

MISSIONE 4
ISTRUZIONE
RICERCA

NEXTGENERATION CROCE DEL NORD



Finanziato
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Ministero
dell'Università
e della Ricerca



Italiadomani
PIANO NAZIONALE
DI RIPRESA E RESILIENZA

Panel di riferimento: **PSE**

Titolo della Proposta: **NextGeneration Croce del Nord**

Codice della proposta: **IR0000026**

Tipologia: **(i) - Empowering**

Proponente: **INAF**

Infrastruttura di Ricerca: **EVN - JIVE - European VLBI Network**

Importo totale: **18.952.289,40€**

Di cui al Sud: **7.723.345,60€ (40,75%)**

Abstract:

This project is primarily prompted by the large expectations resulting from the use of a fully refurbished “Croce del Nord” (CdN, actually the European largest antenna) in the monitoring of orbiting objects. In particular, the measurements provided by the upgraded CdN (via a radar technique) will be extremely relevant to observe objects in Low Earth Orbit (LEO). This activity will be a pillar of the Space Situational Awareness (SSA), one of the capacitive areas of strategic interest for the Nations that consider the access to space as a main target. Within this program, the European Space

Surveillance and Tracking (EU-SST) is the part related to the capability to build a spatial mapping of the objects in orbit, to classify them and to estimate their orbital motion.

As a nice parallel outcome of the complete refurbishment of the CdN, this antenna will become a very useful instrument also to study the radio transients, and in particular the Fast Radio Burst (FRBs), which are very intense and short-lived cosmic bursts of still unassessed origins. Since they mostly come from cosmological distances, their investigation will open unprecedented possibilities to study the evolution of the Universe as well as some fundamental laws of physics.

To support and fully exploit the activities of the CdN, the Italian parabolic dishes of Noto (32m) and SRT (64m) will also be involved, as well as the CHORD instrument in Canada.

At the end of planned activities, Italy will have a national network of sensors, to carry out a monitoring service of space debris, with state-of-art performance, both in terms of angular accuracy, and in terms of the ability to observe very small objects. In parallel, the Italian network will also provide important inputs to improve the capability of the EVN (central to the JIV-ERIC) in FRB science.

Elenco partecipanti alla Proposta:

- Istituto nazionale di astrofisica
- Politecnico di Milano