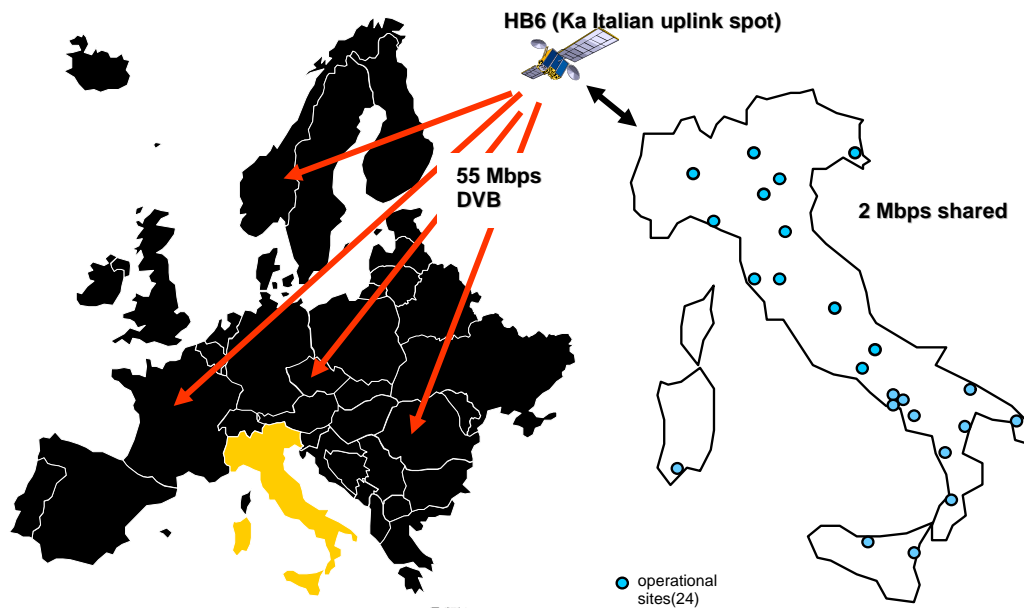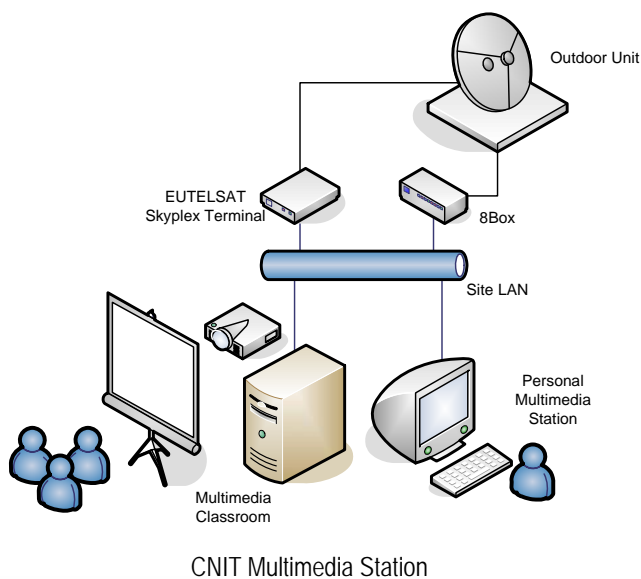# CNIT satellite network

CNIT has set up and operates an advanced proprietary satellite network that connects in a mesh topology the majority of its Research Units and Laboratories. The satellite network, based on the **Skyplex** technology, operates in **Ka band** and provides a guaranteed bandwidth of 2 Mbps shared among the connected terminals. In our typical application most of this bandwidth is reserved for audio and video multicasting, so that a significant improvement of their quality is achieved. CNIT selected EUTELSAT as the space operator partner.

HB6 (Ka Italian uplink spot)

55 Mbps DVB

2 Mbps shared

operational sites(24)

The **Skyplex Ka-band** terminal is a compact unit 31-centimeters wide and 1 rack-unit high and can receive a downlink stream of up to 38 Mbps. This stream is assembled on board the HOT BIRD™ 6 satellite from as many as 6 uplink carriers, each with a net bit rate of approximately 6 Mbps, or 18 uplink carriers each with a net bit rate of approximately 2 Mbps. Skyplex can be operated in either continuous (SCPC) or burst (TDMA) mode, depending on the traffic pattern. The terminal is part of the CNIT multimedia station, whose main components are reported in the figure.

Outdoor Unit

EUTELSAT Skyplex Terminal

8Box

Site LAN

Personal Multimedia Station

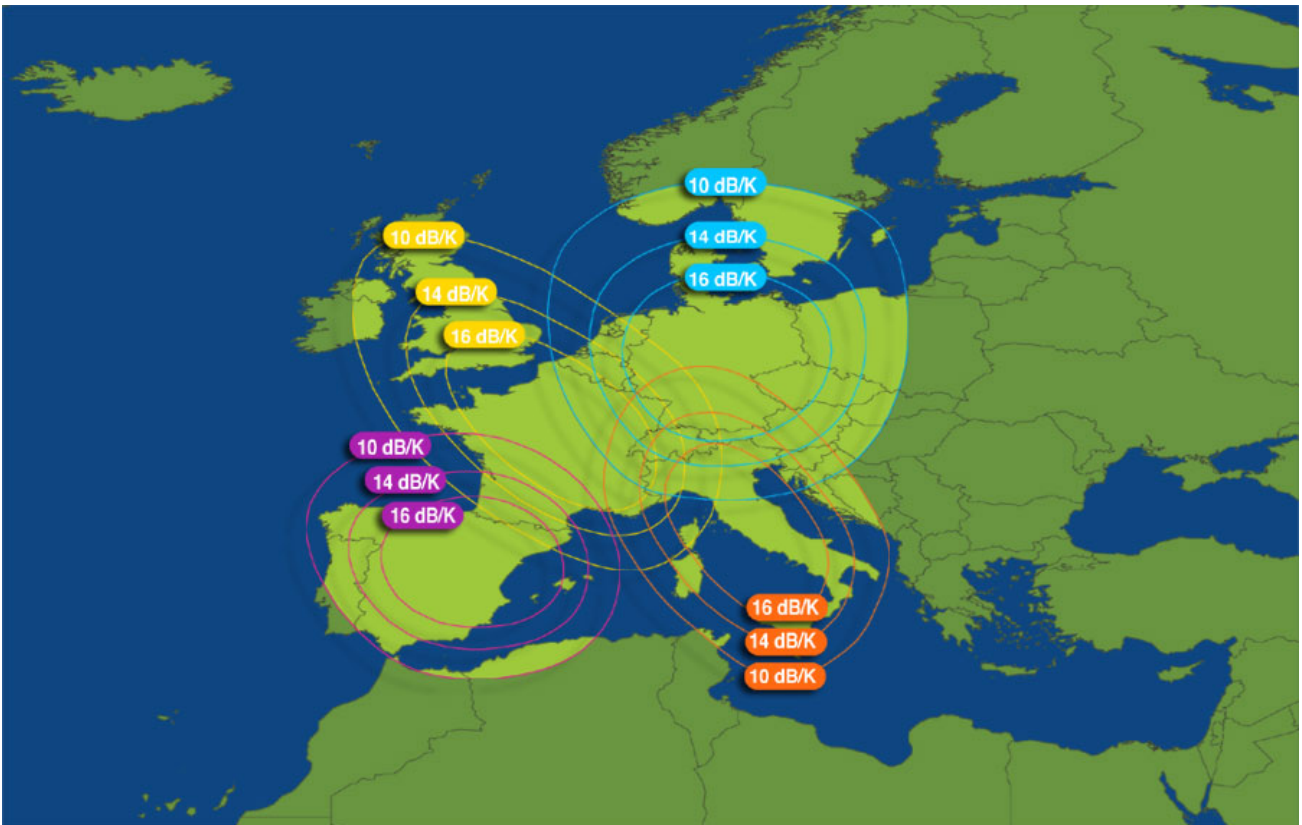Multimedia Classroom

CNIT Multimedia Station

8Box Multicast IP Router

EUTELSAT Skyplex Terminal

Outdoor Unit

The CNIT Satellite network uses the **HOT BIRD™ 6** satellite capacity. This satellite has 4 uplink European regions. CNIT operates on the Italian spot labeled in orange in the figure. The uplink traffic from each single CNIT station is multiplexed on-board through by the Skyplex payload.

This satellite system will also enable the pan-European broadcast diffusion due to the downlink Ka coverage of HOT BIRD™ 6, shown in the figure.

The CNIT satellite network is used for the following applications and services:

- − Multicast Audio-Video Conference
- − Interactive Distance Learning
- − Data Broadcasting
- − Real-Time Interactive Data Applications

Operational CNIT Satellite Network Sites

Name	*City*
LABNET	Napoli
Politecnico di Bari	Bari
Seconda Università di Napoli	Napoli
Università degli Studi di Salerno	Salerno
Università di Cagliari	Cagliari
Università di Catania	Catania
Università di Firenze	Firenze
Università di Lecce	Lecce
Università di Palermo	Palermo
Arcavacata (Università della Calabria)	Cosenza
CNR IMAA - Potenza	Potenza
Università "Mediterranea" di Reggio Calabria	Reggio Calabria
Università di Cassino	Cassino
Università di Bologna	Bologna
Università di Genova	Genova
Università di Napoli Federico II	Napoli
Università di Padova	Padova
Università di Pisa	Pisa
Ist. Sup. "Mario Boella"	Torino
Università dell'Aquila	Aquila
Università di Ferrara	Ferrara
Università di Parma	Parma
Università di Trieste	Trieste
Università di Perugia	Perugia