



Astrophysics Centre for Multimessenger studies in Europe (ACME)

Your chance to excel in multi-messenger science!



**Funded by
the European Union**

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Astrophysics Centre for Multimessenger studies in Europe



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Broaden access to infrastructures, data, expertise, tools... for multi-messenger science.

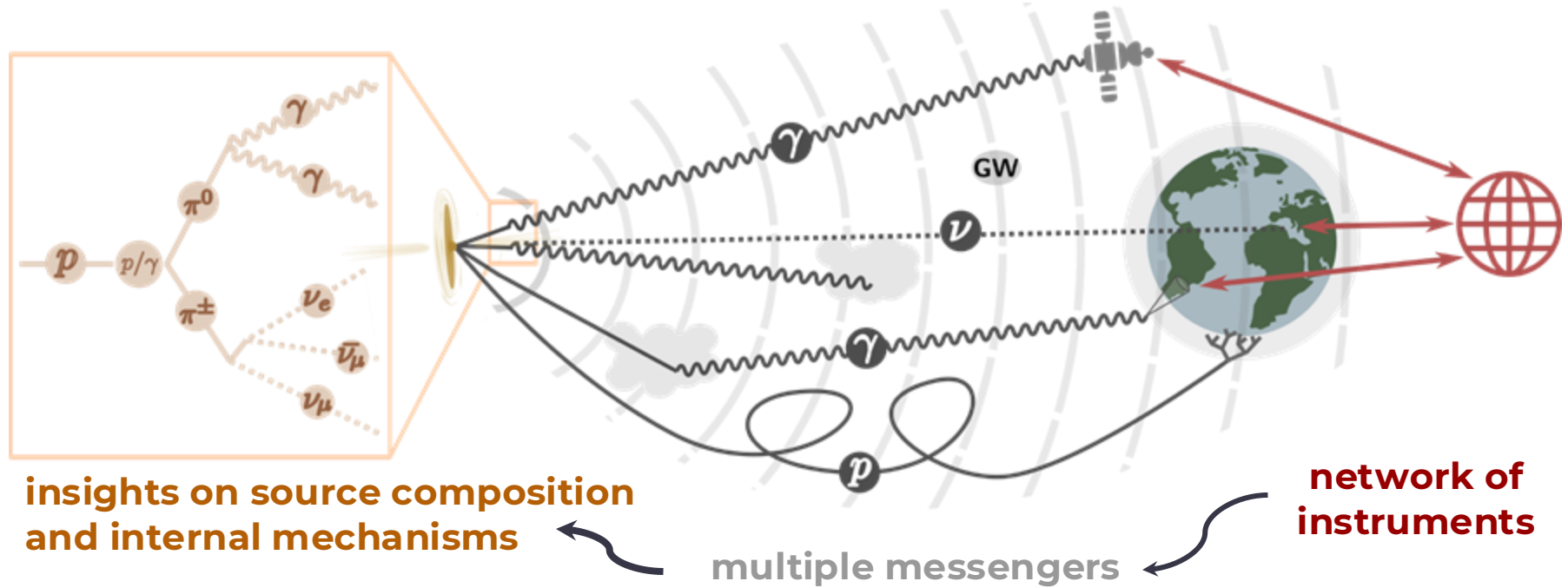
- ❖ Open calls for data sharing and visiting institutes.
- ❖ Organisation of schools and workshops.
- ❖ ...



www.acme-astro.eu

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Multi-messenger Astronomy



need coordination and harmonized access!

The consortium

- ❖ 40 partners
- ❖ 15 countries
- ❖ > 30 research infrastructures
- ❖ Covering:

radio, optical, near infrared, X-rays, gamma-rays, gravitational waves, neutrinos, cosmic rays

Project duration:

Sept. 2024 – Aug. 2028

Total cost:

14.5 M€ (100% EU)



Project structure

Objective: improve access to research infrastructures for multi-messenger science.



1. **Coordinate** the activities
2. Harmonized **transnational/virtual access** to RIs
3. Develop **centres of expertise**
4. Improve **science data products** management
5. Manage **real-time alerts and observations**
6. Provide **training** for new generation
7. Open data sets to **other disciplines**, increase **citizen engagement**

→ 7 corresponding Work Packages (WP)

WP1 – Coordination of the project

Coordination team:

- ❖ Antoine Kouchner (Coordinator)
- ❖ Paolo D'Avanzo (Co-coordinator),
- ❖ Mathieu Lamoureux (Technical coordinator)
- ❖ Julie Epas (Project manager)

For any inquiries, please use the **contact form**:

<https://www.acme-astro.eu/contact-us/>

WP2 – Transnational Access

WP leaders: Robert Beswick, Damien Dornic, Izabela Rottmann

- ❖ Provide **Transnational access** (TNA) to infrastructures with complementary observational data: radio, high-energy gamma rays, neutrinos, cosmic rays
- ❖ Develop and implement the **TNA procedures** for new infrastructures
- ❖ **Facilitate new, innovative science** via cross-disciplinary programmes and increase scientific impact
- ❖ By **linking Astronomy & Astroparticle communities**, extend the user communities and enable new science via access to multiple facilities

WP2 – Telescopes and detectors

- ❖ **Nine instruments** covering radio, optical, γ , neutrinos, and cosmic rays.
- ❖ Those with existing processes: access **from Year 1**
- ❖ KM3NeT/Pierre Auger/CTAO: access **from Year 2**



CFHT



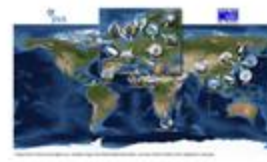
CTAO



e-MERLIN



Effelsberg



EVN



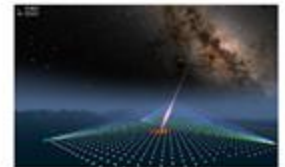
KM3NeT



LOFAR



MAGIC

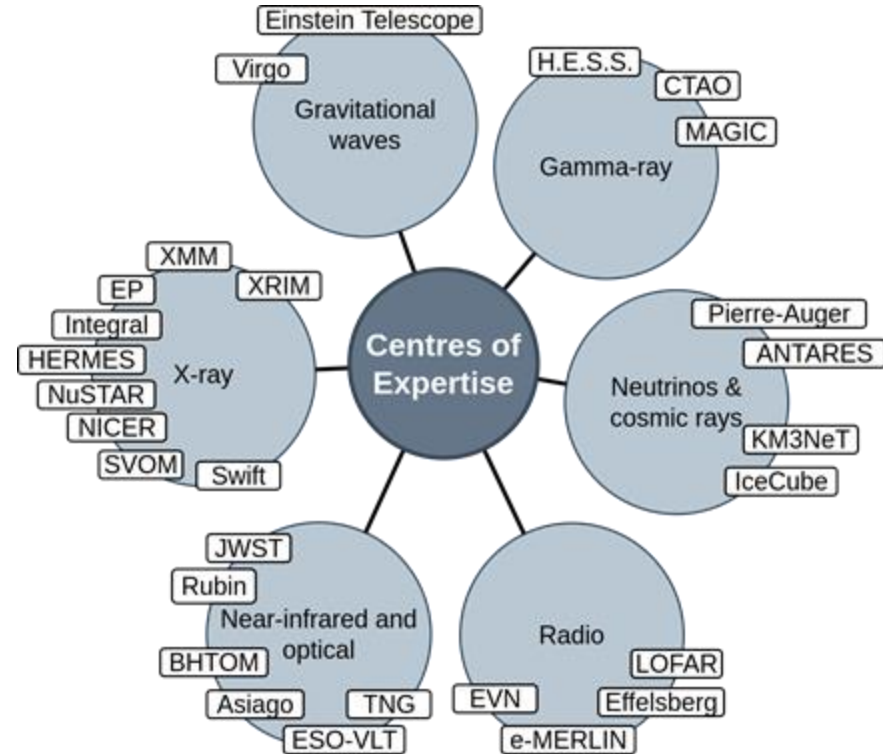


Pierre Auger
Observatory

WP3 – Provision of scientific expertise

WP leaders: Marica Branchesi, Zsolt Paragi

- ❖ **Access to expertise** on **infrastructures, observations, data analysis and interpretation, joint MM analyses.**
- ❖ One Centre of Expertise per messenger = **network of distributed nodes.**
- ❖ Implementation: hands-on sessions, help desk user support, visits to the Centres of Expertise.



WP3 – TNA calls and virtual access

- ❖ Visit to institutes
 - 1-2 week(s) stay, fully funded
 - One call

- ❖ Virtual access to expertise
 - Online platform to get support
 - Documentation, tutorials...



APC



AUTH Laboratory of
Astronomy



BUW



CPPM



GSSI



IFAE



IGFAE



INAF



INFN



IRAP



IRFU



L2IT



SRON



UCLouvain



UNIGE

WP4 – access to archival data and tools

WP leaders: Andrii Neronov, Lukasz Wyrzykowski

❖ Provide **Virtual Access (VA) to online services:**

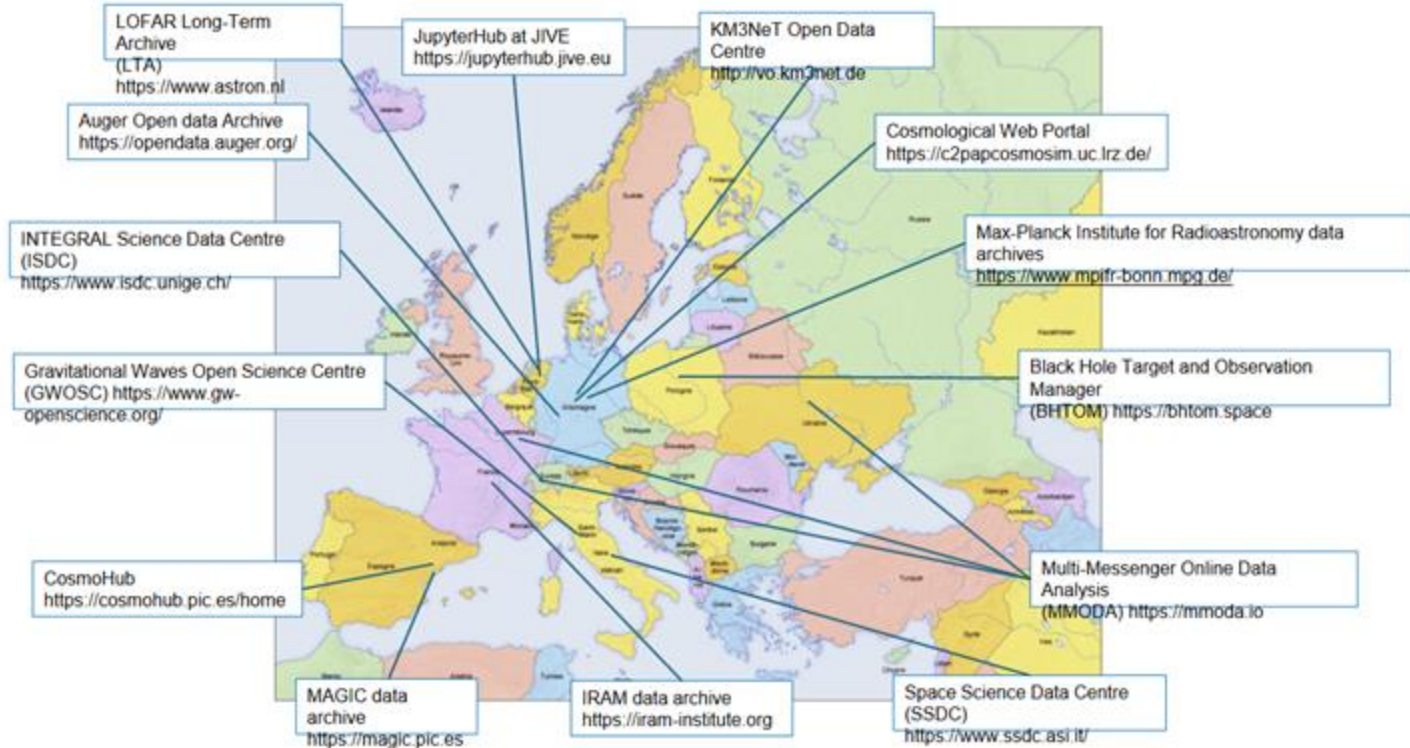
- combination of the data products of various telescopes/detectors
- multi-messenger data analysis workflows (including models).

❖ Lower the barrier of learning practices of the other communities via **harmonization of standards for data access and analysis tools.**

❖ Planning of follow-up observations via provision of services for **on-the-fly analysis of archival multi-messenger data.**

WP4 – access to archival data and tools

Infrastructures involved

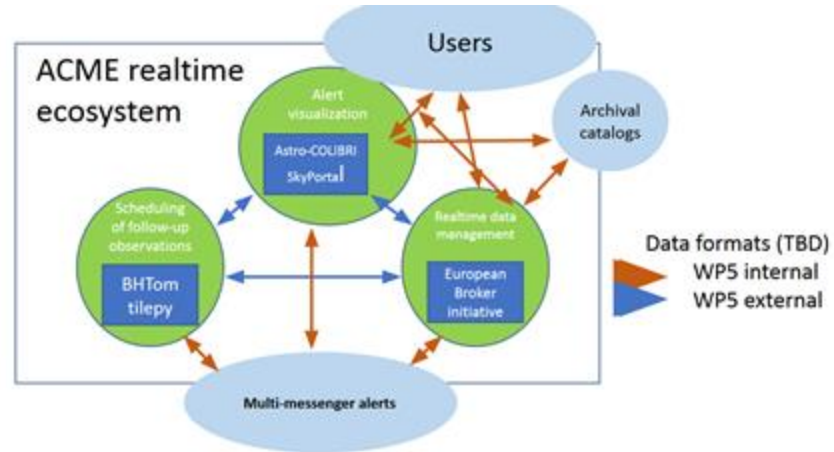


Author: Andrii Neronov, ACME Kick-off

WP5 – coordination for real-time alerts

WP leaders: Fabian Schüssler, Marek Kowalski

- ❖ Create a **real-time ecosystem**, in which researchers obtain virtual access to different, essential and improved alerts streams.
- ❖ Provide **tools to manage and analyze the streams**.
- ❖ **Visualise** the data and **organize follow-up observations** based on detections made in near real time.



WP6 – Training for scientists and engineers

WP leaders: Natalie Webb, Heidi Korhonen

- ❖ Assist the scientists in taking, analysing and interpreting multi-wavelength/messenger observations and coordinating efforts.
- ❖ This will be achieved via conferences, workshops, schools, and hackathons, and through providing dedicated training material.
 - 3–4 in person events per year
 - 2–3 virtual schools/hackathons per year

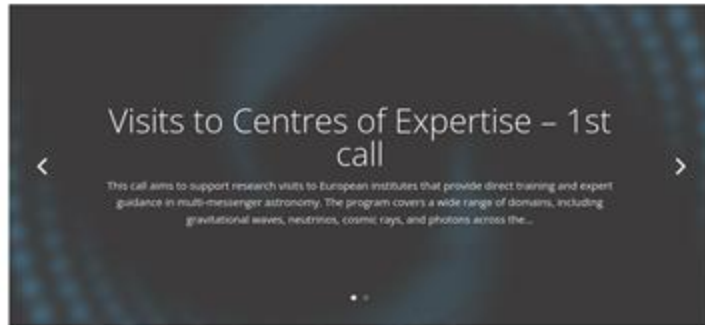
See upcoming events on [ACME website](#).

WP7 – Environment and society

WP leaders: Gwenhaël De Wasseige, Stephen Serjeant

- ❖ Make **auxiliary environmental data available** through dedicated services.
- ❖ Involvement of **citizen scientists** and **amateur astronomers**.
- ❖ Support the **inclusion of under-represented/disadvantaged communities**.

ACME communication channels



Description

ACME (the Astrophysics Centre for Multi-messenger studies in Europe) is set up to realize an ambitious coordinated European-wide optimization of the accessibility and cohesion between multiple leading research infrastructures, offering access to instruments, data and expertise, focused on the new science of multi-messenger astrophysics.

The ACME EU-funded project aims to implement the APPEC and ASTRONET European roadmaps' recommendations and act as a pathfinder to broaden, improve and align access to the respective research infrastructure services and data, and assess and evaluate new models for better coordination and provision of at-scale services.

Ongoing calls

Visits to Centres of Expertise - 1st call

Upcoming calls

TMA - Effelsberg - May 2025

The website

- ❖ Presentation of all infrastructures, tools, members...
- ❖ Ongoing activities (calls, workshops)
- ❖ Archive of all useful materials



www.acme-astro.eu



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