SMARTLNB PRESENTATION

Eloi Stivalletti

53º Encontro Tele.Síntese Brasília – 17 de Julho de 2018

eutelsat

SmartLNB

SATELLITE ENABLES THE IOT BY PROVIDING BACKHAUL CONNECTIVITY AND BY REACHING OBJECTS IN REMOTE AREAS

Personal / Local Area

Limited coverage range, from few cm to a few tens of meters

Key technologies:
RFID, Bluetooth, ZigBee, WiFi

Key applications:
- **Connected home**
- **Connected cars**
- **Wearables**
- **Retail & advertising**

Wide Area

> 100 meters range

Key technologies:
2G/3G/4G, LPWAN (Sigfox, LoRa…)

Key applications:
- **Smart metering**
- **Consumer**
- **Transportation**
- **Smart cities**
- **Retail & advertising**

Global

Global coverage, across multiple countries, including rural areas and oceanic coverage

Key technology: Satellite

Key applications:
- **Transportation**
- **assets tracking (e.g. heavy equipment)**
- **Infrastructure**
- **monitoring (e.g. oil & gas, utilities)**

RFID: Radio Frequency Identification
LPWAN: Low Power Wide Area Network

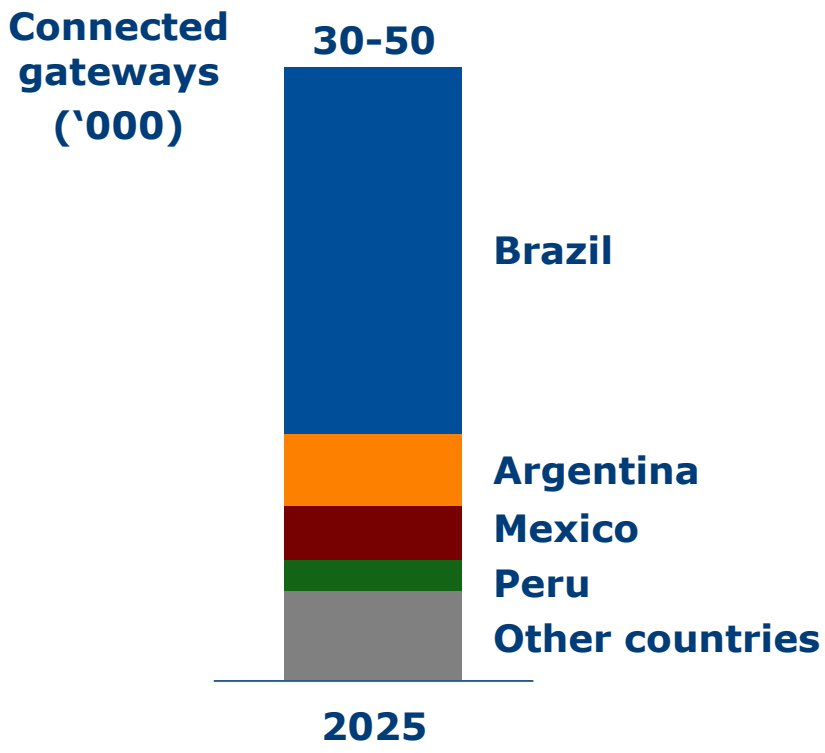
eutelsat

1 *Satellite Backhaul*

2 SmartLNB *Direct to Object*

SATELLITE BACKHAULING OF LPWA NETWORKS IS EXPECTED TO REACH BETWEEN 30K AND 50K CONNECTED GATEWAYS IN LATAM BY 2025

Satellite backhauling of LPWA networks
Addressable market in Latin America

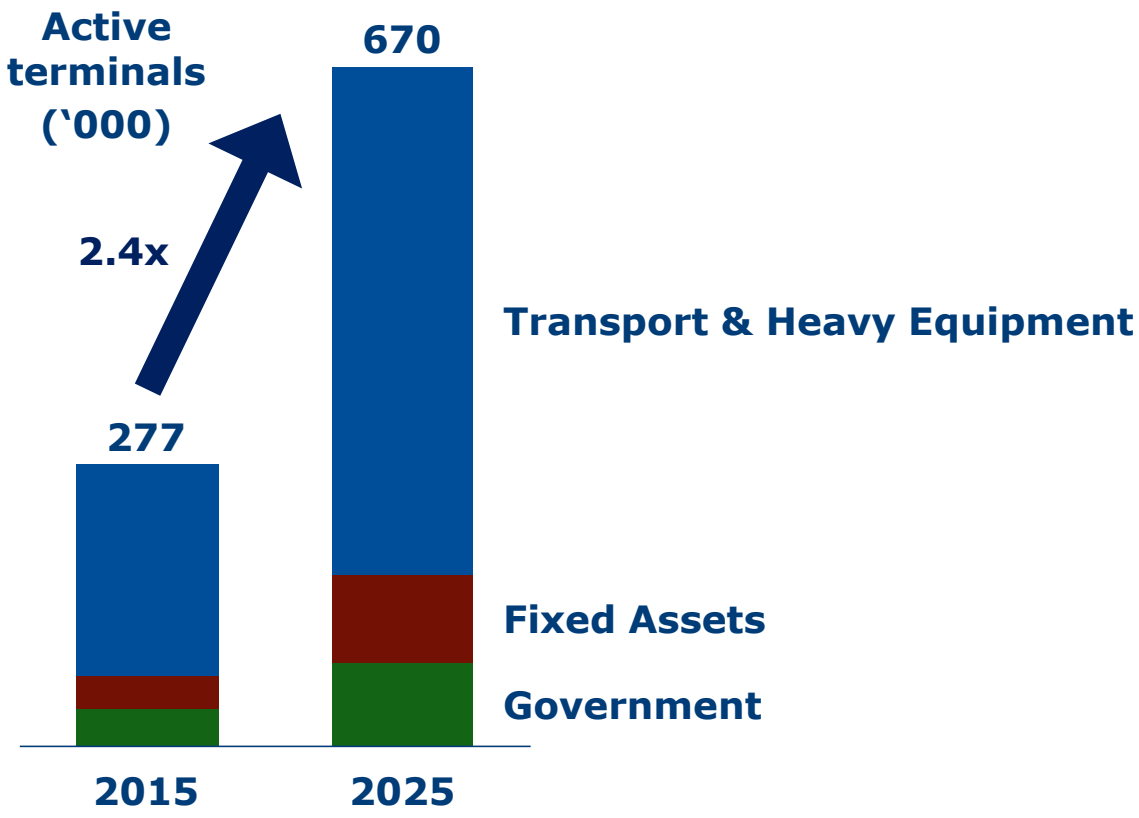


Source: Eutelsat

LPWAN: Low Power Wide Area Network

SATELLITE WILL DIRECTLY CONNECT 670K OBJECTS IN LATIN AMERICA BY 2025

Satellite IoT/M2M Market in Latin America
Direct to object / M2M



Source: NSR / Eutelsat

eutelsat

SmartLNB

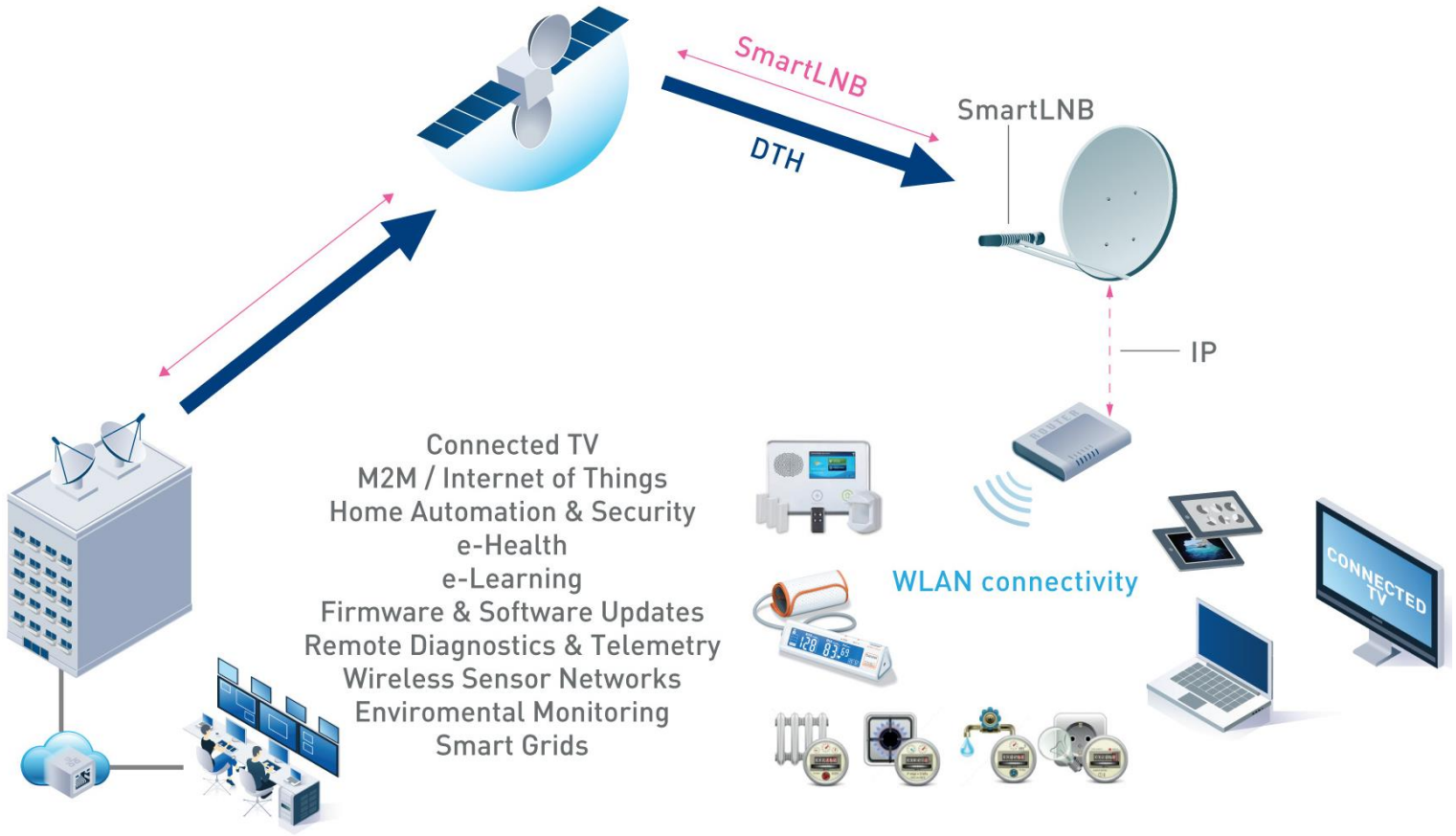
SMARTLNB: ENABLING SATELLITE IOT ANYTIME ANYWHERE

- A low cost satellite terminal
- Optimized for short messages and IOT
- Low Service Cost
- Ubiquitous coverage
- Independent Network with guaranteed SLA
- Low power consumption
- Including a crypto-core allowing strong security functions

USER TERMINAL – HOW IT WORKS

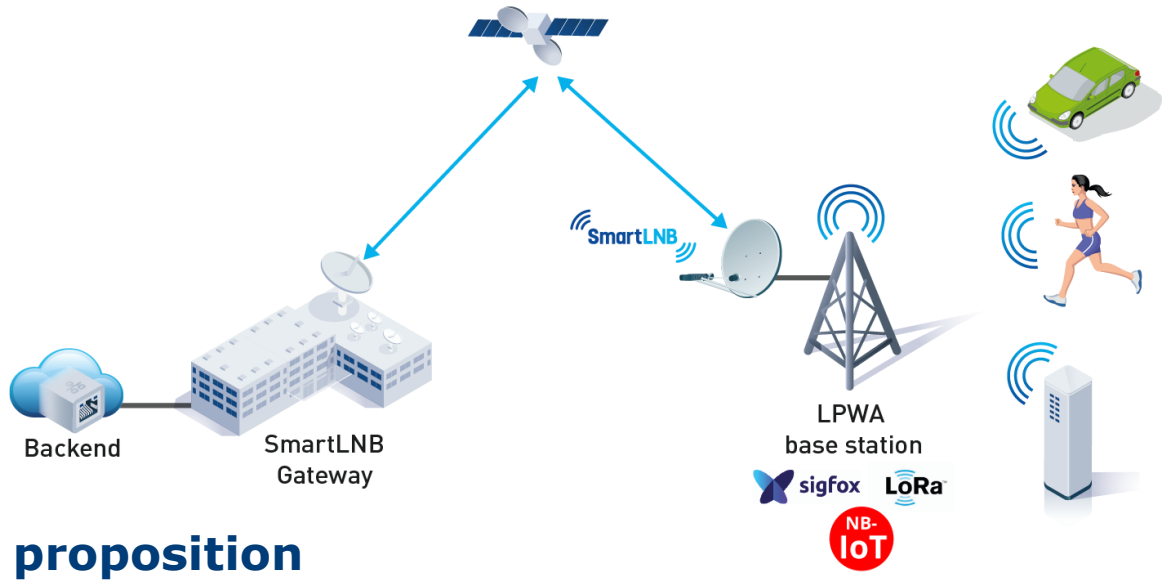
- **SmartLNBs are produced under Eutelsat's specifications by selected certified manufacturers**

- **Typical installation is composed of :**
  - ➔ A satellite dish (typically 75cm)
  - ➔ The 'SmartLNB' feed (ODU) with
    - → Coaxial or Ethernet output
  - ➔ The Indoor-Unit (IDU) able to split
    - → video signal for multicast/broadcast applications
    - → IP signal to the user local network



USE CASE EXAMPLES

USE CASE: BACKHAULING FOR IOT NETWORKS

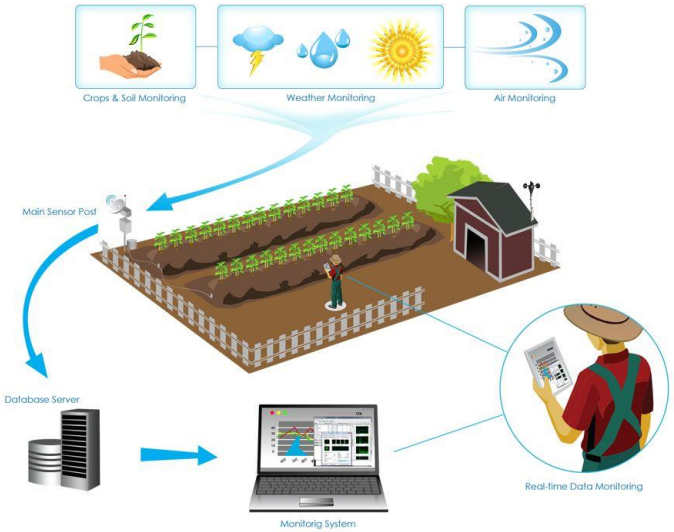


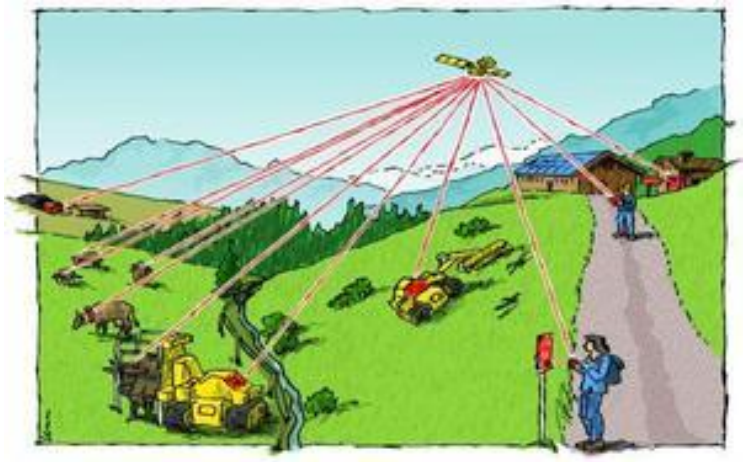
Value proposition

- Ubiquitous coverage
- Uniform deployment
- Guaranteed quality of service
- Designed for IOT
  - Adaptive packet size
  - Asynchronous access
  - Low Power
- Low terminal and service cost
- High spectrum efficiency
- Service already deployed in three continents
- Plug and Play Ethernet interface

USE CASE EXAMPLE: SMART FARMING

- Farmers are using IoT to track equipment location and performance, and increasingly livestock grazing in open pastures
- Sensor-based field and resource mapping
- Remote crop and equipment monitoring
- Climate monitoring and forecasting
- Stats on livestock feeding and produce
- Predictive analytics for crops and livestock
- Livestock tracking and geofencing
- Smart logistics and warehousing





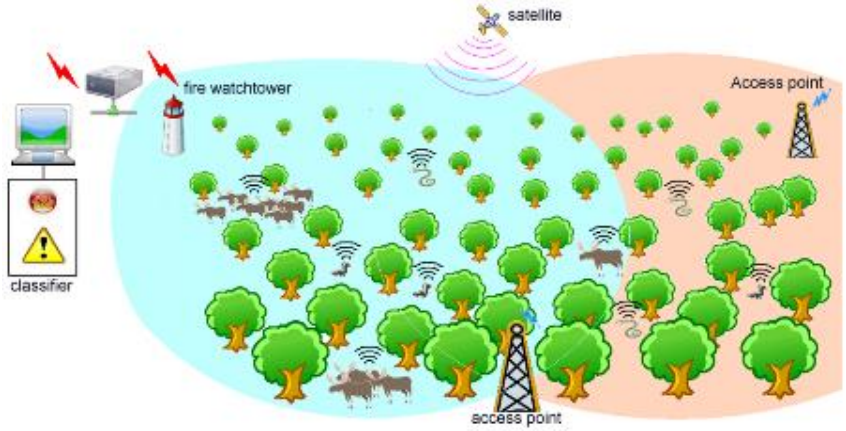
USE CASE EXAMPLE: SMART ENVIRONMENT

- **Forest Fire Detection**
  - ➔ Monitoring of combustion gases and preemptive fire conditions to define alert zones.

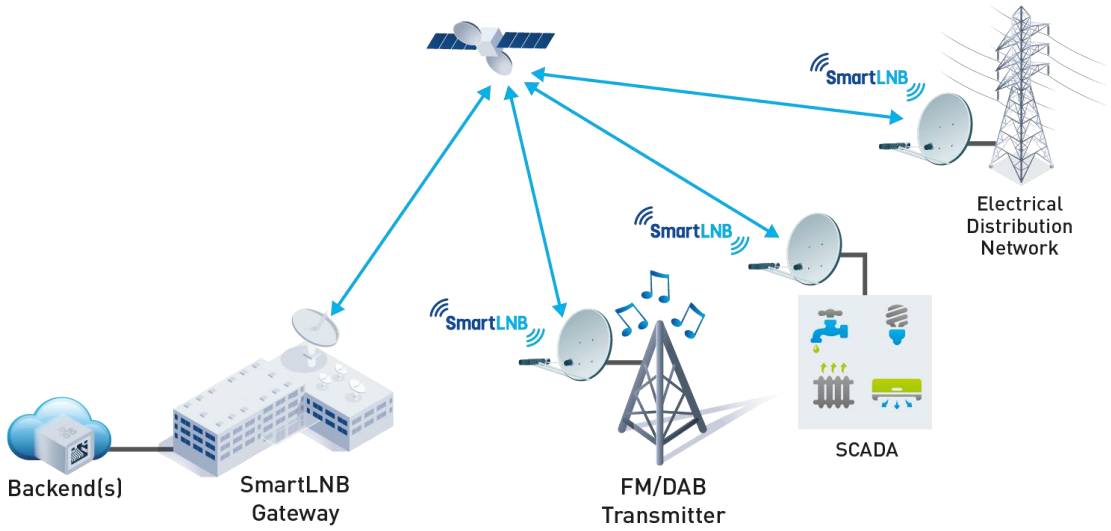
- **Snow Level Monitoring**
  - ➔ Snow level measurement to know in real time the quality of ski tracks and allow security corps avalanche prevention Remote crop monitoring

- **Landslide and Avalanche Prevention**
  - ➔ Monitoring of soil moisture, vibrations and earth density to detect dangerous patterns in land conditions

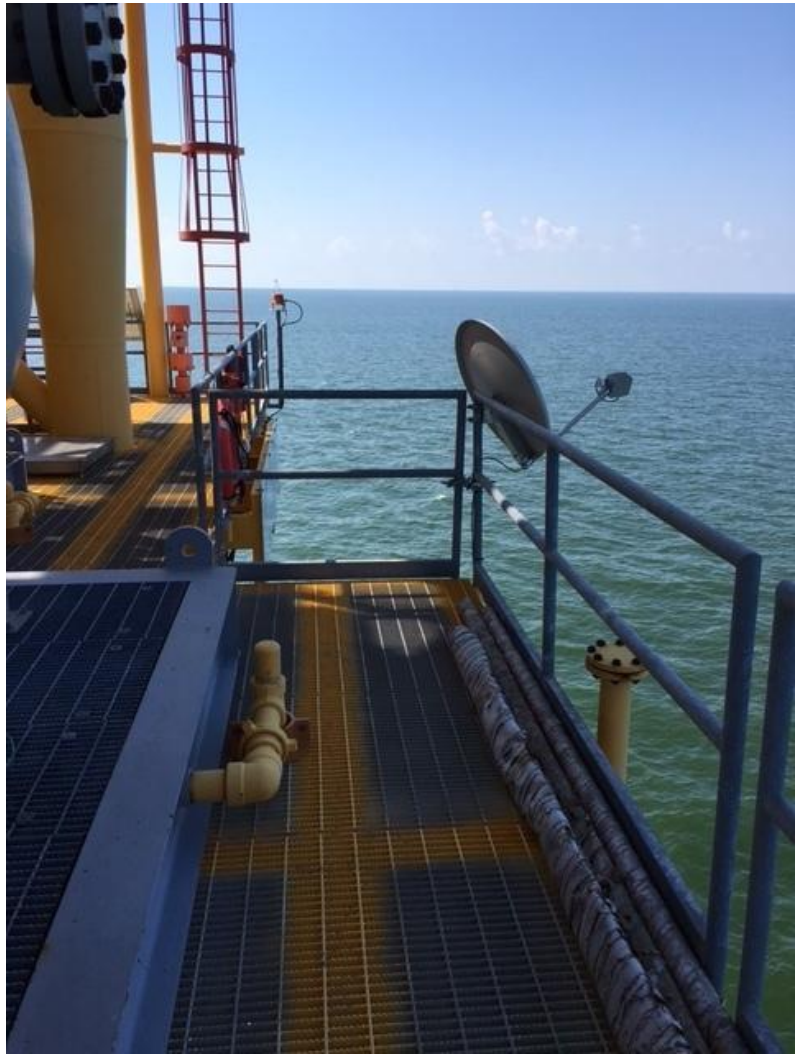
- **Earthquake Early Detection**
  - ➔ Distributed control in specific places of tremors.



USE CASE EXAMPLE: DIRECT M2M/IOT/SCADA CONNECTIVITY

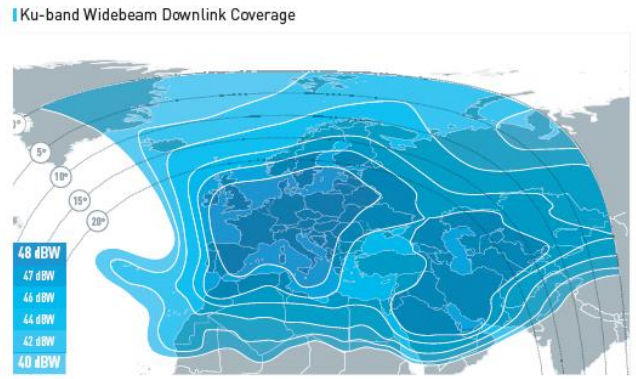


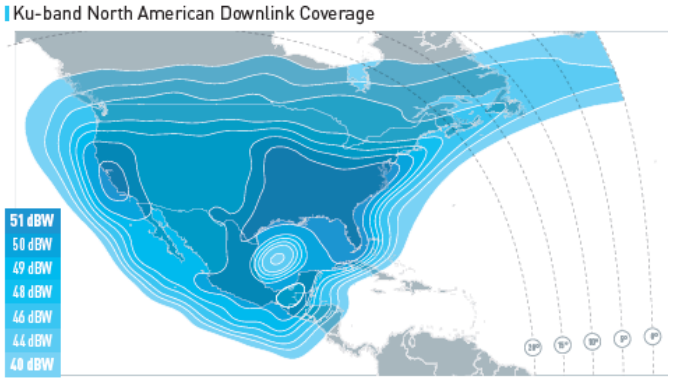
- **Value proposition**
  - Ubiquitous coverage
  - Uniform deployment
  - Guaranteed quality of service
  - Optimized for M2M/IOT/SCADA
    - Adaptive packet size
    - Asynchronous access
    - Low Power
  - Low terminal and service cost
  - High spectrum efficiency
  - High reliability
  - Service already deployed in three continents
  - Plug and Play Ethernet interface

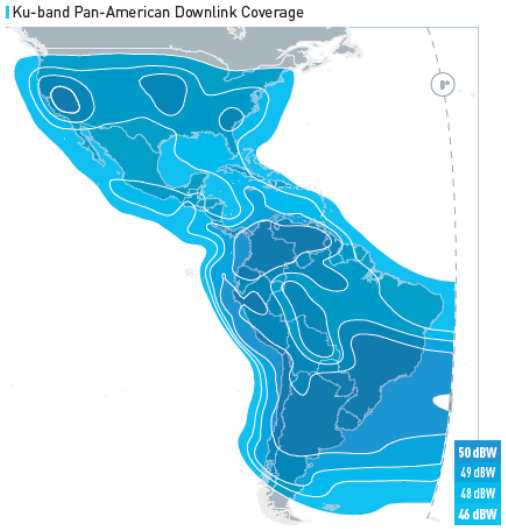


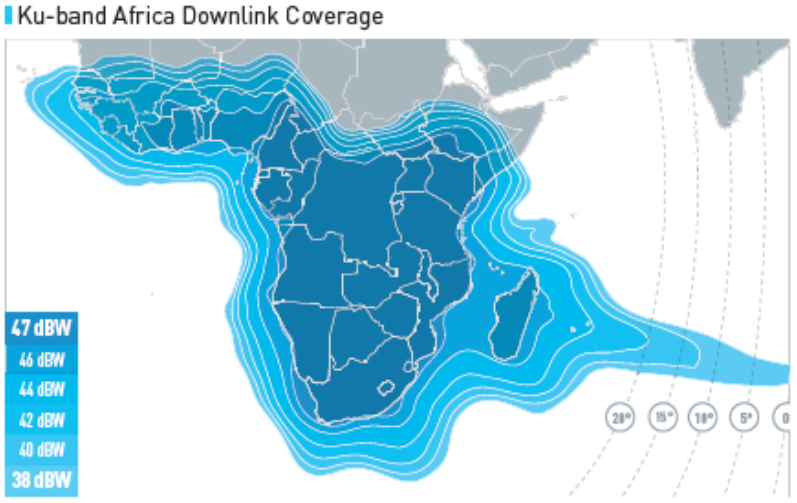
SMARTLNB SERVICE COVERAGE (Q1 2018)

Name	Teleport	Coverage
EBIS_EUROPE_1 **24/7 operational**	Rambouillet	E10A Widebeam Europe FWD: 36 MHz RTN: 10 MHz
EBIS_US_1 **24/7 operational**	Petaluma, CA (USA)	E113WA Continental US FWD: 8 MHz RTN: 10 MHz
EBIS_US_2 **24/7 operational**	Raleigh, NC (USA)	E113WA Americas FWD: 18 MHz RTN: 10 MHz
EBIS_AFRICA_1 **24/7 operational**	Rambouillet (RX) + Cagliari (TX)	E7B Sub Saharan Africa FWD: 36 MHz RTN: 10 MHz









Forthcoming Applications & Solutions

MARITIME APPLICATIONS

Maritime two way access

- Combining maritime TVRO antenna with SmartLNB
- Cost much lower than existing VSATs
- Target market: hundred thousand medium size boats
- Today those medium size boats are often not served with broadband connectivity because of
  - → Terminal cost (several tens of thousand $)
  - → And high service cost (typically in L and S band)

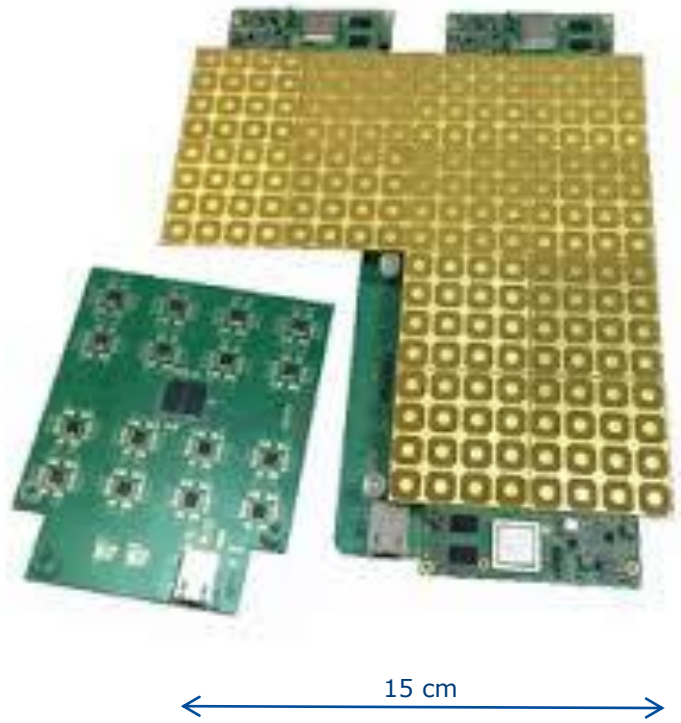
- Key applications
  - → Connectivity
  - → IOT backhauling
  - → Remote management of Maritime "drones"

SMALL SIZE TERMINALS WITH INTEGRATED ANTENNA

- **Small low cost multi-beam direct radiating phased array antenna opening new fields of applications:**

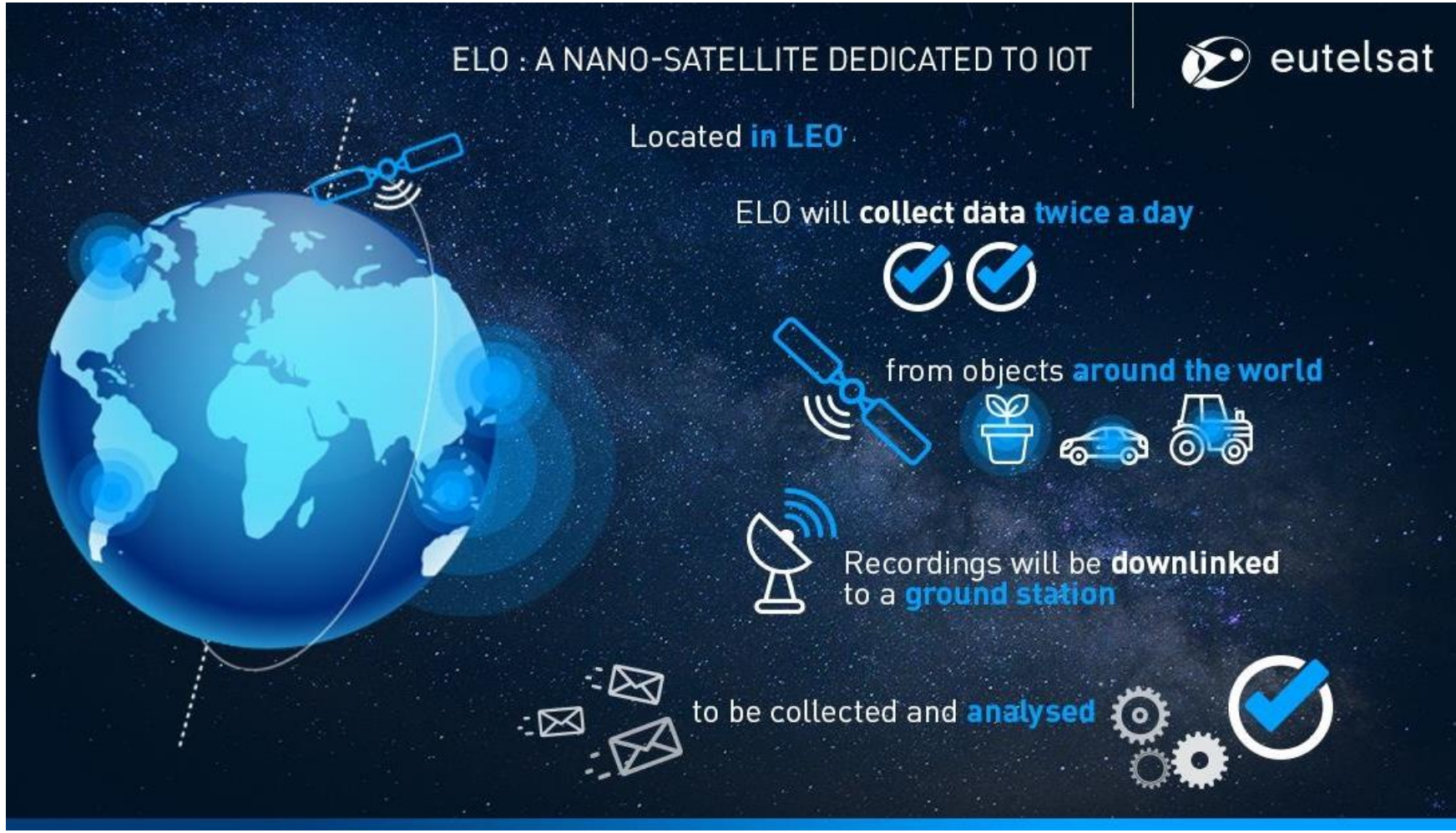
- **Connected Vehicles with**
  - → **Entertainment applications**
  - → **In-car telematics**
  - → **Software upgrades**
  - ➔ **Target market: 400M vehicles to be connected**
  - ➔ **Satellite complementary to terrestrial connectivity**
  - ➔ **Service cost much lower than alternatives in L/S band**
  - ➔ **Low cost terminals**

- **Terrestrial direct connectivity**
  - ➔ **Portable IOT terminals**



ELO – EUTELSAT LEO FOR OBJECTS

- ✓ **Scheduled for launch in 2019**
- ✓ **Sun-synchronous orbit between 500 and 600 km in altitude**
- ✓ **Omni-directional antennas, same used by terrestrial IoT networks**
- ✓ **ISM frequency and other frequency bands**



Contact : eloi.stivalletti@eutelsat.com

Obrigado!

eutelsat

SmartLNB