

The benefits

There are a number of benefits that will come from EVALSO:

- **Fast and efficient access to data:**
At present, data can take anywhere from hours to weeks before it becomes available for use. EVALSO allows data to be transferred in near real-time.
- **Virtual presence at the observatories:** The bandwidth offered by EVALSO makes a “virtual presence” at the observatories possible, by using videoconferencing to participate remotely in work at the observatory.
- **New possibilities in observing:** EVALSO can serve several of the needs of its partner members, for example, by operating robotic telescopes on Armazones, supporting their use for educational purposes; and improving the scientific exploitation of the capabilities of both observatories through innovative operations schemes, which will act as pathfinders for the operation of future facilities like the European Extremely Large Telescope.

The consortium

EVALSO is an international consortium of astronomical organisations and research network operators, part-funded under the European Commission FP7.

www.evalso.eu

It is a partnership between the Università degli Studi di Trieste, Italy; the European Southern Observatory, an international organisation; Ruhr-Universität Bochum, Germany; Consortium Gestione Ampliamento Rete Ricerca (GARR), Italy; Universiteit Leiden, Netherlands; Istituto Nazionale di Astrofisica (INAF), Italy; Queen Mary, University of London, United Kingdom; Cooperación LatinoAmericana de Redes Avanzadas (CLARA), Uruguay, and Red Universitaria Nacional (REUNA), Chile.



EVALSO

A new communication infrastructure for European astronomy in Latin America

The need

The sites of Paranal and Armazones are ideal for astronomical observation due to their high altitude, clear skies and remoteness from light pollution. But their location means they are far from any pre-existing high bandwidth communications infrastructure, leaving them dependent on a microwave link to transmit scientific data.

The capacity of this link cannot realistically be upgraded to cope with the increasing data volumes generated as observing facilities grow. This potential bottleneck calls for a new type of connectivity between the observatories and their end-users.

The solution

EVALSO — Enabling Virtual Access to Latin American Southern Observatories — is a new network infrastructure connecting the observatories at Armazones and Paranal to Santiago.

From there it is possible to connect via existing networks including REUNA and RedCLARA*, the transatlantic link*, GEANT* and European national research networks to the observatories' parent institutions in Europe and the whole scientific community.

* RedCLARA, GEANT and the transatlantic link were created with EC support.



The technology

EVALSO is a high-capacity, high-speed data facility. It uses 100 km of newly installed fibre-optic cable to connect the observatories to existing commercial infrastructures.

The fibre-optic cable between the observatories and Antofagasta, and the backbone between Antofagasta and the communications hub in Santiago carry data at speeds of 10 Gbps — a thousand times faster than a home broadband connection — using DWDM (dense wavelength division multiplexing) technology.

From the hub to the end-users in Europe, the entire network can operate up to speed of 1 Gbps.

