



# REUNA – SA3CC

August, 2023

**REUNA**  
Ciencia y Educación en Red

# Summary

 01 – REUNA in numbers

 02 – REUNA's Network

 03 – Chajnantor Pop

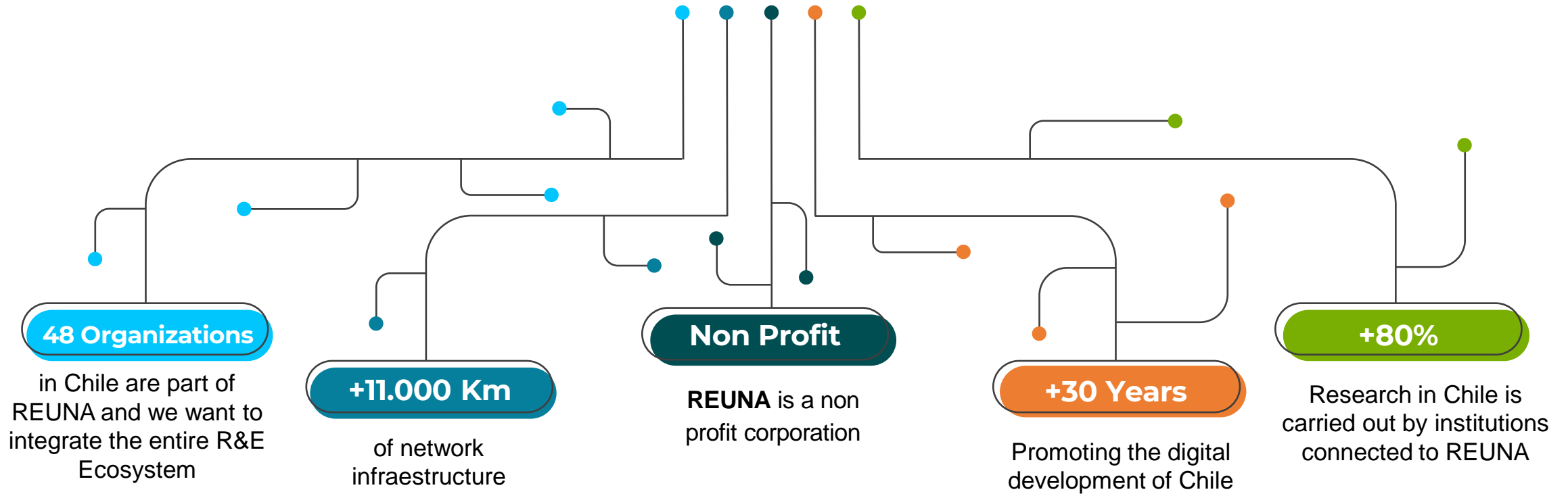
 04 – Patagonia Project

 05 – International Reach

 06 – International Sinergie Project

# REUNA

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# Current Infrastructure



**+11.00Km**  
Network infrastructure

**NOC**  
24x7 in house

**100%**  
Backuped Backbone  
Network Infrastructure

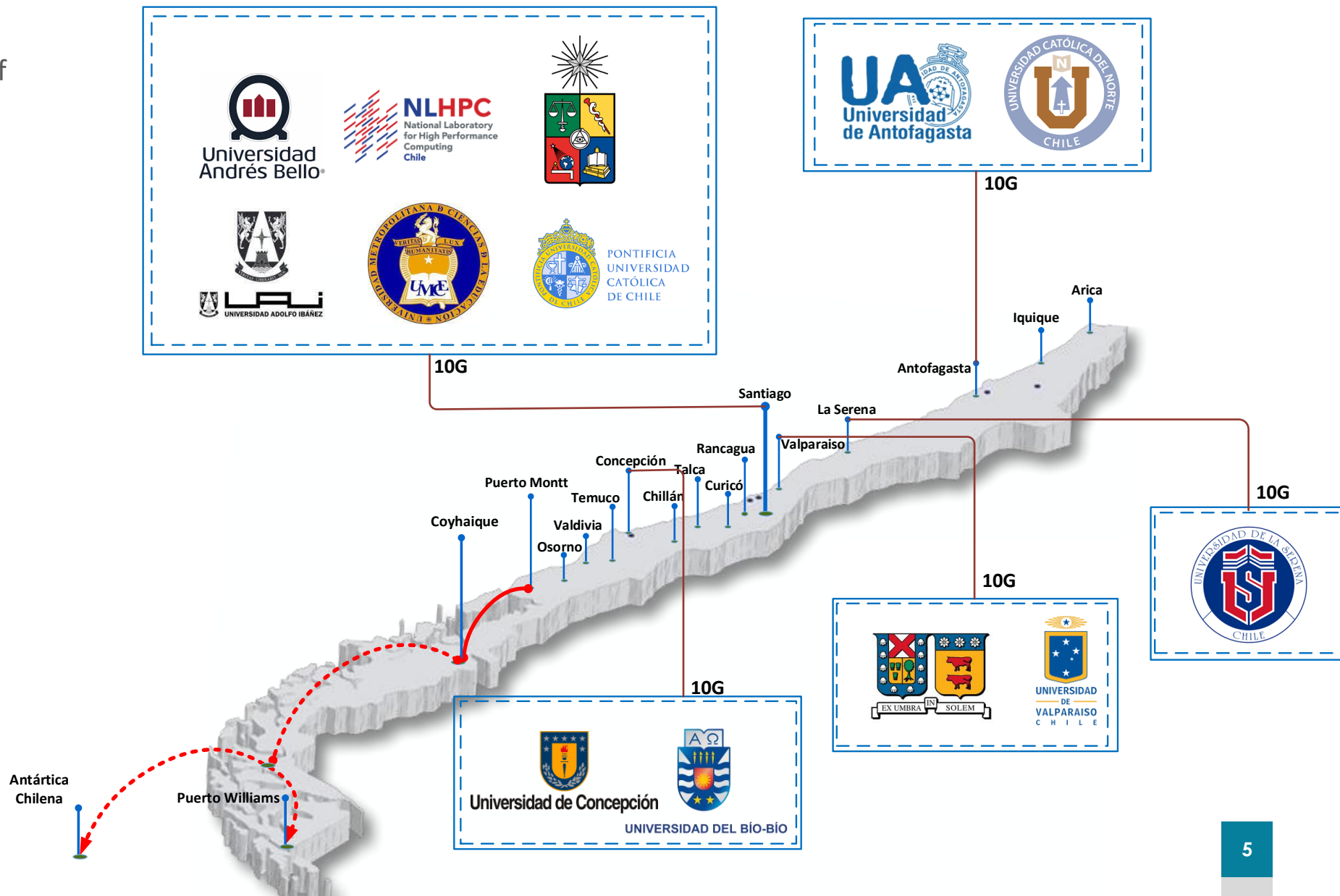
**18**  
Points of presence  
located in the main cities

# The Chilean institutions involved in astronomy projects use the backbone network of REUNA to connect among them and to world

The following organizations are part of REUNA:

- Universidad de Antofagasta
- Universidad Católica del Norte
- Universidad de La Serena
- Universidad Santa María
- Universidad Adolfo Ibáñez
- Universidad Andrés Bello
- National Laboratory for High Performance Computing
- Universidad Metropolitana de Ciencias de la Educación
- Pontificia Universidad Católica de Chile
- Universidad de Chile
- Universidad del Bío-Bío
- Universidad de Concepción
- Universidad de Valparaíso

All these institutions are connected to 10 Gbps





# What's new from last SA3CC?





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# Chajnantor PoP

A REUNA project in collaboration with ALMA Observatory, to provide fast, reliable and secure connectivity to international astronomical projects located on the Chajnantor Plateau.



The **highest PoP for R&E** in the world

**12 astronomical initiatives** will be able to connect

**High speed data transmission**

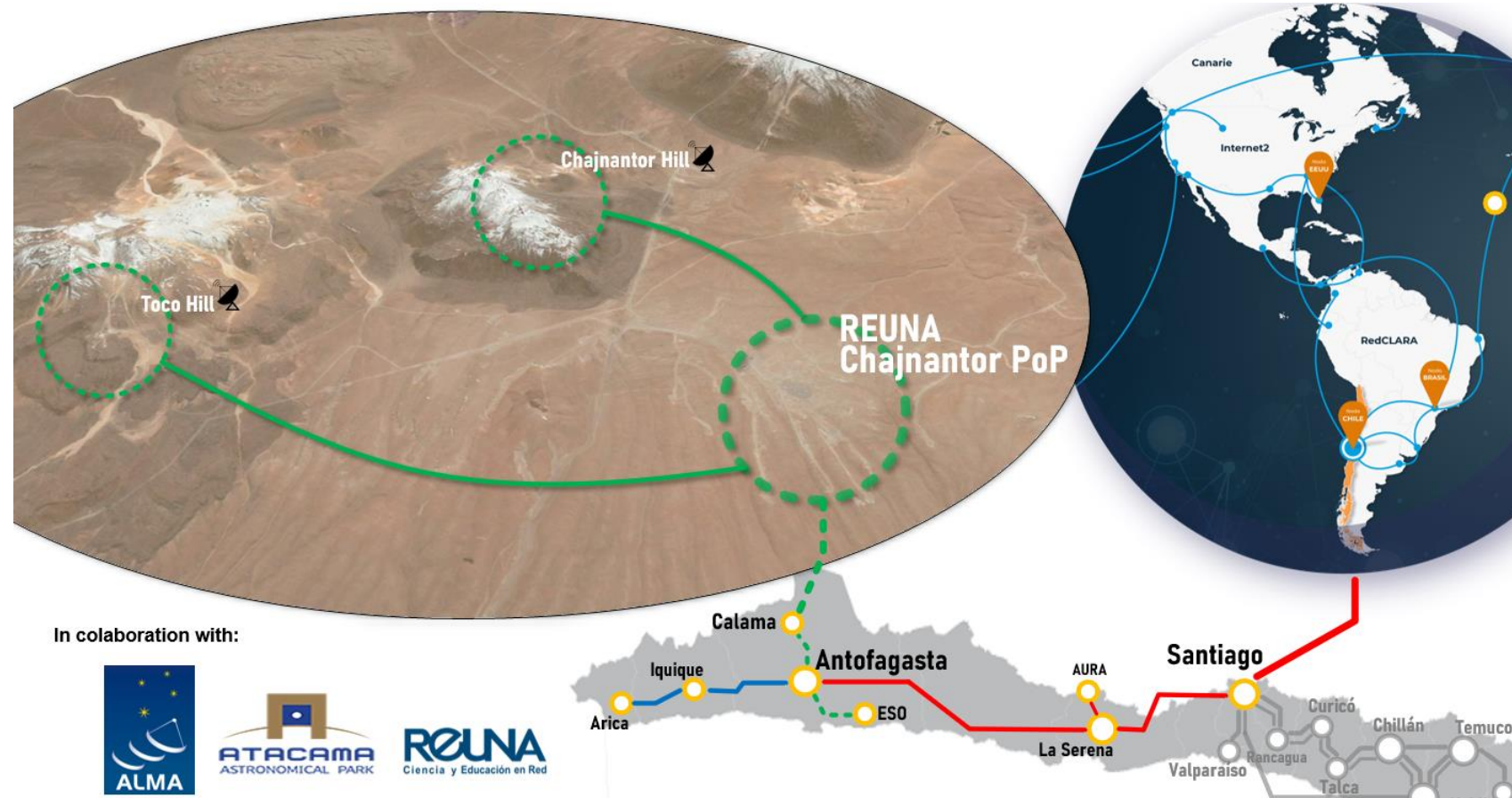
At more than **5,000 meters** of altitude

**Remote operation** of telescopes and more...



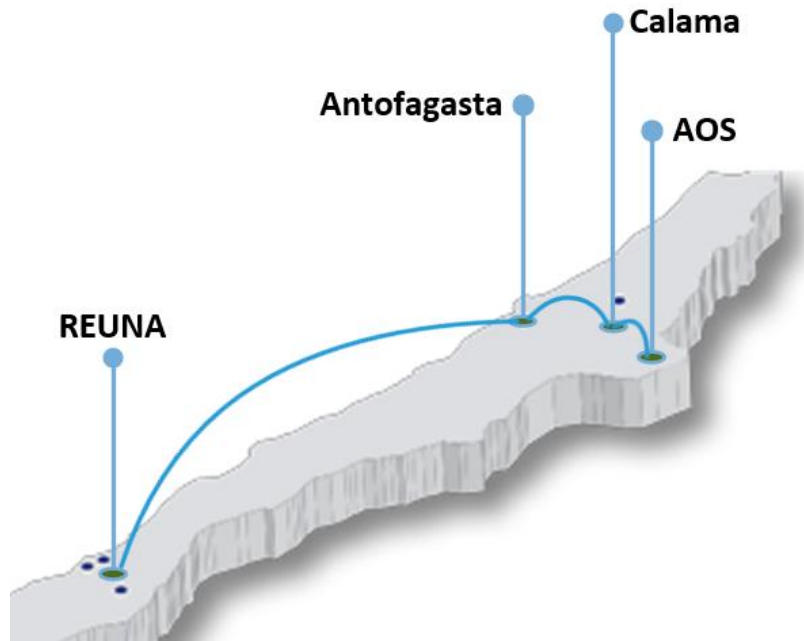
# A collaborative physical connectivity

- REUNA, through a collaboration agreement with ALMA, accesses a portion of the connectivity infrastructure and installs its PoP in the ALMA data center in AOS.
- The telescopes or the Park made agreements with ALMA to achieve last-mile connectivity to connect the various hills to the REUNA PoP.
- A CWDM solution is the current proposal of connectivity.
- The first telescope connected is expected for first half of 2024



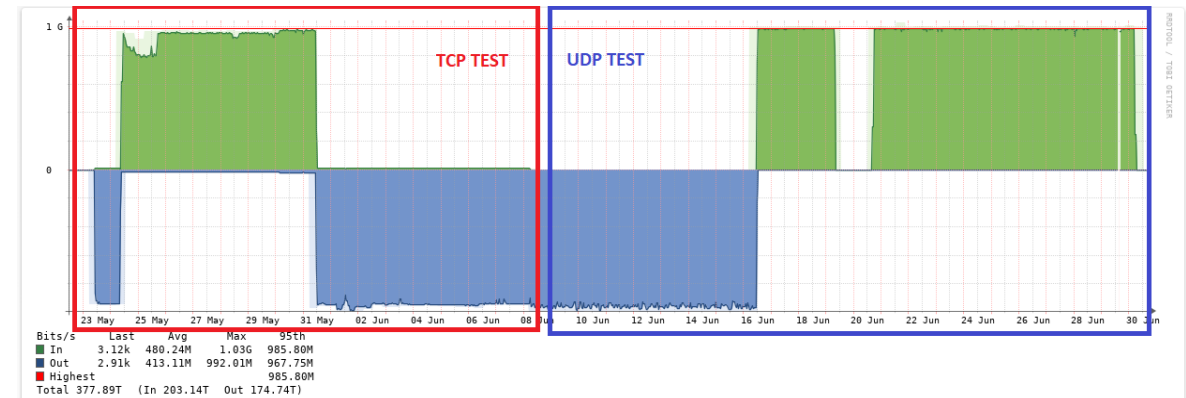


# Bandwidth Test CCAT (AOS) to University of Cologne (Germany)



## Network infrastructure

- **ALMA:**  
AOS – Calama – Antofagasta: 1 Gbps
- **REUNA**
  - Antofagasta-Santiago: 100Gbps



Protocol	Route (From AOS)	Download Avg.	Upload Avg.
TCP	CCAT (AOS) - Universitaet zu Koeln	941 Mbps	930 Mbps
UDP	CCAT (AOS) - Universitaet zu Koeln	981 Mbps	954 Mbps

# PATAGONIA

NEW RESEARCH AND EDUCATION NETWORK FOR THE SOUTHERN MACROZONE



**+10 UNIVERSITIES, PROFESSIONAL TRAINING CENTERS AND RESEARCH CENTERS**

in the Aysén and Magallanes regions.

**+800 MILLION PESOS**

to connect the knowledge-generating institutions of the Southern Macrozone to the Academic Networks.

**+1,300 KM OF NETWORK**

which means a 42% increase in the territorial extension of REUNA's current digital infrastructure.

**+400,000 ACADEMICS, RESEARCHERS, OFFICIALS AND STUDENTS**

connected nationwide.

## SOME APPLICATIONS



TELEMEDICINE



ARTIFICIAL INTELLIGENCE



EARTH SCIENCES



ONLINE EDUCATION



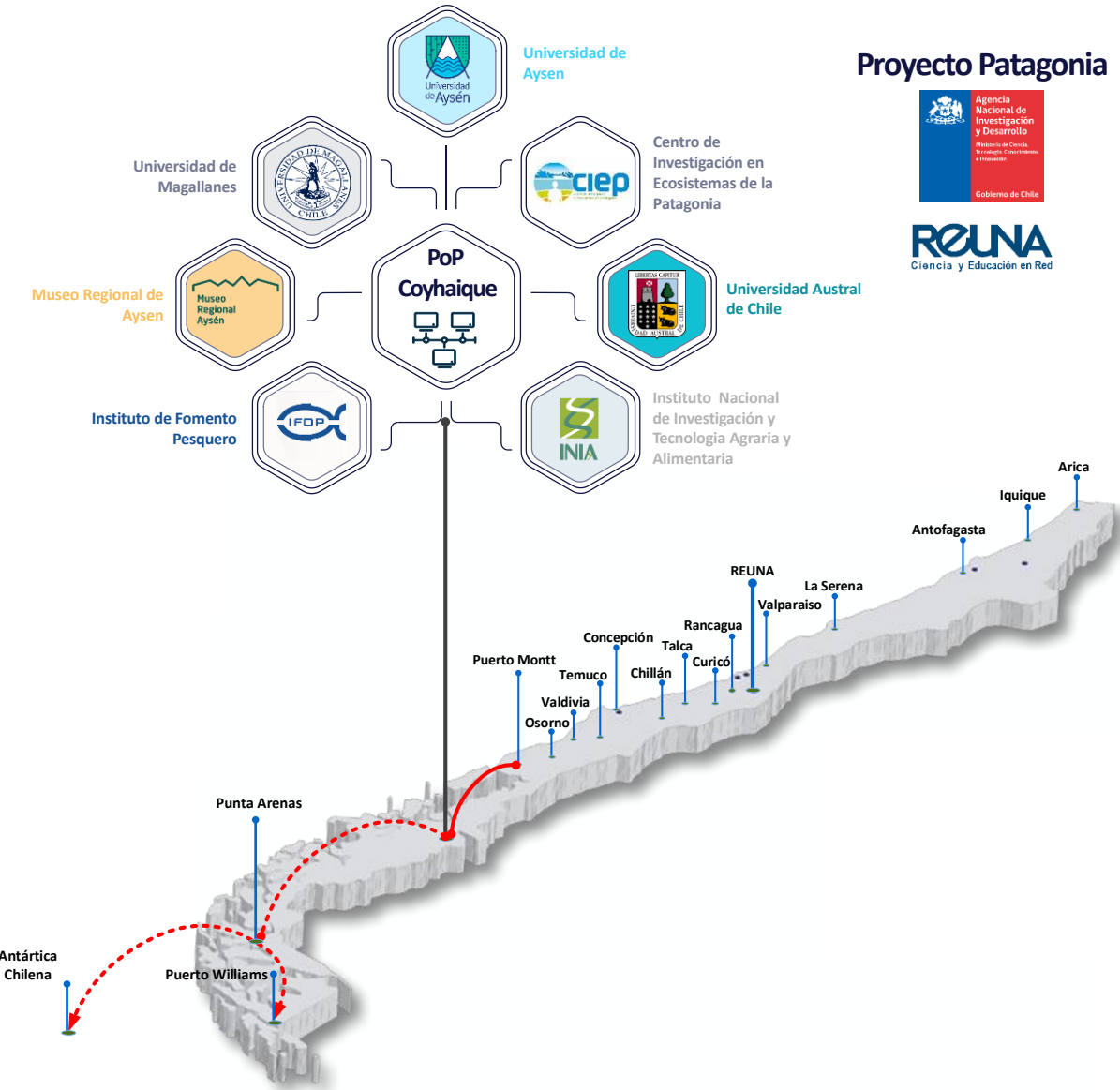
BIGDATA

Project funded by



# Coyhaique PoP

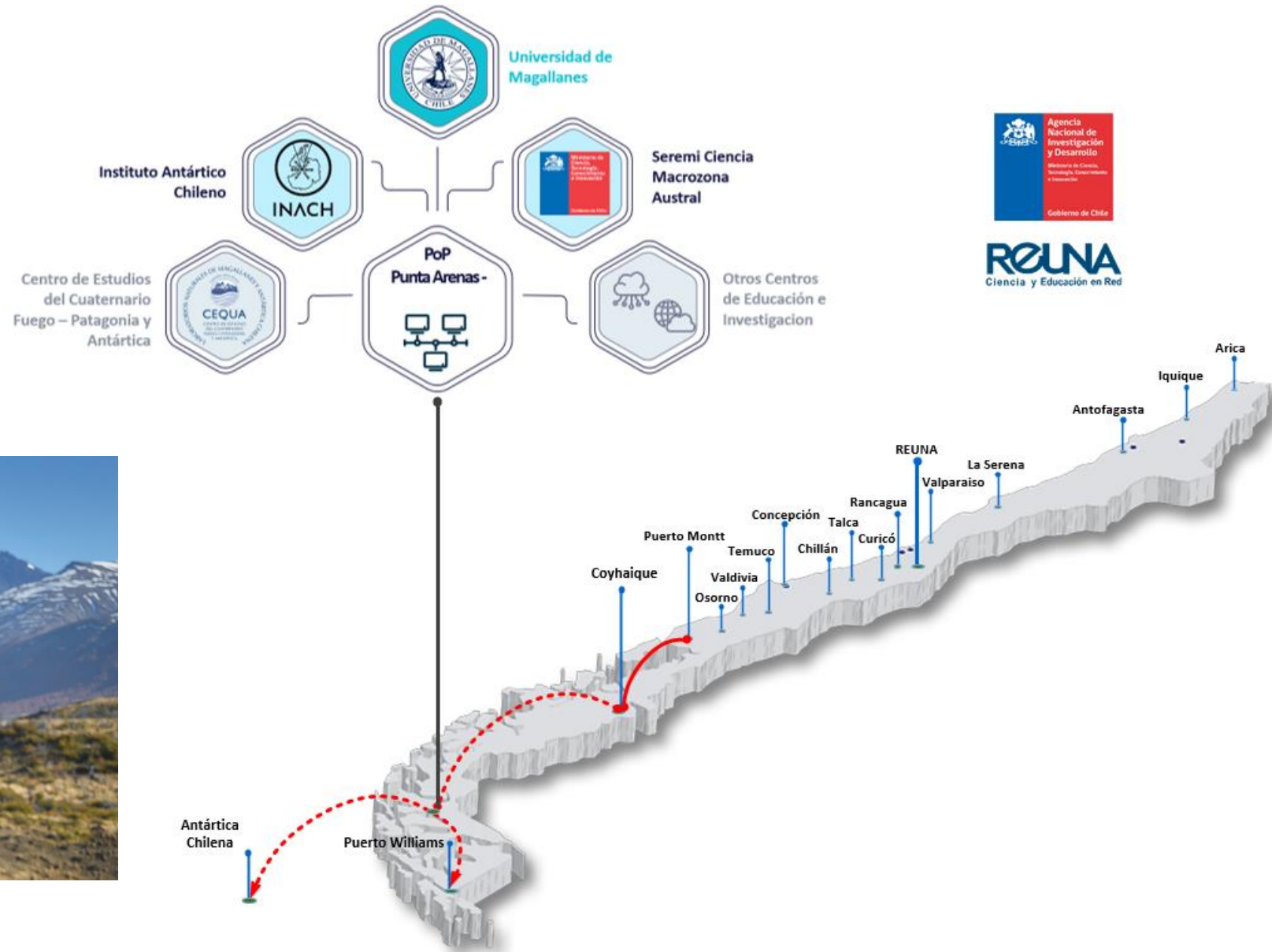
We reach Coyhaique!





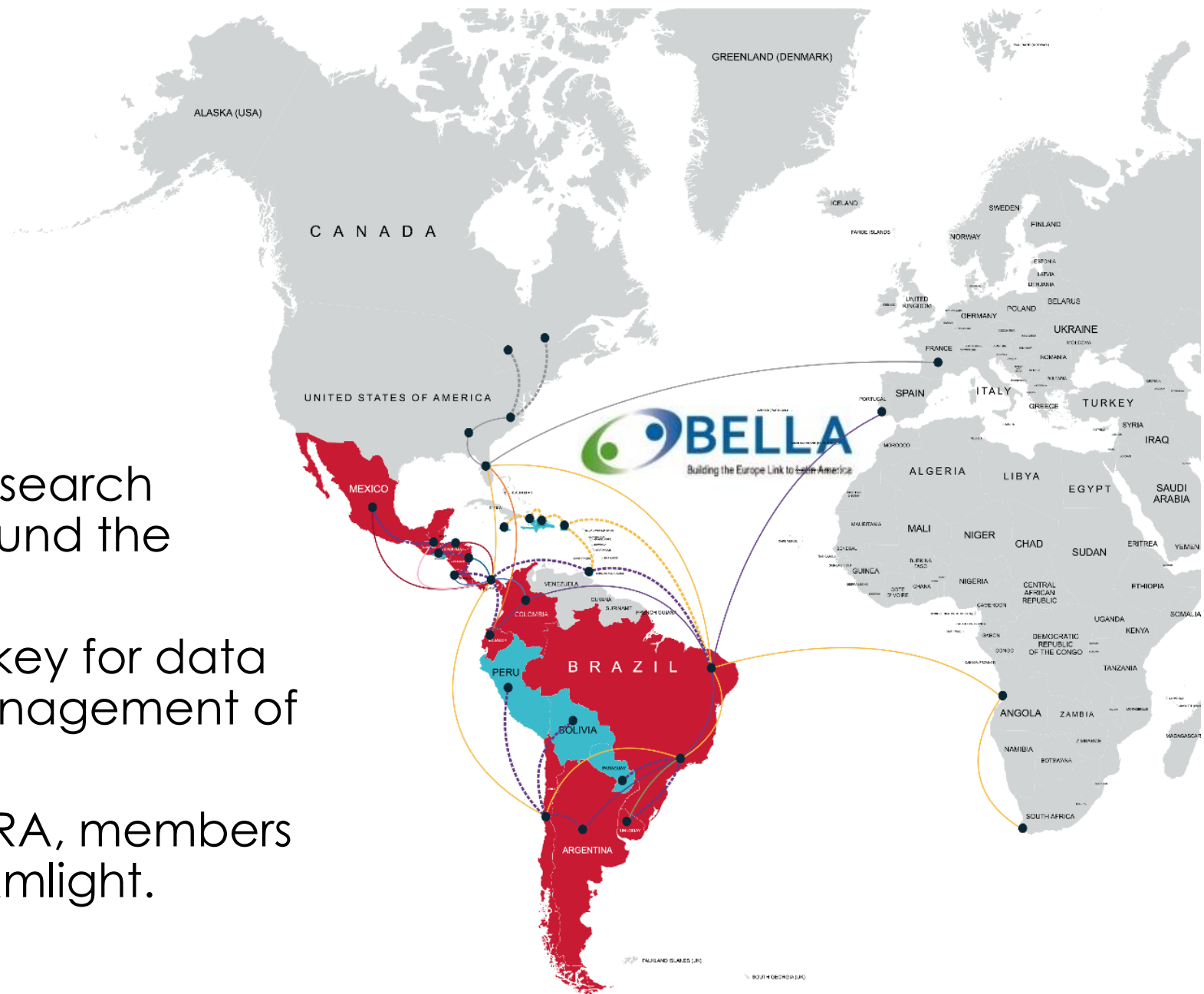
# Punta Arenas PoP

- Planning to reach Punta Arenas before the end of the year.



# Internacional Reach

- Much of the astronomical research community is distributed around the world.
- International connectivity is key for data transmission and remote management of instruments
- We are founders of RedCLARA, members of BELLA and partners with Amlight.



# Future international synergie projects



## Next Challenge: Connecting Antarcica

More than 20 countries use  
Punta Arenas as a gateway  
city to Antarcica

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# CABLE Antártico

-  Starting Point  
**Puerto Williams**
-  Arrival Point  
**Antártica**
-  **1.000 km**





# ROUNA

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