MADDEN – Multi-RI Access and Discovery of Data for Experiment Networking

OSCARS
Open Science Clusters' Action for Research & Society

The MADDEN project aims to build a multi-Research Infrastructure (RI) Data Lake managed with Rucio, a robust open-source framework for data management, distribution and access, initially developed to meet the requirements of the ATLAS experiment in High Energy Physics (HEP), and now widely adopted across various scientific communities. The project enhances Rucio to create a unified Multi-RI Data Lake, supporting international efforts to share and analyse experimental data more effectively.

ESCAPE
Astronomy, Nuclear and Particle Physics

Challenge

Modern science such as Gravitational Wave (GW) research requires international collaboration. Each RI typically manages its own data in isolated Data Lakes, hindering easy access and shared analysis. A common data infrastructure is needed, especially as projects such as the Einstein Telescope (ET) and Cosmic Explorer (CE) prepare for the future of GW research.

Solution

Build a multi-RI Data Lake.

The ET Data Lake and a mock CE Data Lake will be set up and managed with two independent Rucio instances. Authentication features will be extended to allow ET users to seamlessly access data from both instances. A technology demonstrator for the Virgo collaboration will also be set up.

Scientific Impact

As Rucio is the Distributed Data Management solution adopted by ESCAPE, this project is the first necessary architectural step towards a consistent support of Open Science and the FAIR data principles in the gravitational wave (GW) physics domain, beyond the current existing GW Open Science Centre.

Partners

Istituto Nazionale di Fisica Nucleare - INFN (COORDINATOR), Institut de Recherche en Mathématique et Physique - Université catholique de Louvain - IRMP - UCLouvain

https://www.oscars-project.eu/projects/madden-multi-ri-access-and-discovery-data-experiment-networking