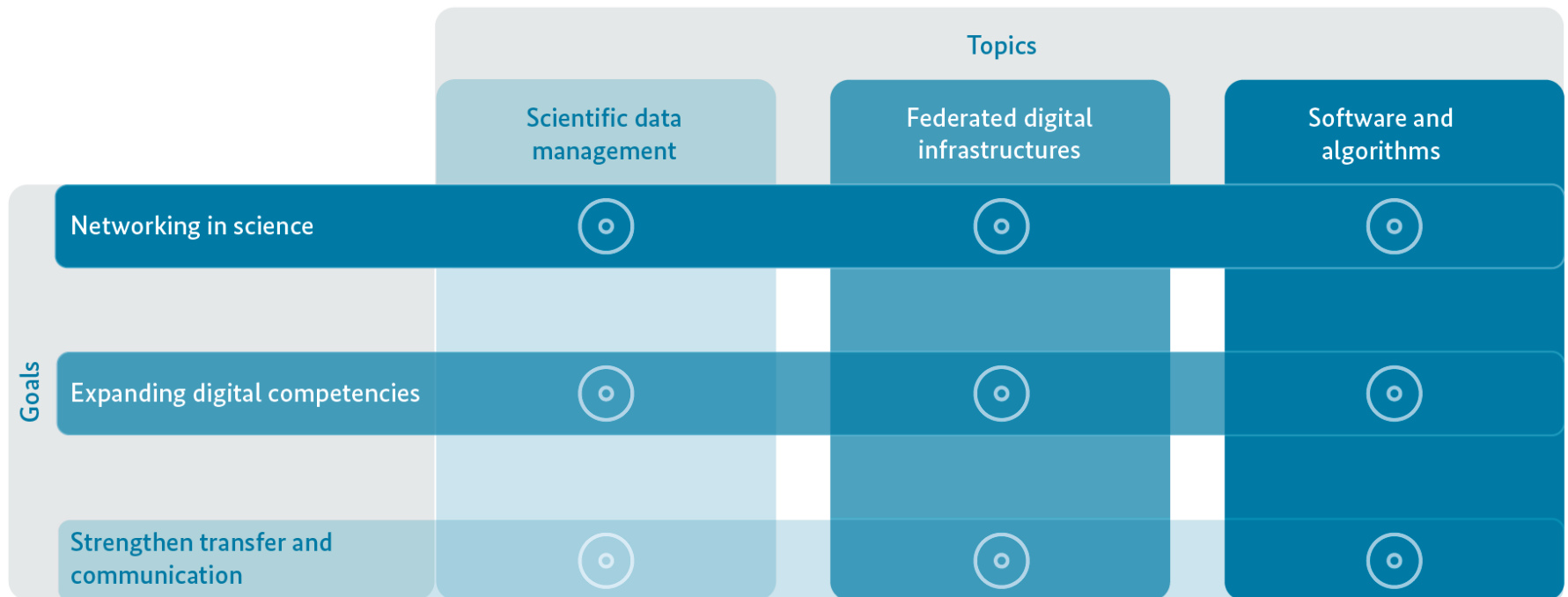
- New and efficient structures of processing
- Overcoming historic „differences in culture“ of different areas of study

## Learning action plan

- Consideration of current parameters



# Goals, topics and measures within ErUM-Data



 Measures within ErUM-Data

# ErUM-Data Hub

## Impulses and requirements from the prism-process and strategic paper

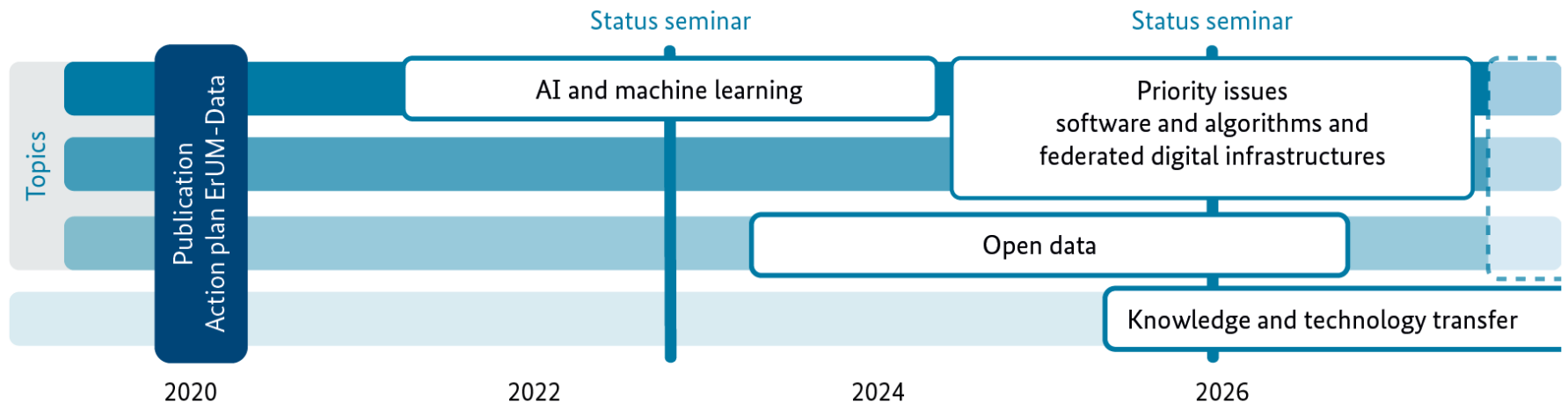
- Requirement of a central networking- and transfer-office for a coordinated and professional approach

## Implementation

- ErUM-Data-Hub for overarching coordination
  - Networking
  - Public relations
  - STEM training
  - Knowledge- and innovation-transfer

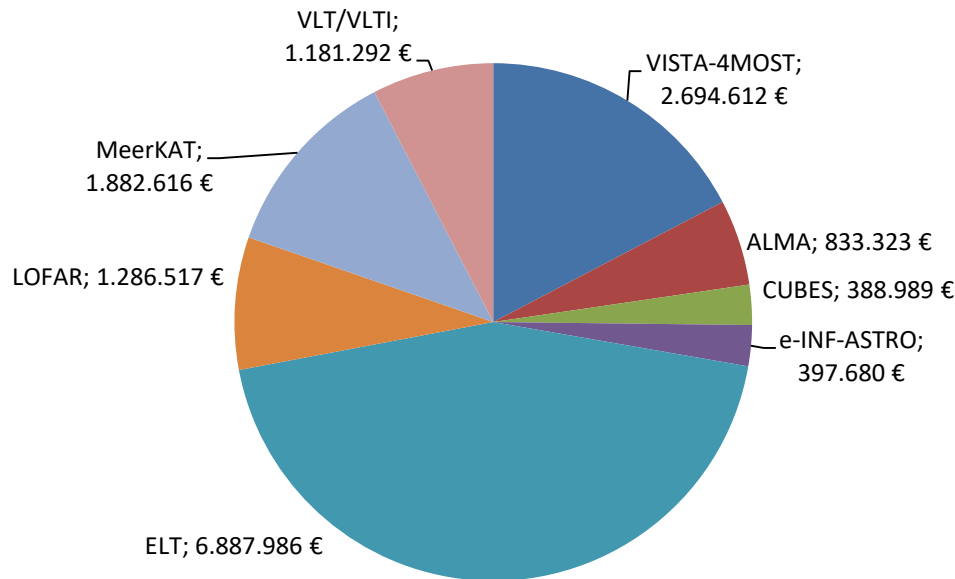


# ErUM-Data: Timetable and implementation

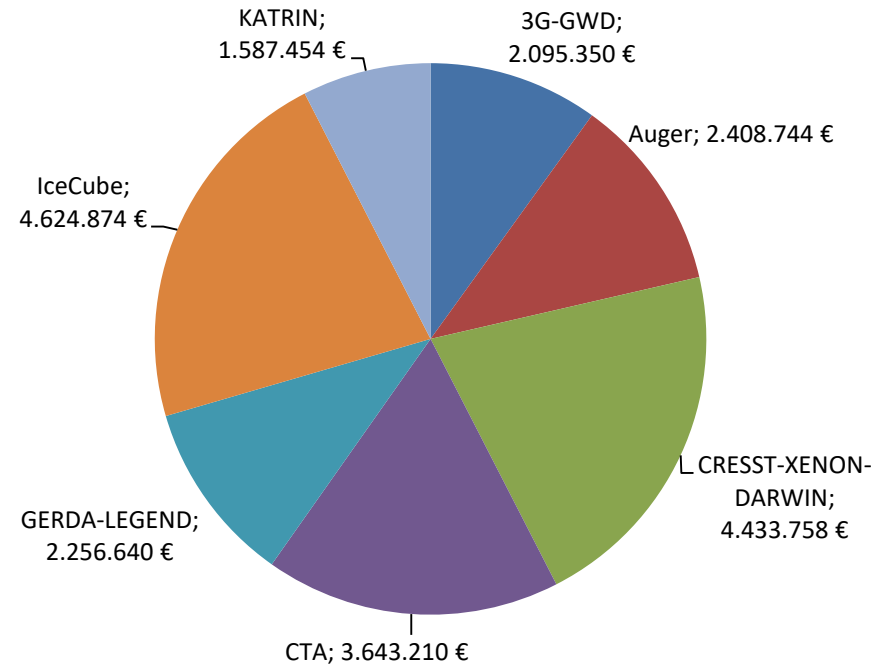


# New funding period „Universe 2020-2023“

71 projects, 36.6 Mio€

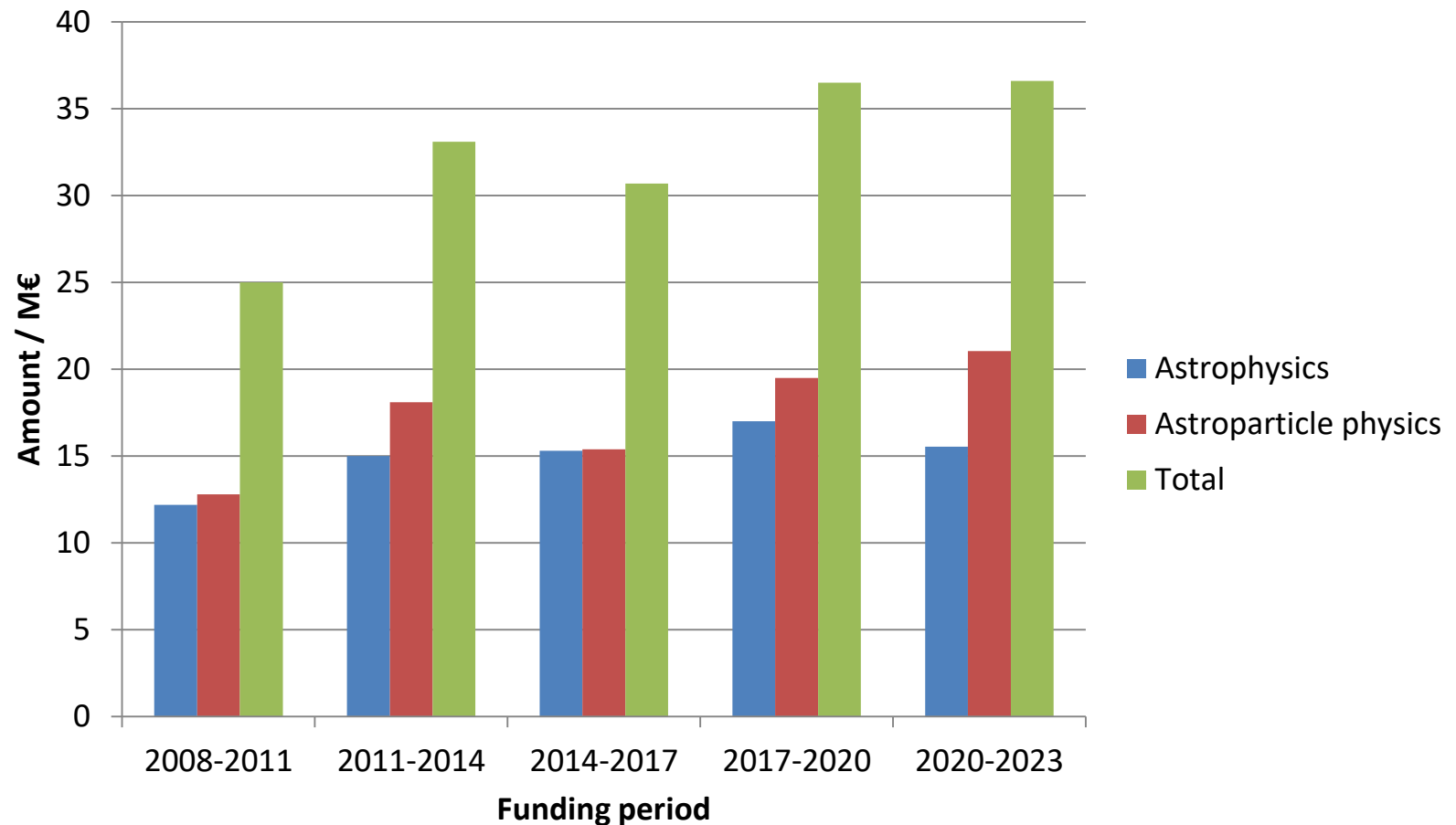


Ground-based astrophysics:  
28 projects, 15.55 Mio€



Astroparticle physics:  
43 projects, 21.05 Mio€

## Allocated funding 2008-2020





# Gravitational Wave Research

- The „Universe 2020-23“ call (09/2019) included: „Experimental research and development work for a next-generation of gravitational wave detector“.
- 7 corresponding projects were selected (total funding: 2.1 Mio.€)
- NB: this funding of R&D work neither constitutes nor prejudices any BMBF commitment to a specific future RI (Einstein Telescope)

# Special Funding for LNGS

- GER-ITA MoU (2019) included a German commitment for in-kind contributions to a technological upgrade of the LNGS (5.5 Mio.€ BMBF + 1 Mio.€ MPG)
- BMBF asked KAT to broadly solicit corresponding community proposals; KAT provided a list of suggested projects in March 2020
- GER-ITA bilateral discussions identified items of common interest; corresponding full project proposals were reviewed by a BMBF expert panel
- BMBF funding decision has been taken and confirmed with ITA side; formalities are on track to conclude by the end of the year.

**MANY THANKS to the KAT representatives and everyone else involved!**

# Perspectives of basic natural sciences at large-scale facilities?

Scientific excellence

Future technologies

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and industry

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# Thank you very much