



# SICRAL

ITALIAN SYSTEM FOR  
SECURE COMMUNICATIONS  
AND ALERTS



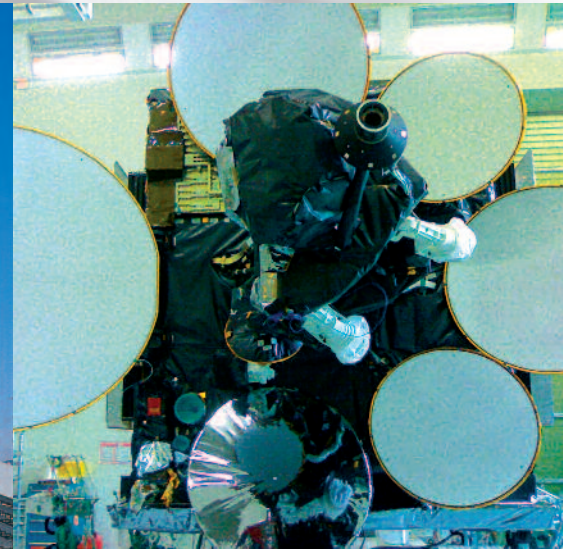
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The SICRAL programme implements military satellite communications capabilities in the three main bands in use: UHF, SHF (X band) and EHF, with continuity assured until 2025 with the progressive launch of new satellites.

The programme is divided into three phases. The first took place in 2001 with the launch of the SICRAL 1 satellite, which is still in use and has a remaining life of around three years. The second phase begins with the launch of SICRAL 1B, which will have an expected operational lifespan of 13 years. The third phase, currently at the planning stage in co-operation with France, will involve the construction of SICRAL 2, scheduled for launch at the end of 2012.

The SICRAL programme, jointly with France (Syracuse programme) and the United Kingdom (Skynet programme), will supply NATO with all the capacity it requires.



UHF

# THE SICRAL PROGRAMME

SICRAL (*Sistema Italiano per Comunicazioni Riservate ed Allarmi - Italian system for secure communications and alerts*) is Italy's satellite system for military communications, boasting unprecedented flexibility and versatility. The system allows interoperability between defence, law enforcement and civil emergency agencies, and those responsible for the management of strategic infrastructure.

SICRAL gives the Italian armed forces proprietary satellite communications capacity for strategic and tactical links in Italy and for out-of-area operations, with terrestrial, naval and air platforms.



## SICRAL 1B AREA COVERAGE



EHF



SHF



# SICRAL 1B

## THE NEW ITALIAN DEFENCE SATELLITE



SICRAL 1B is the second satellite in the SICRAL programme, and is intended to have a period of joint operation with the first satellite. SICRAL 1B is located in an orbital position not far from the first satellite, and will have very similar technical and operational characteristics. Launched from a Sea Launch platform in the Pacific, on the same latitude as the equator, SICRAL 1B will have an estimated operational lifespan of 13 years.

Like SICRAL 1, also the SICRAL 1B programme was built by Thales Alenia Space and Telespazio, the two companies that form the Space Alliance partnership between Finmeccanica and Thales. Thales Alenia Space (Thales 67%, Finmeccanica 33%) developed the system and built the satellite. Telespazio (Finmeccanica 67%, Thales 33%) is responsible for the launch and early orbit phase (LEOP) and managed the building of the system's ground segment.



The SICRAL 1B programme is a **public-private partnership** between the Italian Defence General Staff and Finmeccanica. Thanks to this agreement the programme, which has already led to a major upgrade of defence infrastructure, was able to continue. The military satellite capacity that SICRAL 1B will offer in the three main frequency bands (UHF-SHF and EHF) will cover the growing operational requirements of the Italian defence agencies, while part of the capacity will also be offered to NATO and its allies.

The best  
defence is  
communication

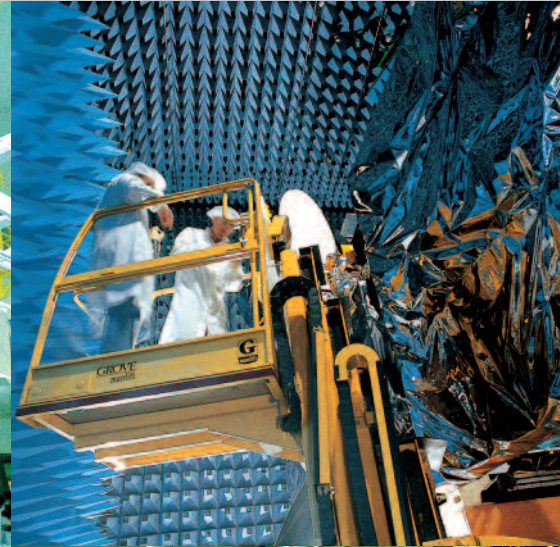
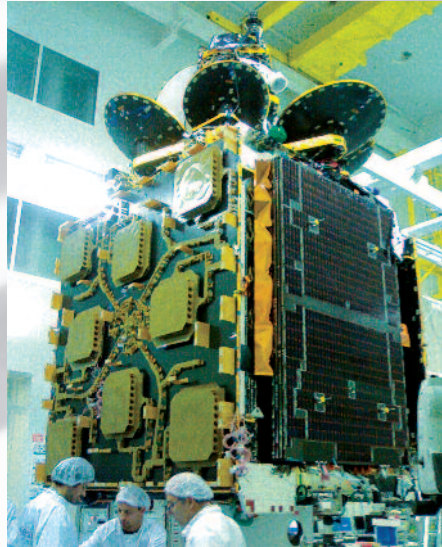


# THALES ALENIA SPACE

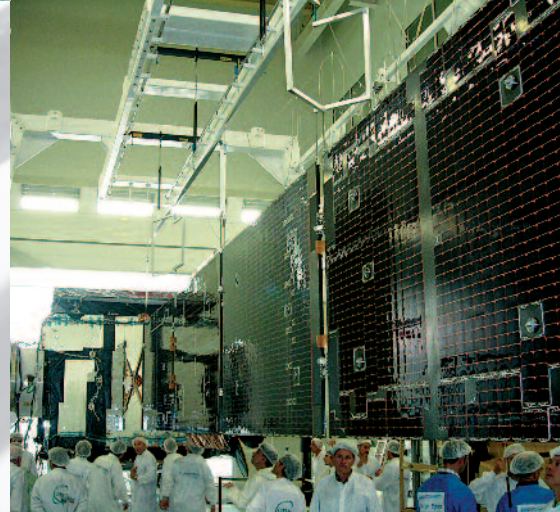
Thales Alenia Space is responsible for developing the SICRAL programme and building the first two satellites. For SICRAL 1, the company – then called Alenia Spazio – designed the system as part of the SITAB consortium (70% Alenia Spazio, 20% Fiat Avio, 10% Telespazio). Today, as Thales Alenia Space Italia, plays a key role in expanding and strengthening the programme by building SICRAL 1B and providing some parts of the ground segment, including the telecommunications control centre in Vigna di Valle. For the architectural, engineering and technological solutions, the SICRAL system has an indisputable strategic advantage, since it offers a competitive performance, and can meet all current and future Italian defence requirements for military telecommunications.

As part of the programme, a transmission system was developed and built to operate on three frequency bands (multi-payload and multi-transmission), as well as a repeater for each band:

- › EHF (44-20 GHz), dedicated mainly to infrastructure communications and supported by a receiving antenna that principally covers Italy;
- › UHF (320-240 MHz), used mainly for mobile tactical communications and with coverage of the entire hemisphere visible from the satellite;



› SHF (8-7 GHz), the main band for high-/medium-volume communications, which is complementary to the EHF band, but with a multi-band antenna that can be reconfigured electronically. SICRAL 1B, like SICRAL 1, was designed and integrated, as regards all its components, at the facilities of Thales Alenia Space Italia.



**SICRAL:**  
a stronger system,  
a safer Europe



# TELESPAZIO



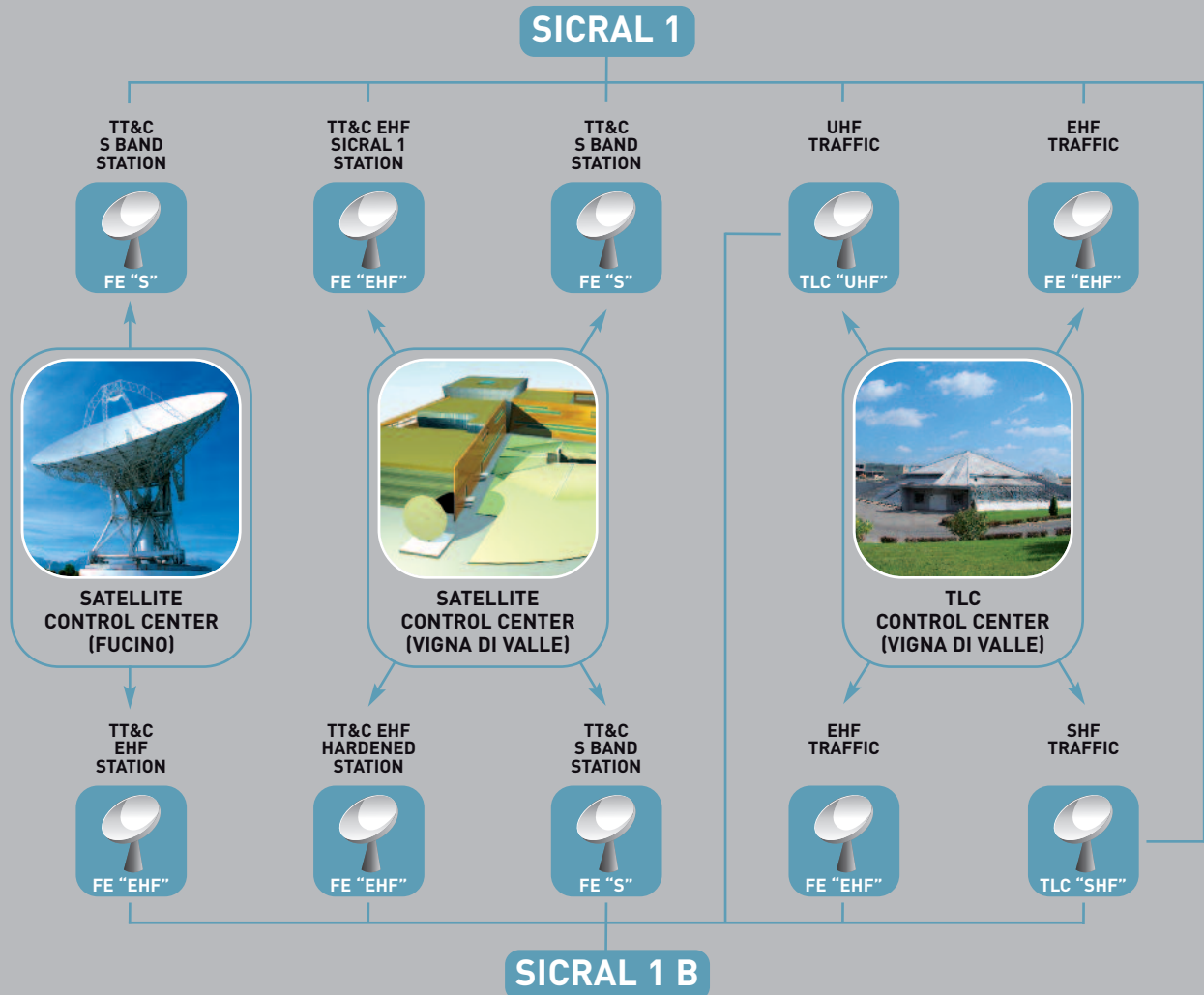
For SICRAL 1B Telespazio managed the building of the system's ground segment at the Satellite Control Centre at Vigna di Valle and the Fucino Space Centre. It is also responsible for the launch and early orbit phase (LEOP) of the satellite. After its launch from a Sea Launch platform, the satellite will be positioned in a geostationary orbit 36,000 km from earth, at 11.8° E. The LEOP activities and the first in-orbit tests (IOT) will be carried out by Telespazio's space centre in Fucino. The telemetry, tracking and control (TT&C) operations are carried out in bands S and EHF. Once the correct positioning of the satellite has been

verified and the commissioning operations have been carried out, the Fucino space centre will transfer the control of the satellite and the transmission networks to the military satellite control centre in Vigna di Valle. The Fucino space centre will continue to play a backup role. As part of the **public-private partnership** between the Italian Defence General Staff and Finmeccanica, Telespazio contributed a significant part of the direct costs of the SICRAL 1B programme, thus obtaining some of the satellite's capacity. This means the company can take on the role of satellite operator in selling capacity and services to NATO and to the European and US defence markets.



A defence network  
connection between air,  
land and sea

# ARCHITECTURE OF THE SICRAL SYSTEM



## ADDITIONAL INFRASTRUCTURES FOR GROUND SEGMENT

- 1 New building (Vigna di Valle) to host Satellite Control Centres
- 2 Satellite Control Centre (VdV + Fucino)
- 1 Satellite Simulator
- 2 TTC EHF Band Station (2 VdV + 1 Fucino)
- 1 TTC S Band Station (VdV)
- 1 Network Control Centre + 1 Gateway (VdV)
- 1 TLC SHF Band Station + 1 TLC UHF Band Station (VdV)

## SICRAL 1B: TECHNICAL SPECIFICATIONS

Orbital position	▶ geostationary at 11.8° East
Stabilisation	▶ three-axis
Satellite control	▶ ground and sun sensors
Mass on launch	▶ 3,060 kg
Payload weight	▶ 538 kg
Payload energy requirement	▶ 2,270 W
Solar cell output	▶ 4,200 W
TT&C	▶ S and EHF bands
Maximum pointing error	▶ 0.17° N/S and E/W
Propulsion	▶ bipropellant liquid
Operational life	▶ 13 years
Launch system	▶ Sea Launch



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