

# CosmoHub



Funding source  
**National, regional**

In-kind value  
**€500k–€1M**

Timeframe  
**2013–ongoing**

Target group  
**Researchers**

Scale  
**International**

Year of reporting  
**2024**

## Case study

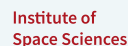
**CosmoHub** is a web-based service designed to facilitate an interactive exploration, visualisation, and distribution of large astronomical datasets. Powered by a highly specialised big-data infrastructure, it supports users while providing excellent performance.

CosmoHub officially collaborates with numerous European and international projects, such as Gaia, Euclid, PAUS, DES, MICE, LSST and CTAO.



### Collaborators:

- Port d'Informació Científica (PIC)
- Institut de Física d'Altes Energies (IFAE)
- Institut de Ciències de l'Espai (ICE-CSIC)

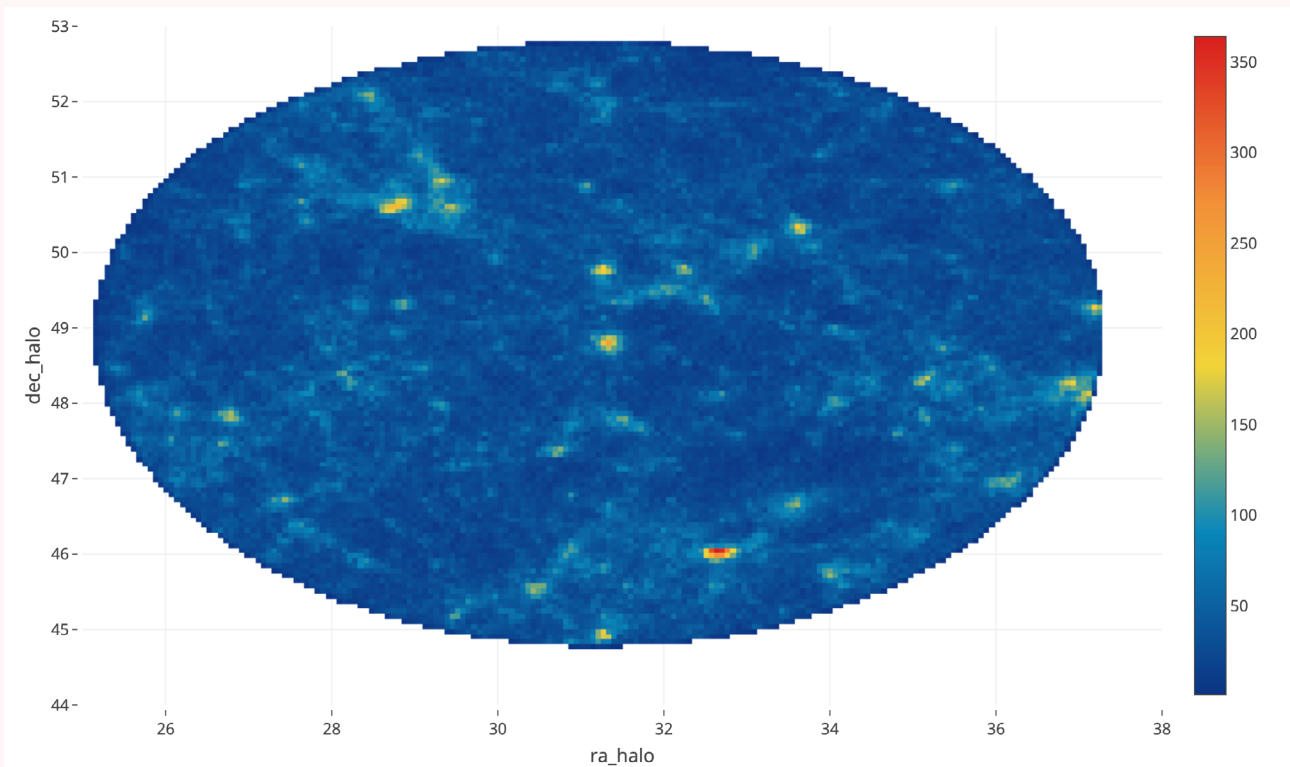


## Added value

- Providing a **centralised open data repository**, adhering to FAIR principles.
- Interacting with and distributing massive, structured datasets through the **fastest platform** in the astronomy and cosmology community.
- Offering an **easy and intuitive interface** to advanced features through custom-defined functions, such as HEALPix, array aggregation, and spherical geometry operations.

## Problem addressed

**CosmoHub** tackles the challenge of managing, accessing, and distributing massive scientific datasets by providing a centralised, intuitive, and scalable platform that supports multi-experiment data exploration and the delivery of customised data subsets. By streamlining data access, it enhances collaboration, efficiency, and reproducibility in large-scale research projects.




CosmoHub plot showing the large-scale structure of the Universe, using a simulated dark matter halo catalogue containing 2.13 billion entries.  
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### SRIA General Objective

G03: Establish a sustainable and federated infrastructure enabling open sharing of scientific results

### Research areas

 Engineering and Technology

### Type of result

 Infrastructure  Tool  
 Service