

# **GARR stato e prospettive della Rete per la Ricerca**

FEDERICO RUGGIERI

Bari 12 Luglio 2019

RECAS Bari



# GARR: The Research and Education Community



FOUNDERS




A new statute has been approved by the Board of Directors and signed in the Assembly of 21 March 2019



# The Users

## More than 1000 connected sites belonging to several organisations

-  100 Universities
-  350 Research Institutes and Laboratories
-  60 Biomedical Research Institutes
-  65 Libraries, Museums and Cultural Institutions
-  500 schools (170 directly connected)

## Institutions depending from several Ministries:

- Ministry of Education, University and Research
- Ministry of Health
- Ministry of Cultural Heritage
- Ministry of Economic Development
- Ministry of Agriculture



# Computing and Data Centres interconnected by GARR



INFN	HTC - 1 Tier1 (CNAF-Bologna) + 9 Tier2 (Bari, Catania, Frascati, Legnaro, Milano, Napoli, Pisa, Roma, Torino)
ENEA	HTC & HPC - Portici (NA), Brindisi
CINECA	HPC - Marconi (Bologna)
GARR	Bari, Catania, Cosenza, Napoli, Palermo
CRS4	Cagliari
RECAS	Bari, Catania, Cosenza, Napoli

- More that **16.000** km of GARR owned fibers  
~**9.500** Km of backbone  
~**6.500** Km of access links
- More than **1000 user sites** interconnected
- **> 2,0 Tbps** aggregated access capacity
- **> 3,5 Tbps** total backbone capacity
- **2x200 Gbps** IP capacity to GÉANT
- Cross border fibers with ARNES (Slovenia), SWITCH (Switzerland).
- **> 100 Gbps** to General Internet and Internet Exchanges in Italy
- **NOC and engineering** are in-house, in Rome.



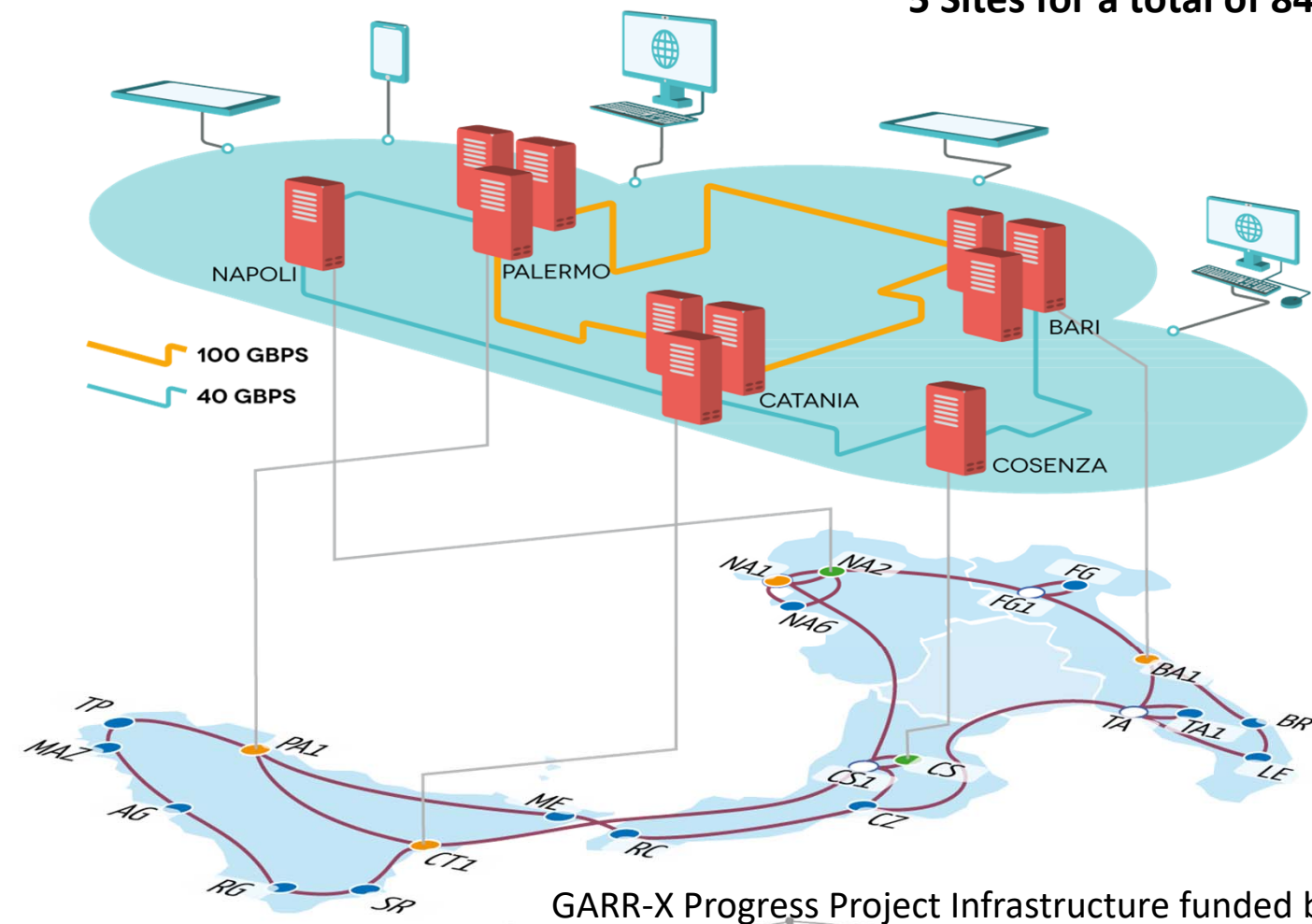
# ICT Infrastructure – Cloud GARR

5 Sites for a total of 8448 virtual CPU and 10 PB di STORAGE

**Federated Cloud OpenStack based**

Recent proposal from GARR Scientific & Technical Committee advise the GARR Board of Directors to use capacity to:

- Support members' research activities
- Support research proposals via competitive grants open to the community
- Support research activities via agreements



GARR-X Progress Project Infrastructure funded by MIUR

## Basic Services (1/2)

GARR-LIR - **[lir@garr.it](mailto:lir@garr.it)**

- Assigns IPv4 e IPv6 addresses

GARR-NIC – **[nic@garr.it](mailto:nic@garr.it)**

- Domains registration under .it and .eu

DNS (Domain Name System) - **[staff-dns@garr.it](mailto:staff-dns@garr.it)**

- Support to DNS configuration and secondary servers

GARR-CERT – **[cert@garr.it](mailto:cert@garr.it)**

- Security Incidents and Alerts management

GARR Certification Service – **[garr-ca@garr.it](mailto:garr-ca@garr.it)**

- Digital Certificates (TCS -TERENA Certification Service or X509 CA GARR)

GARR-SCARR – **[scarr@garr.it](mailto:scarr@garr.it)**

- Network security scanning on request

## Basic Services (2/2)

- MIRROR (IPv6 also) - **mirror-service@garr.it**
  - Software Distributions – e.g. Linux / CentOS / Scientific Linux
- Filesender - **https://filesender.garr.it/**
  - Send and receive Large Files (IDEM access)
- GARR Vconf - **vconf-service@garr.it**
  - Video-Conference
- EduRoam - **eduroam@garr.it**
  - Support to initial configuration and problem solving
- GARR-IDEM-AAI – **idem@garr.it**
  - Support to IDP or SP federation process

**GARR**  
**MIRROR**



# On request Services

- **GARRbox** – Personal Cloud storage based on ownCloud



- **IdP in the Cloud** – A full fledged Identity Provider pre-configured to be connected to IDEM and eduGAIN



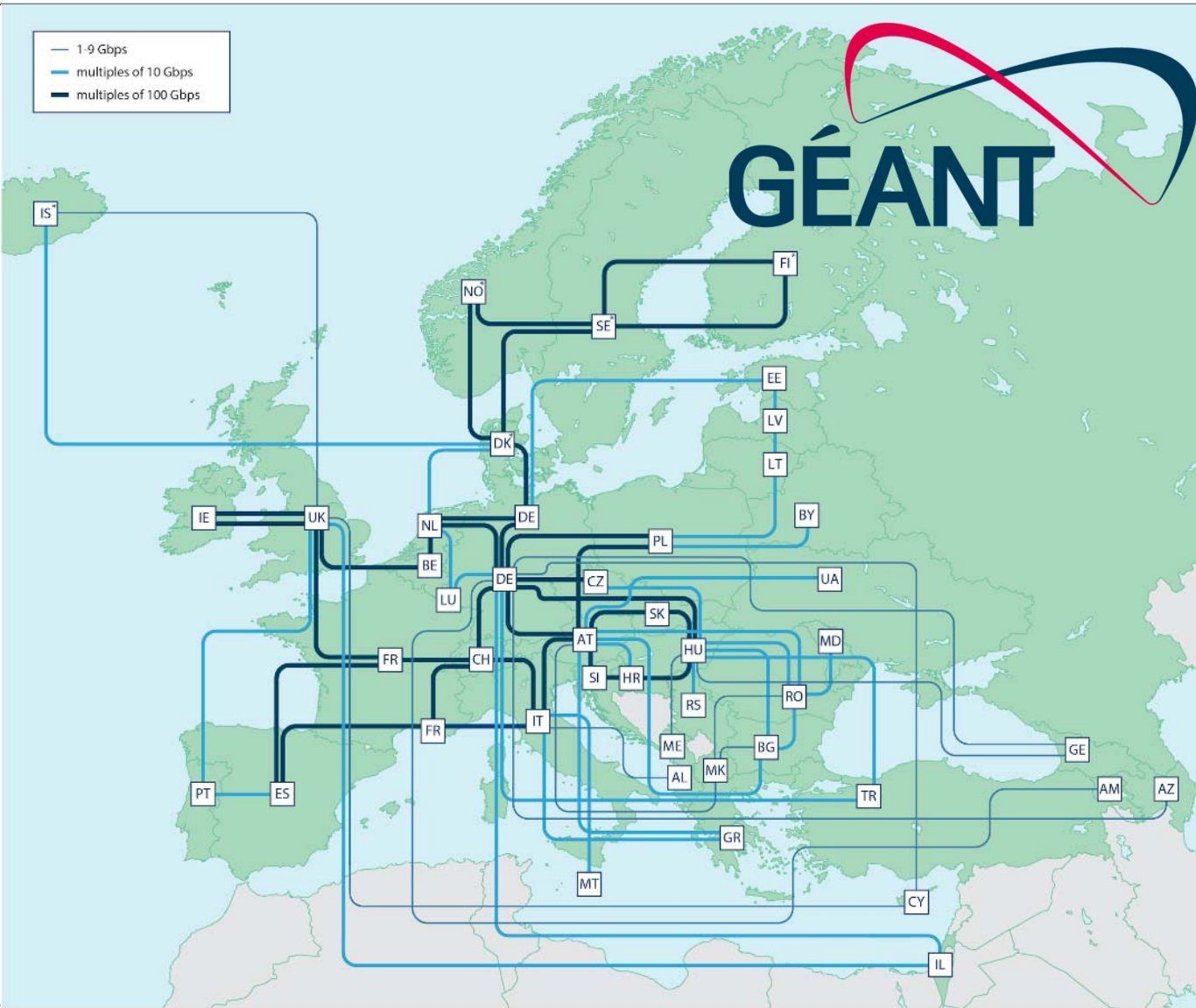
- **WebConference** – Web conference system based on AdobeConnect
- **LOLA** – LOw LATency advanced audio/video system, specifically tuned for Arts and Humanities real time activities, developed in collaboration with Tartini Conservatory in Trieste

- **GARR cloud** allows creating and managing Virtual Machines (**IaaS**) as well as deploying cloud applications (**DaaS**)
- **Collaborative platform** based on open solutions such as onlyoffice



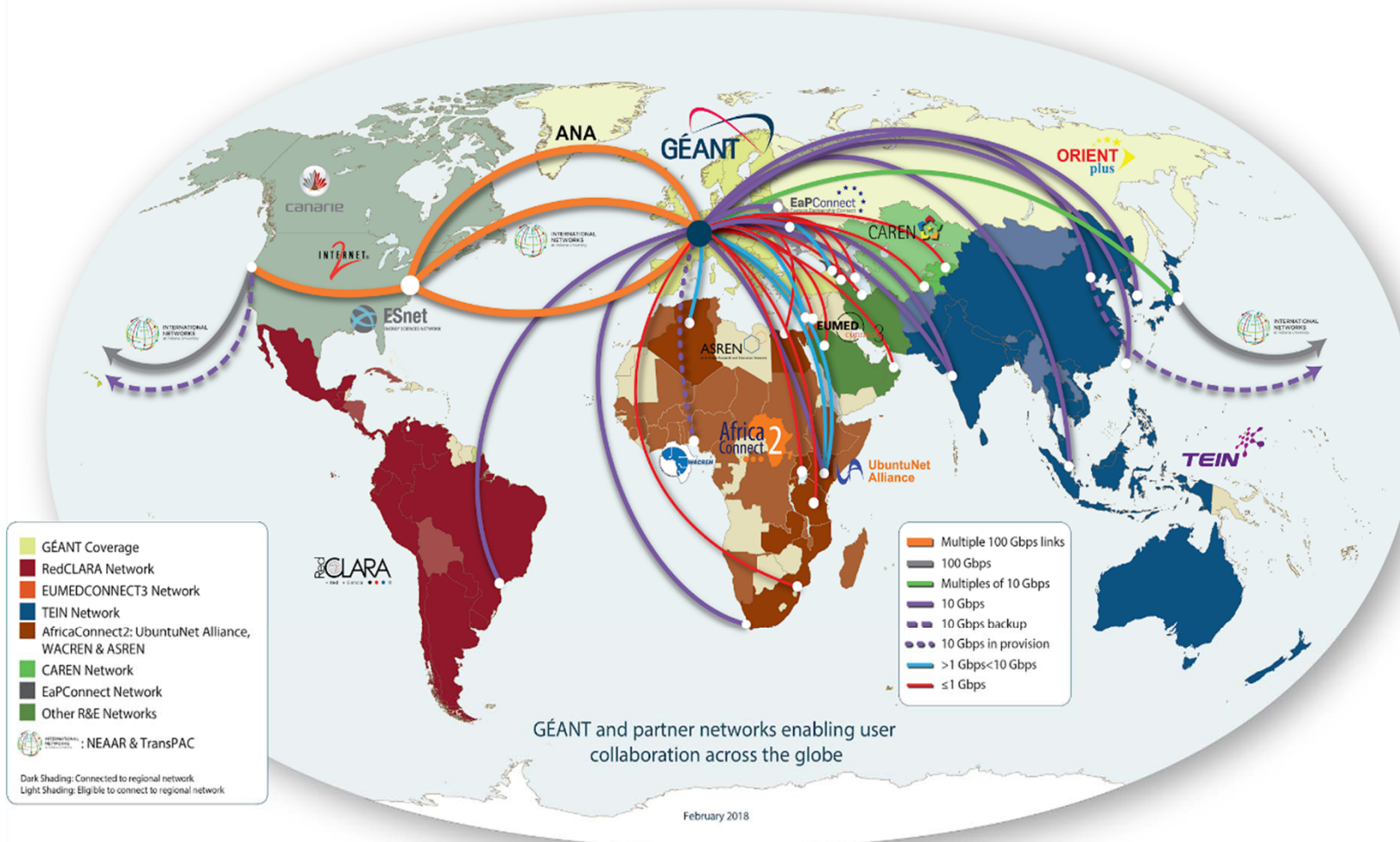


# European Research & Education Network: GÉANT



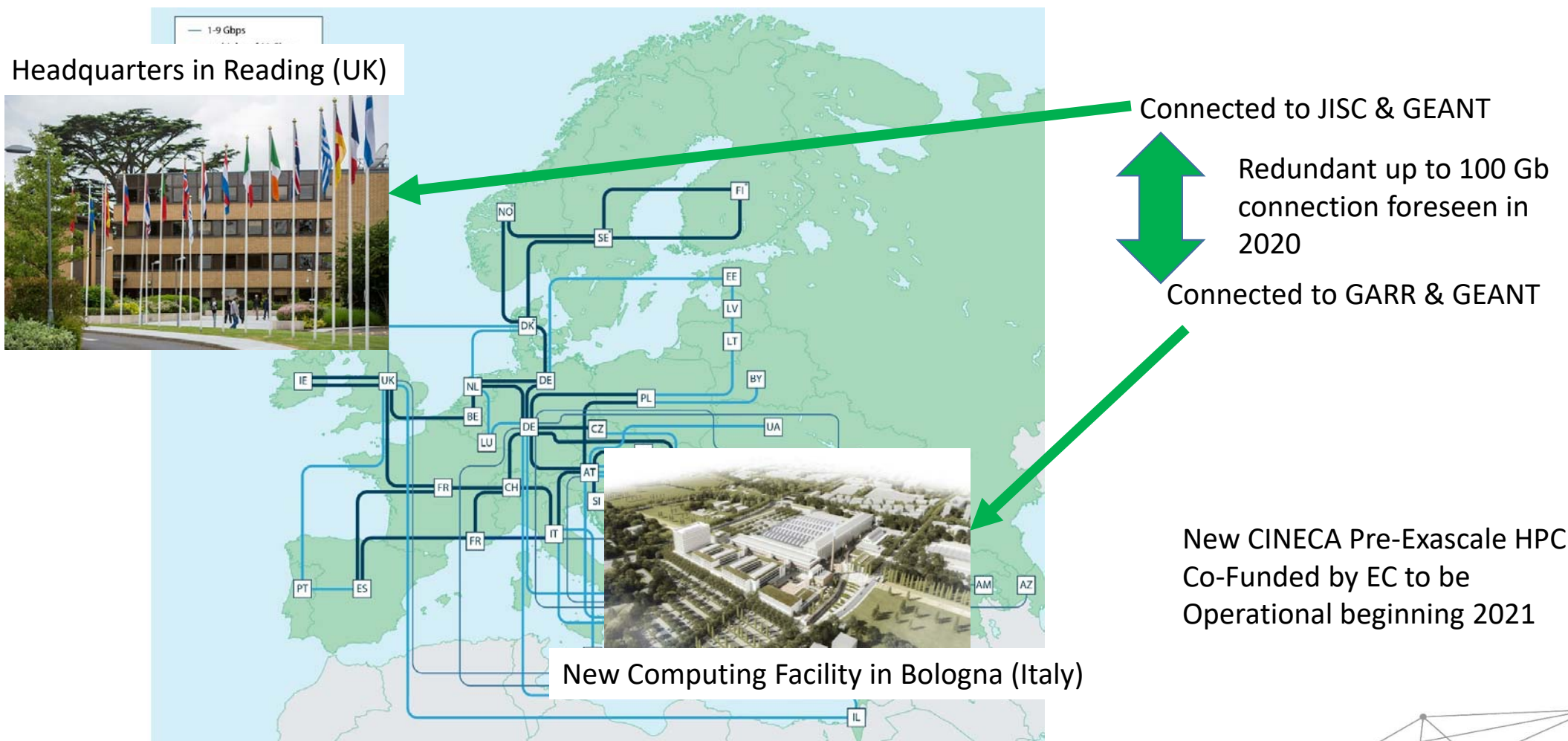
- **GÉANT** is the European Backbone that interconnects all the NRENs
- **GARR** is a founding member of the **GÉANT Association** that manages the GÉANT Network
- New GEANT projects: GN4-3 & GN4-3N started 1 Jan 2019
- GN4-3N will deploy a new network based on Fibres in IRU for 15 Years

# Global Networking with GÉANT



New link at 100 Gbps from London to Singapore jointly procured with AARNET and NORDUNET

# European Centre for Medium-Range Weather Forecasts (ECMWF)

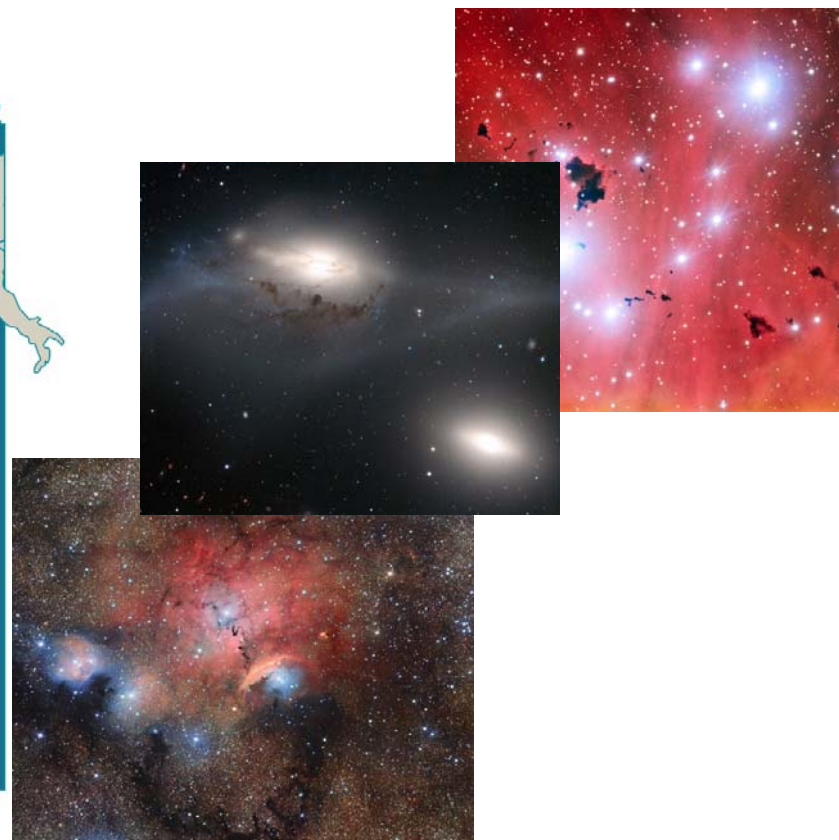
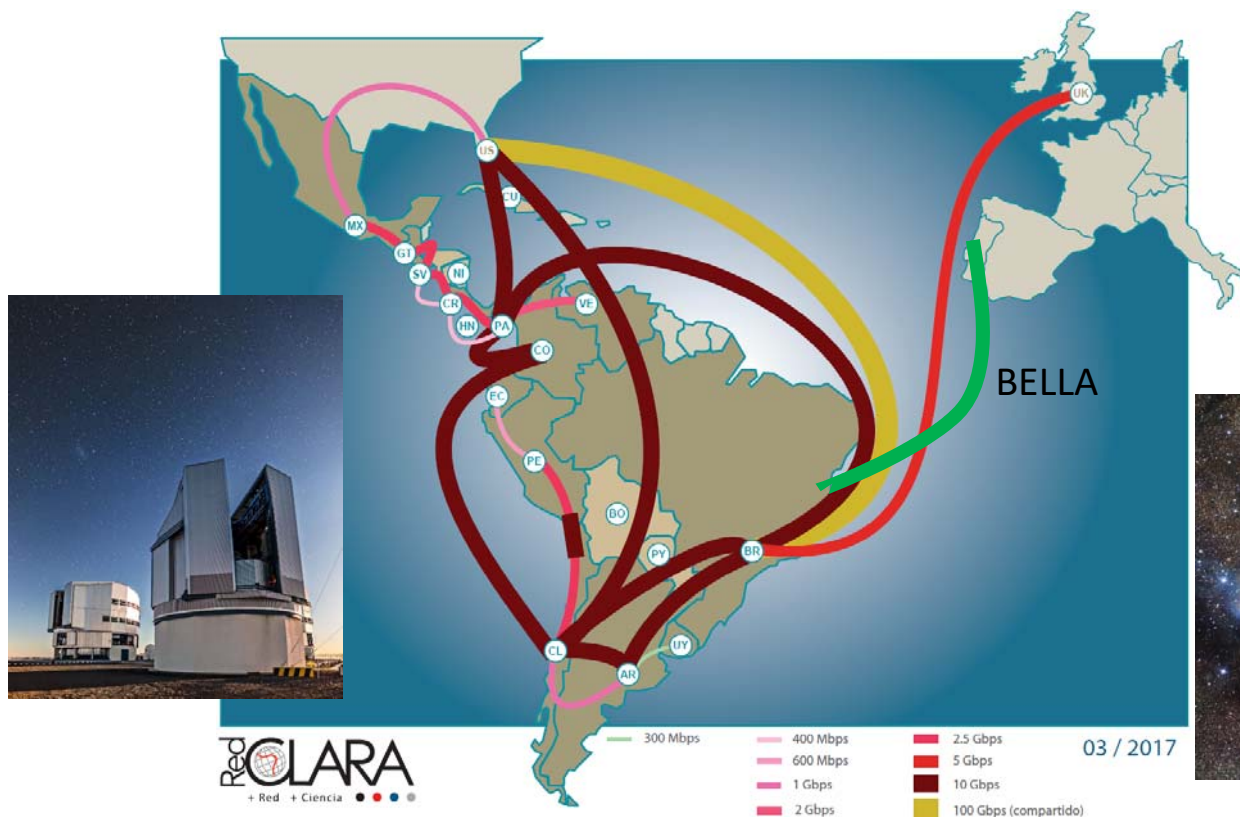




# European Southern Observatory



ESO operates three unique world-class observing sites in the Atacama Desert region of Chile



# Fibre Cable-EuroAsia Interconnector





# Trans-Adriatic Pipeline (TAP)



A GAS pipe under construction from Turkey to Italy passing by Greece and Albania

# Thank you