



# Austrian membership in the EGI federation

EGI'22 Conference

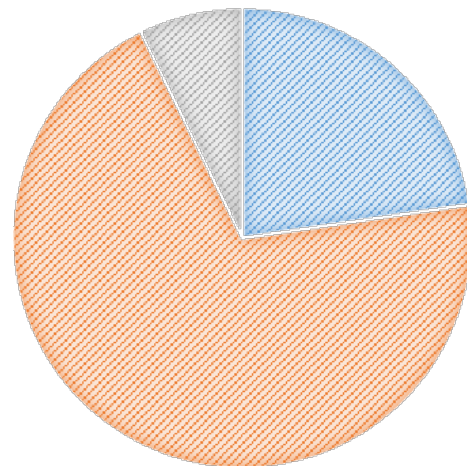
20-Sep-22

Matthias Schramm, TU Wien

# Austrian scientific community

- National funding:
  - R&D funding by central government in 2022: 3,87bn EUR
  - General University Funds for R&D 2020-22: 2,11bn EUR

AUSTRIAN R&D PERSONNEL 2019 (FULL-TIME EQUIVALENT)



- Higher Education sector: 18970,9 (14668,5 researchers)
- Business enterprise sector: 58591,5 (33868,1 researchers)
- Government and private non-profit sector: 6097,5 (3817 researchers)



**EUROPEAN OPEN  
SCIENCE CLOUD**

## EOSC: federated data infrastructure of cloud solutions / services

# 2,100

| Year | Number of employees (thousands) |
|------|---------------------------------|
| 2016 | 799                             |
| 2017 | 1,096                           |
| 2018 | 1,324                           |
| 2019 | 1,532                           |
| 2020 | 1,704                           |
| 2021 | 2,017                           |

OVER **850,000**  
**PAGE VIEWS**

# 130

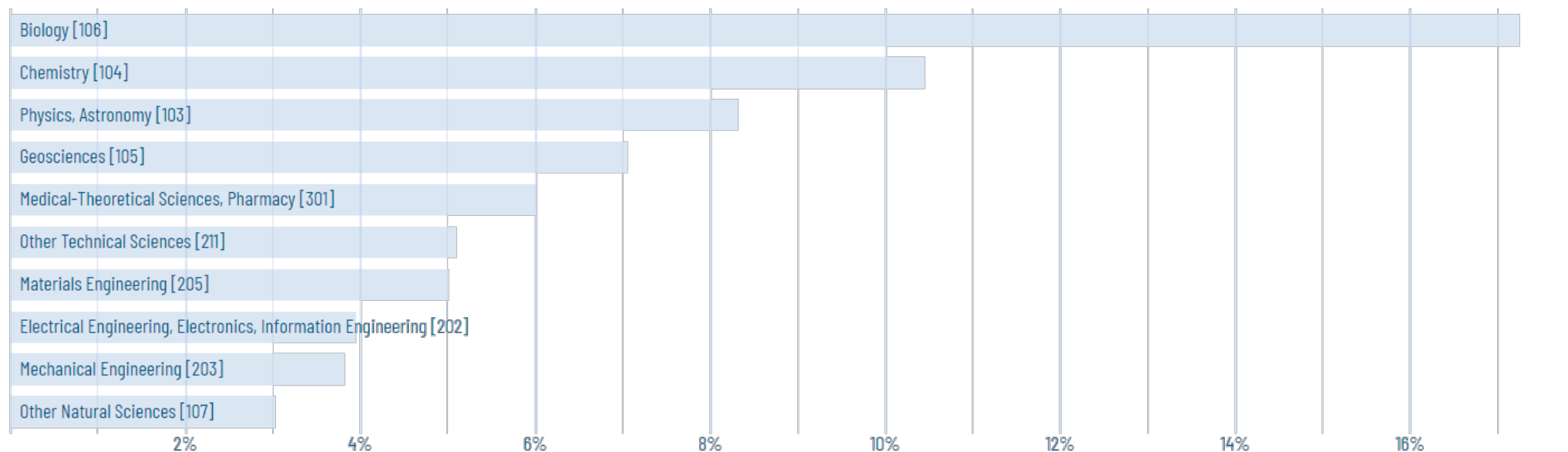
universities, universities of applied sciences, companies,  
start-ups & spin-offs, extramural research institutes,  
private universities, museums, libraries, archives,  
platforms, networks, associations and many more

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[illegible]

## RESEARCH AREAS / AUSTRIAN FIELDS OF SCIENCES / AUSTRIA

### TOP CATEGORIES / 3 DIGITS



### MAIN GROUPS / 3 DIGITS

**49.110%**

Natural Sciences

**26.611%**

Technical Sciences

**14.393%**

Human Medicine, Health Sciences

**4.471%**

Humanities

**2.486%**

Social Sciences

**1.552%**

Agricultural Sciences, Veterinary Medicine

**0.703%**

Fine / Visual Arts

**0.546%**

Music

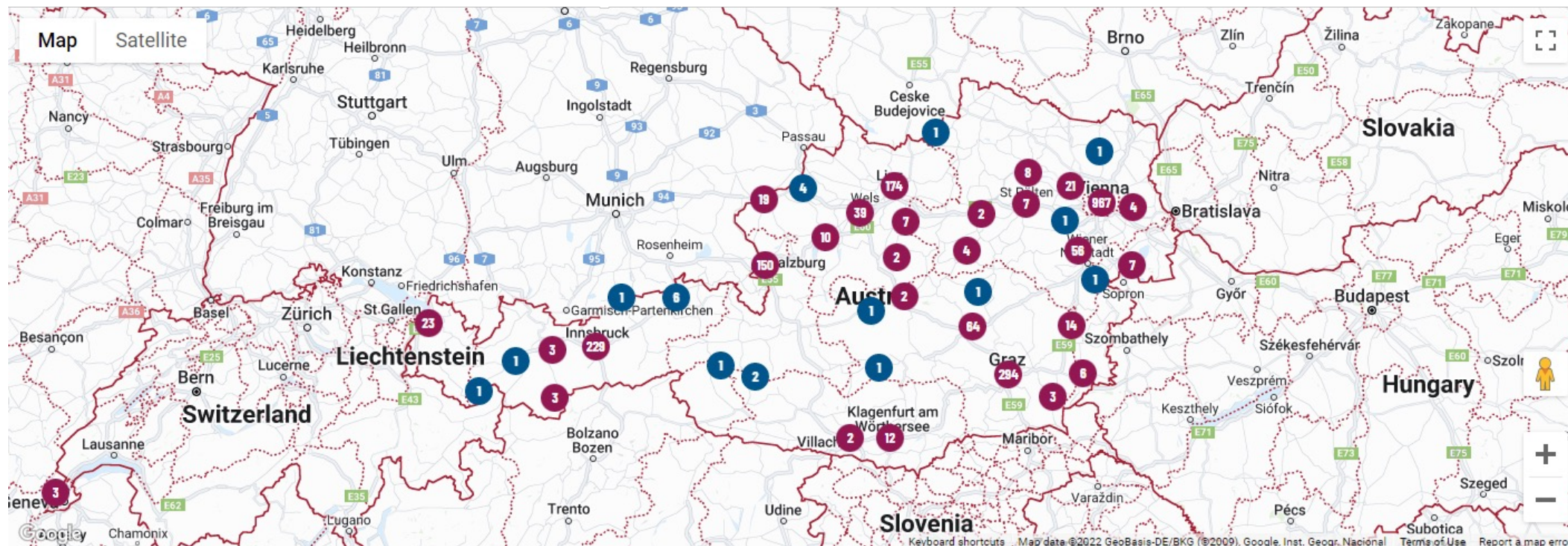
**0.128%**

Performing Arts



# 2,161

RESEARCH INFRASTRUCTURES / OPEN FOR COLLABORATION / AUSTRIA



## 1,427

Large equipment

5

## 313

Core facility (CF)

## 194

Electronic database / Collection

## 126

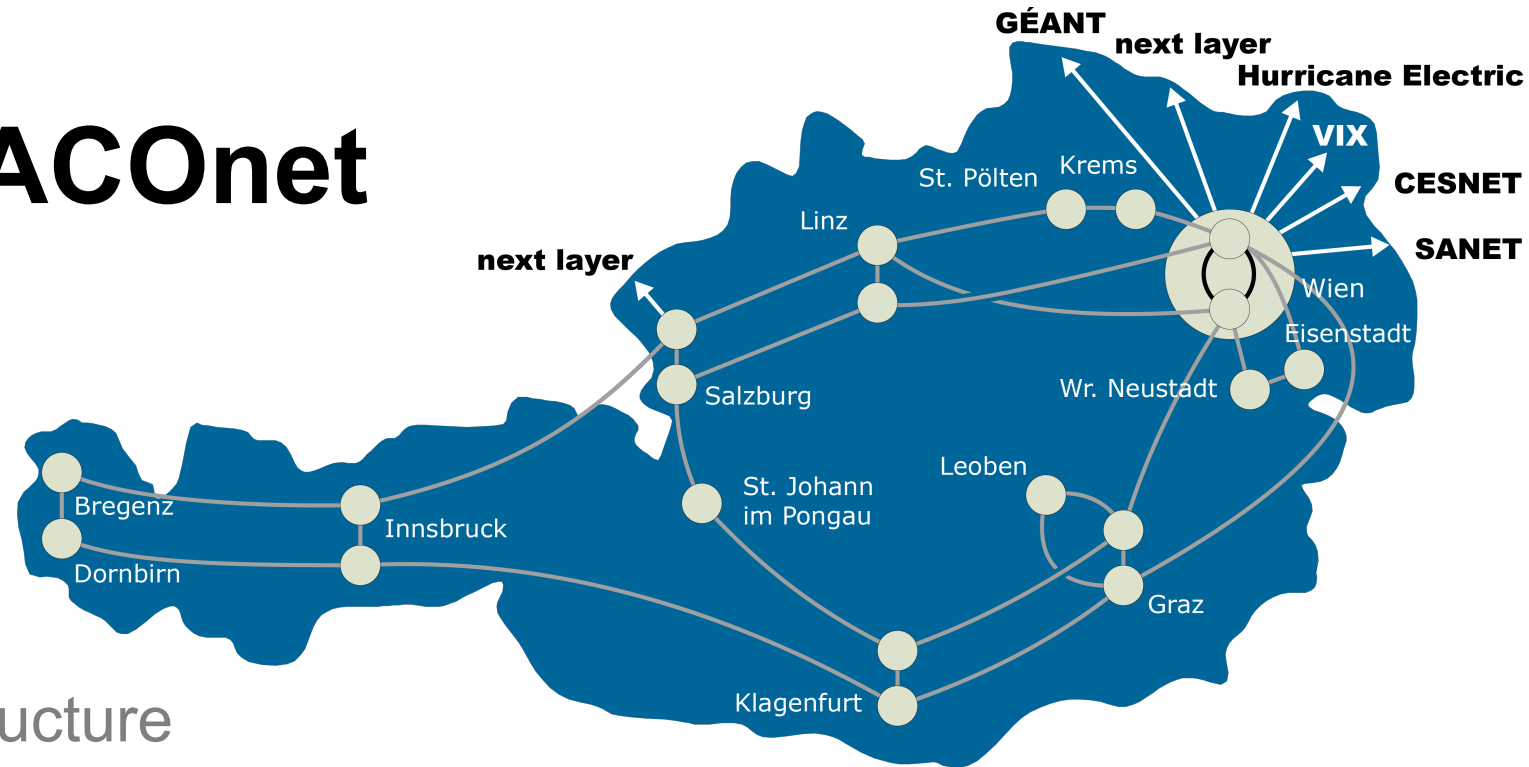
Other research infrastructure

## 101

Spatial research infrastructure

# Austrian NREN / ACOnet Topology

- Fibre optic backbone
  - Austria wide / all provinces
  - Redundant connection
  - High-performance infrastructure
- International connectivity
  - Peering agreements at the Vienna Internet eXchange
  - → connection to national + supra-regional data
- ACOnet Next Generation Project
  - Backbone upgrade: 10G→100G+



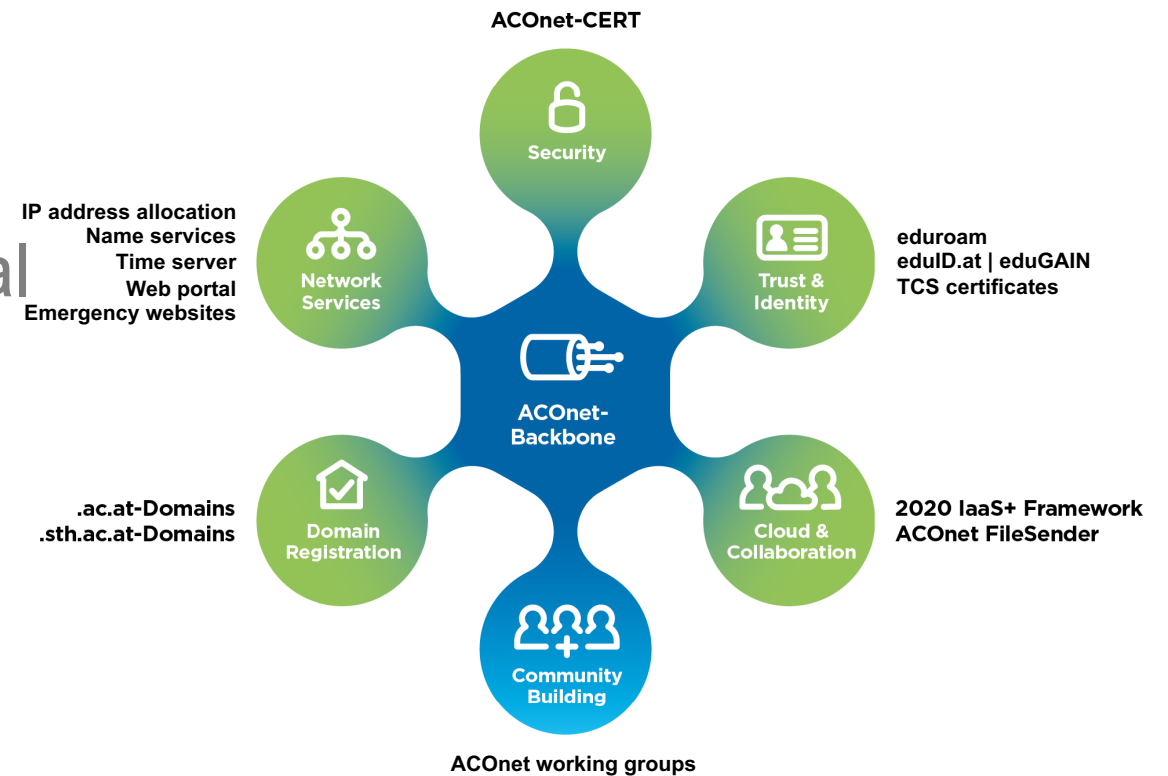
# Austrian NREN / ACOnet: The Beginnings

- 1981: Development initiated by universities and ministry
- 1986: Founding of the "Association for the Promotion of an Austrian **N**ational **R**esearch and **E**ducation **N**etwork" (ACONET) & Participation in the European umbrella organization
- 1990: First common communication infrastructure for ACOnet & connection to the Internet
- Since 1992: Infrastructure based on Internet Protocol, operated by the ACOnet-Team of the University of Vienna
- ACONET Association: User representation & Steering Board

# Austrian NREN / ACOnet: Evolution

Since then:

- Continuous Technological Renewal
  - Optical Fibre, IPv6, ...
- Continuous Expansion
  - Sites, Community
- Additional Services





# The ACO-Community

ACOnet: 250+ Participating Organisations

ACOMarket: IT-Service Broker (since 2019)

Negotiating software framework agreements

ACONET Association: 40+ Members

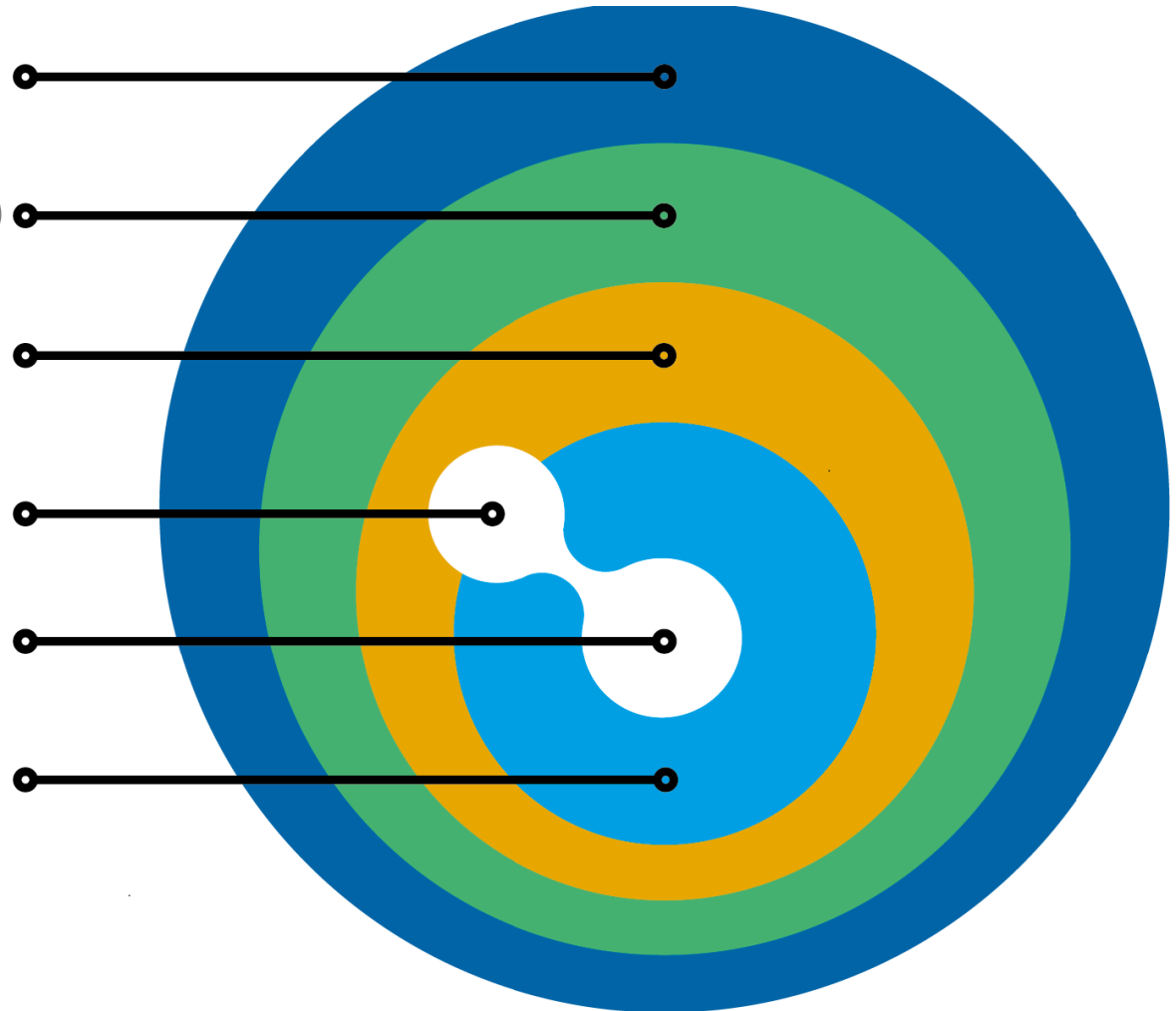
One of nine ACOMarket shareholders

ACOnet Steering Board

6 persons for ACOnet operations

ACOnet Operations - University of Vienna

ACOnet Locations: 20



# ACOnet Association: Additional Activities



European Open Science Cloud

Austrian Mandated Organisation



Partnership for Advanced Computing in Europe

Austrian Mandated Organisation



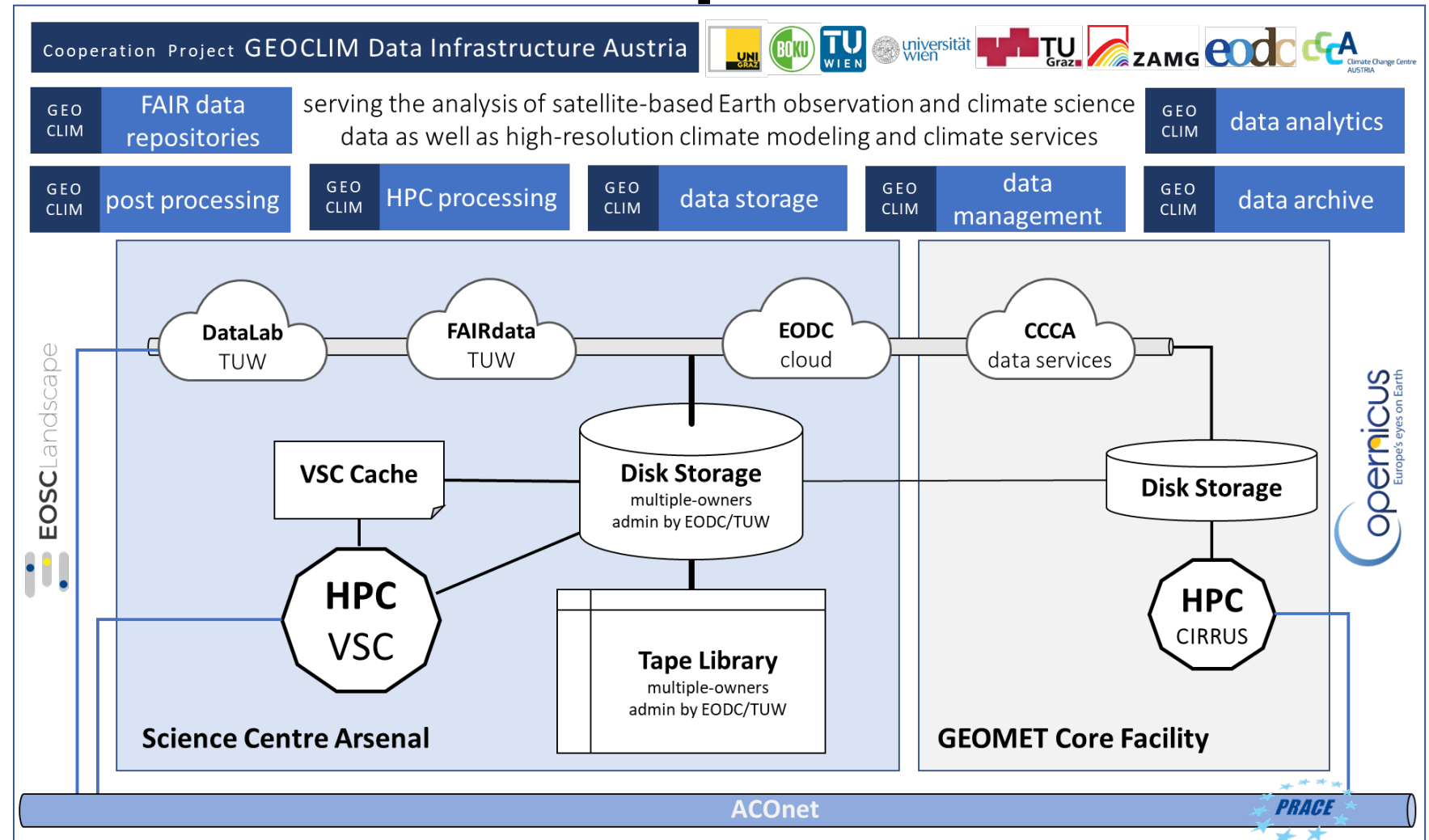
Austrian Quantum Fibre Network



European Grid Infrastructure

# Path towards EGI membership

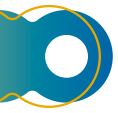
- Bottom-up approach
- Users from EO / climate sectors



# Path towards EGI membership

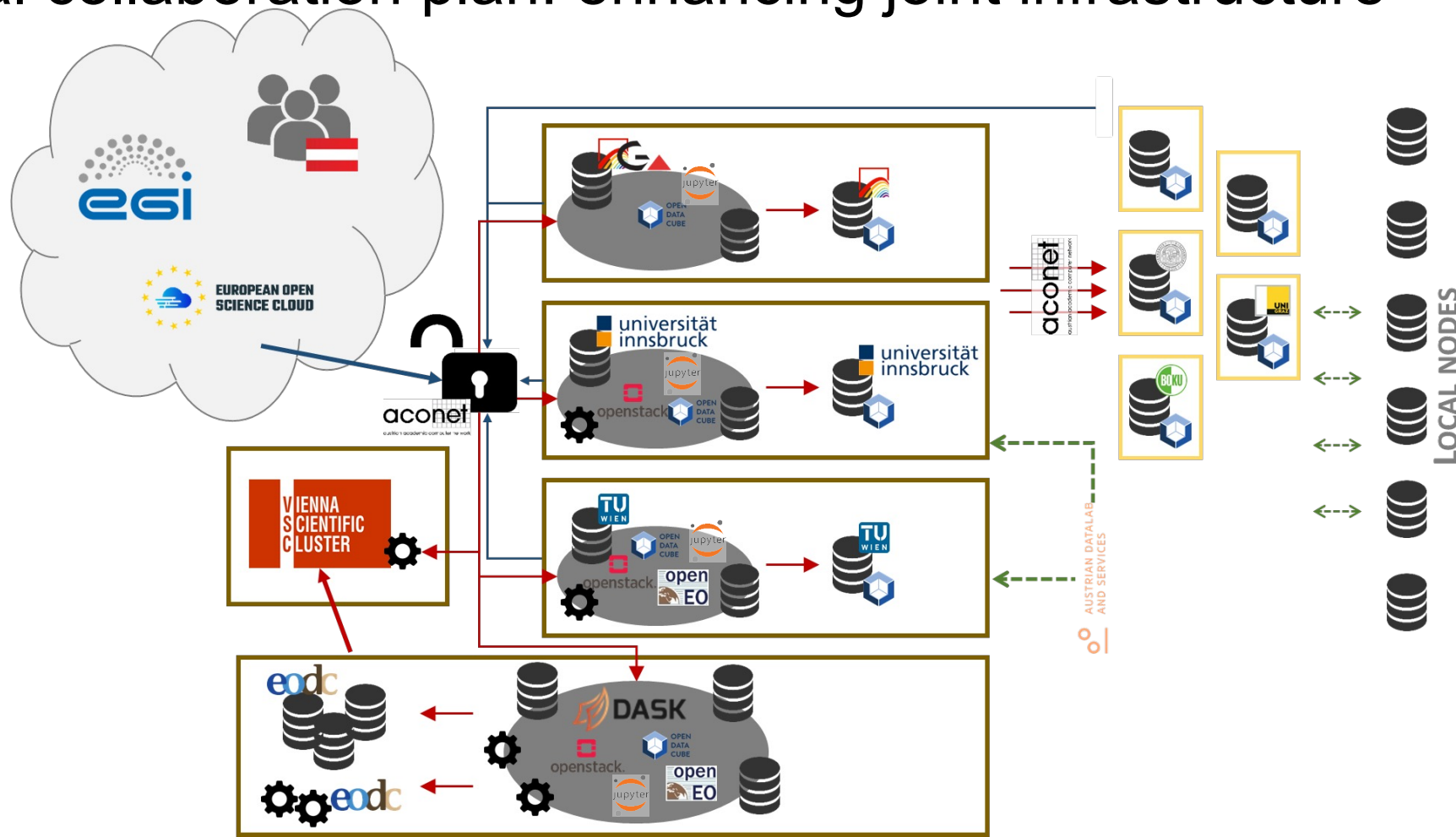
Current national consortium





# Using EGI membership

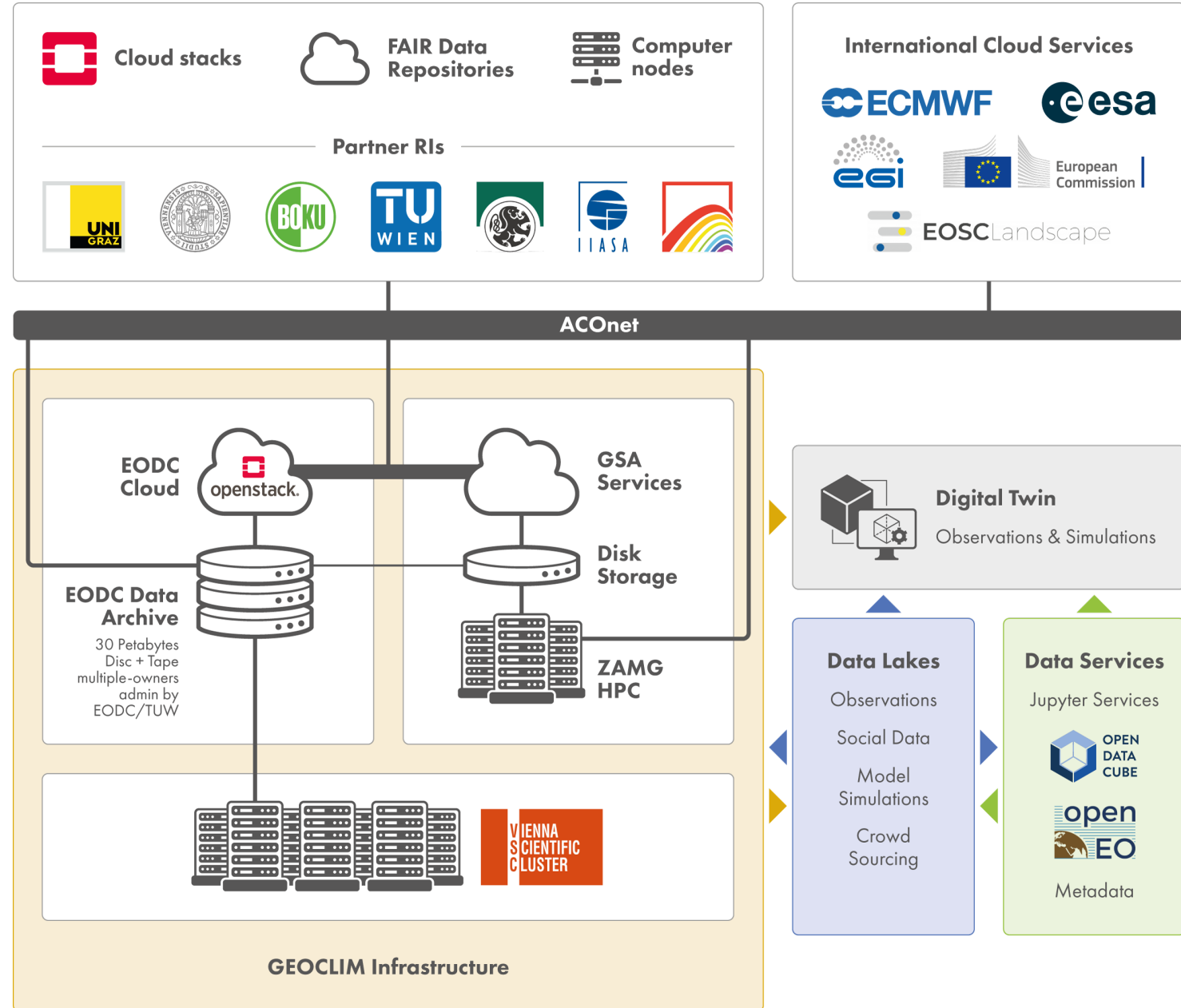
National collaboration plan: enhancing joint infrastructure





# Using EGI membership

National collaboration plan:  
increasing partner  
organisations





# AQUnet

## Quantum signals via ACOnet

- Background: several bilateral fiber projects between Quantum community and ACOnet
  - Quantum communication
  - Metrology reference / clock comparison
- Idea: develop/use/extend ACOnet fiber infrastructure in a joint initiative

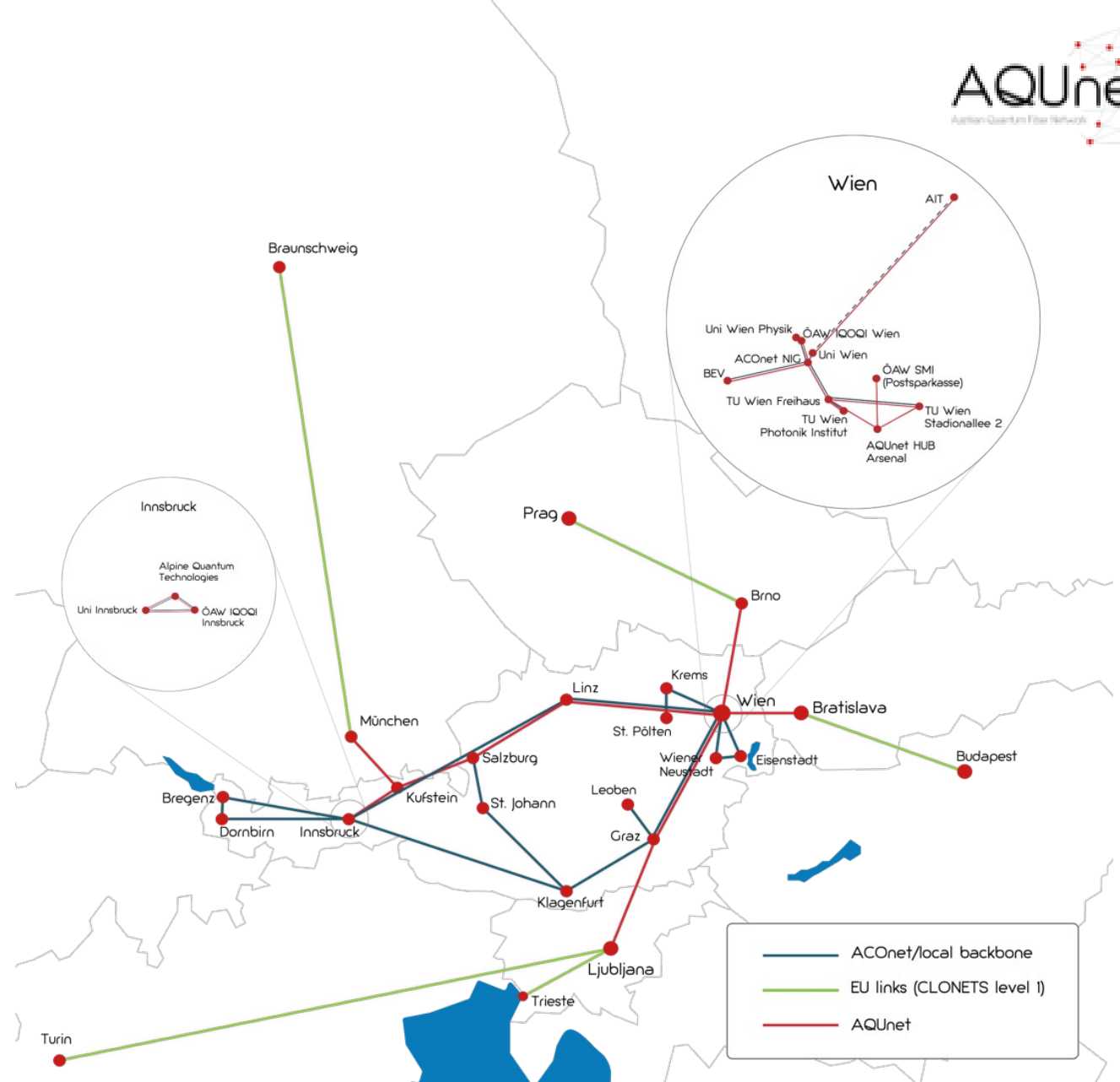
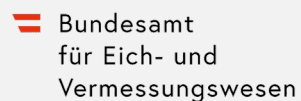
# AQUnet

## Project Factsheet

### Funding



### Partners



# AQUnet

## International context

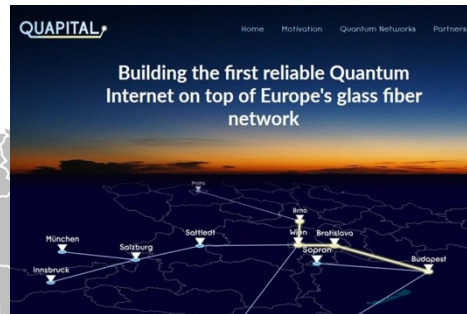
Goal: supporting these European infrastructure initiatives on national level

### Quantum Communication signals



<https://openqkd.eu>

*Sending entangled Photon pairs to Alice and Bob*



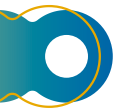
<https://quapital.eu>

### Metrology reference signals



<https://clonets-ds.eu>

*Sending specific wavelength: 1542nm (IR)*



# Forecast internet traffic growth 2022-2024

ACOnet anticipation to GÉANT Compendium 2021

- Universities: +100%
- Research Institutions: + 75%
- Further Education: + 70%
- Cultural Institutions: + 50%
- Hospitals: +50%
- Primary schools: +100%
- Secondary schools: +100%
- Government: +50%





 **Thank you!**

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