SARABAND OBJECTIVES

The overall objective of the SARABAND project is to push the boundaries of RF technology by developing high performance, smart, multi-beam, programmable and reconfigurable antennas containing (in terms of size in comparison with existing Q-band technology) miniaturized Q-band (40,5 - 43,5 GHz) radio technology to enable an energy efficient and high performance future wireless backhaul, as well as last mile access to bridge the digital divide.

S&T SARABAND SUMMARY PROJECT OBJECTIVES

Low profile (flat and thin), high gain antennas in Q-band.

Q-band Multi-Beam Antennas with up to four beams of different beamwidth and programmable directions.

Q-band high power radio front-end with MMICS (Monolithic Microwave Integrated Circuit) on a smart (miniaturized) technology SIP (System in Package), thermal management and power efficiency with suitable packaging and interconnections process.

Integration of antennas with radio heads to achieve a cost effective and compact Beam Forming Solution for mobile backhaul with installation constraints (low cost and power efficiency).

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SARABAND

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SMART ANTENNA & RADIO FOR ACCESS AND BACKHAUL FOR ADVANCED NETWORK NODES

Project Coordinator
Thales Communications & Security SA

SEVENTH FRAMEWORK PROGRAMME

From October 3, 2011 until October 2, 2014

sarabandfp7.eu

Potential Use Cases

SARABAND Demonstrator connects five different Terminals to a high speed point-to-multipoint network. Four different application scenarios for the deployed network are envisaged:

Backhaul for 4G Base Station

A first scenario would involve a terminal, which could be a Mobile Operator Cell Site with a 4G Base Station, requiring a dedicated Backhaul channel of up to 120 Mbps.

Internet Service for a small office

Terminal 2 could be a Small or Medium size Company requiring a Broadband Internet Service. Such a company would require a bandwidth in the range of 50 to 100 Mbps depending on the number of employees.

Video Surveillance

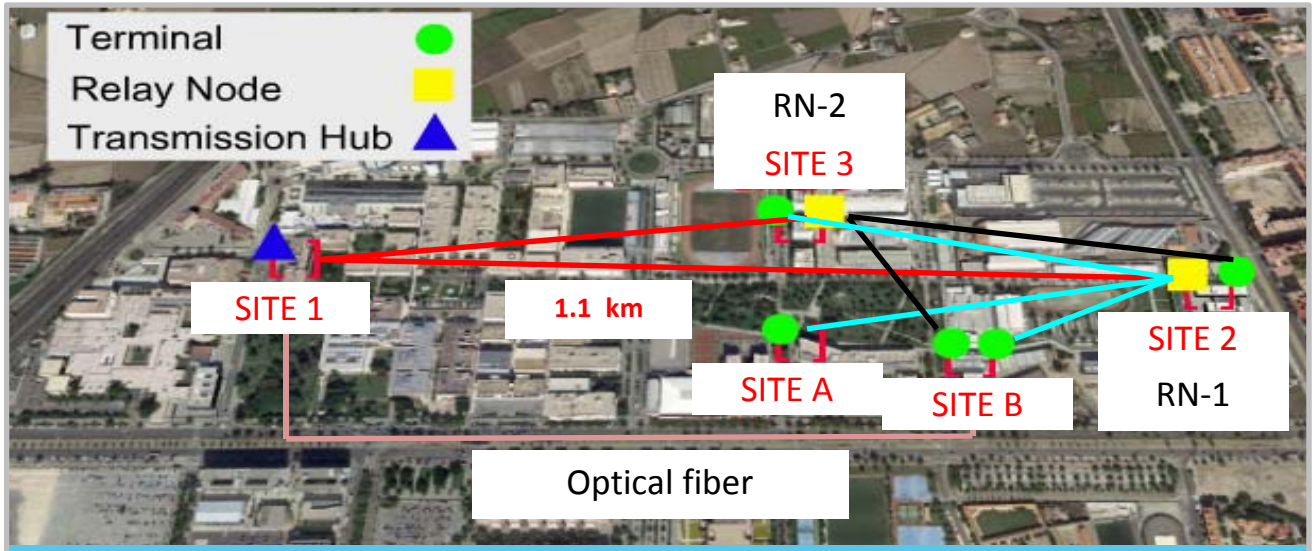
A third scenario could involve Terminal 3 giving support for an IP-based video surveillance system. This system requires stable broadband connections to send video streams and alarms.

Residential Access

Terminal 4 and 5 in the Saraband Deployment are configured to share the capacity of a single channel of up to 120 Mbps. This configuration is typical in Residential Access Networks where the available capacity is distributed dynamically among the subscribers.

SARABAND Small Scale Field Trial

The antennas and radio frequency modules developed in SARABAND have been integrated in a wireless network platform deployed at the campus of the Universitat Politecnica de Valencia, in Spain, where specific smart-antenna and radio functionalities have been tested in the system platform. This demonstrator provides Gigabit Ethernet communications from a Transmission Hub to 5 Terminals through millimeter-wave wireless links, in a point to multipoint (PMP) architecture, and two Relay Nodes have been used to extend the system range and to avoid the limitations of line of sight.



SARABAND Network Performances

Link	Distance	Modulation	Max. Aggregated Capacity
TH-RN1	1100 m	QPSK 3/4	96 Mbps
TH-RN2	610 m	64 QAM 2/3	104 Mbps
RN1-Terminal 1	495 m	16 QAM 3/4	72 Mbps
RN1-Terminal 2	496 m	16 QAM 3/4	72 Mbps
RN1-Terminal 3	305 m	16 QAM 3/4	72 Mbps
RN2-Terminal 4	495 m	16 QAM 3/4	72 Mbps
RN2-Terminal 5	280 m	16 QAM 3/4	72 Mbps