SATELLITE MARKETS AND TECHNOLOGY TRENDS
ITU INTERNATIONAL SATELLITE SYMPOSIUM

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BANGKOK, 1 SEPTEMBER 2017

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ITU

NBTC
National Broadcasting and Telecommunications Commission

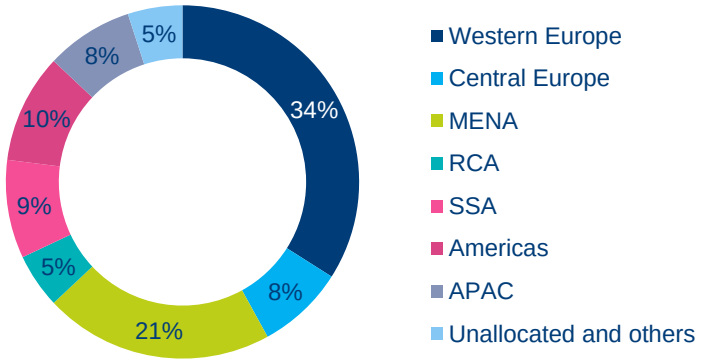
Eutelsat in a nutshell

KEY DATA

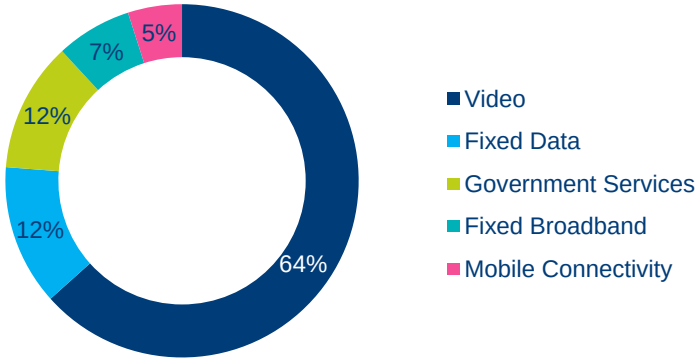
- Revenues of €1.48bn
- Fleet of 39 satellites; global coverage
- Operating >1,370 transponders
- Broadcasting >6,600 channels
- Backlog of €5.2bn, representing 3.5 years of revenues

REVENUE BREAKDOWN BY APPLICATION

By geography

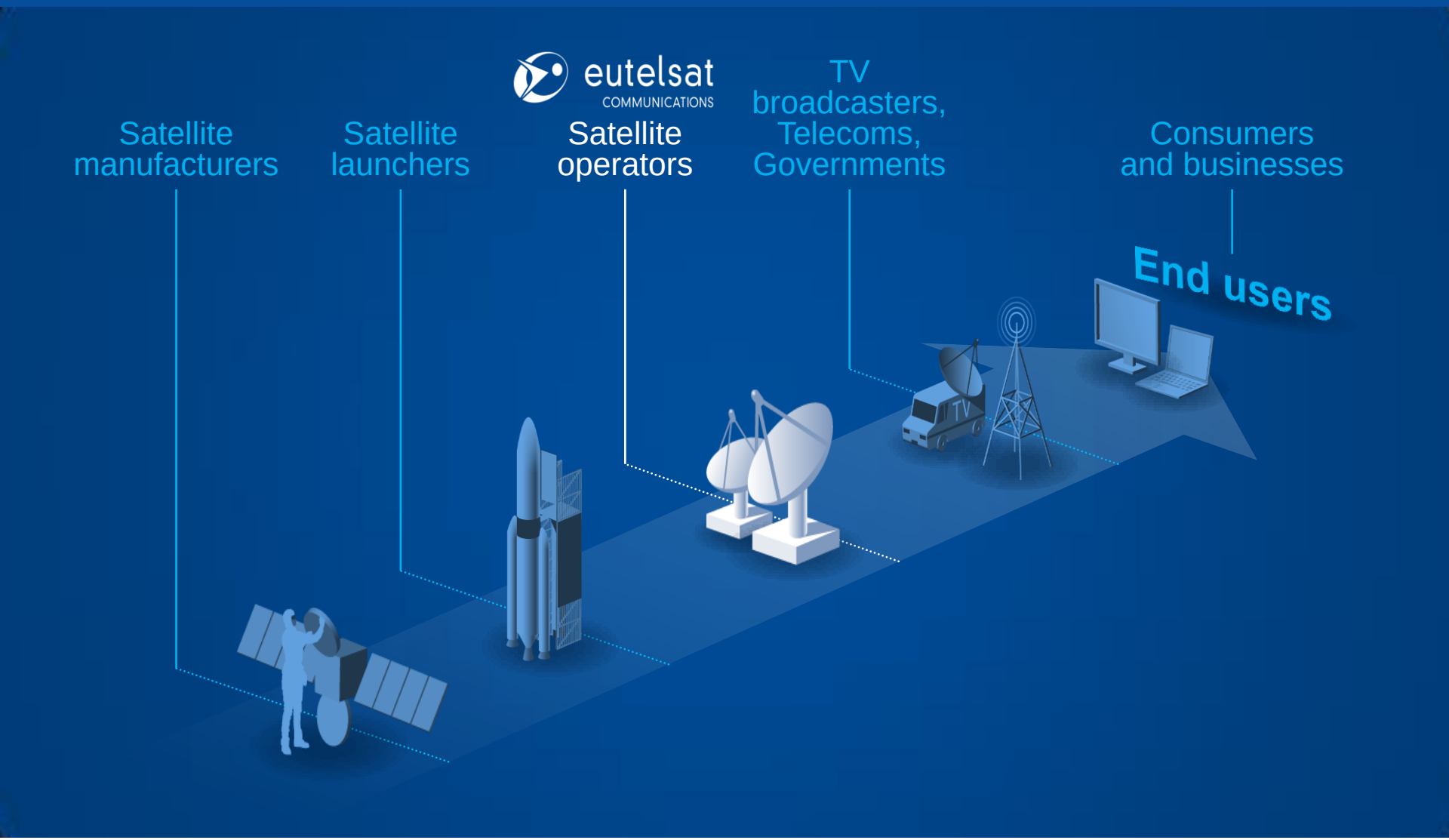


By application



Data as of 30 June 2017 except for breakdown of revenues by geography which is a 30 June 2016.

The satellite value chain



Business characteristics

► High barriers to entry

- Finite resource of orbital positions and frequencies, heavily regulated at international level with key commercial orbital positions have already been developed
- High upfront CAPEX before operations
- High technology & technical expertise through satellite lifecycle

► Robust business model

- Significant backlog with long term contracts generating revenue visibility
- Economies of scale
- High operating margins
- Predictable operating cash flow

Trends in our core businesses

VIDEO: MODEST DEMAND GROWTH

- **Sustained growth in emerging markets**
  - Robust channel growth
  - Increasing HD penetration
  - Middle East, Africa leading growth
  - Prices well-oriented
- **Broad stability in Europe**
  - Broadly stable channel count
  - HD and Ultra HD ramp-up
  - Improving encoding and compression

FIXED DATA: STRUCTURALLY CHALLENGED

- **Global demand driven by increasing connectivity needs**
- **Large HTS systems adding to existing overcapacity**
- **Ongoing severe pricing pressure**
- **More stickiness in certain segments**

GOVERNMENT SERVICES: POCKETS OF OPPORTUNITY

- **US DoD demand stabilising, albeit at lower prices**
- **Slower migration to HTS than Data Services**
- **Opportunities in Europe, Asia and MENA and in non-military**

Longer-term potential in Video and Connectivity

VIDEO

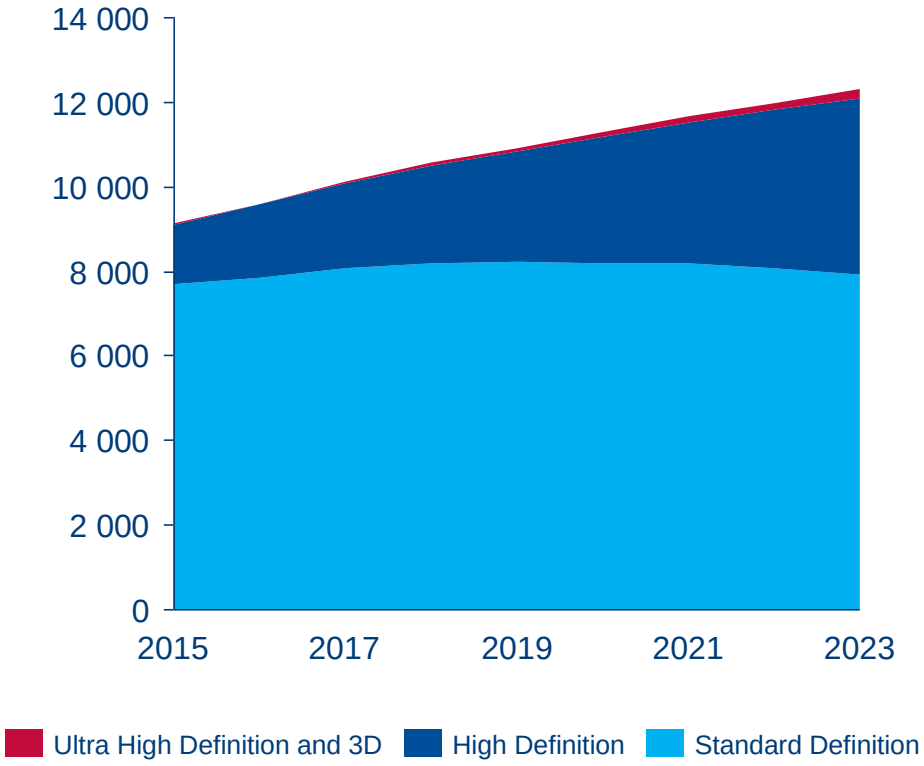
- Satellite and IPTV set to dominate global video distribution in the longer term
- Opportunity to enhance satellite value proposition by offering IP-like viewer experience
- Outsourcing of services by broadcasters will create additional sources of demand

FIXED AND MOBILE CONNECTIVITY

- Nascent markets with huge potential
- Massive growth in bandwidth usage per consumer
- Medium-term potential in Aero
- Long-term potential in land mobility
- VHTS and VVHTS satellites are pre-requisites in terms of volume and pricing for mass-market adoption

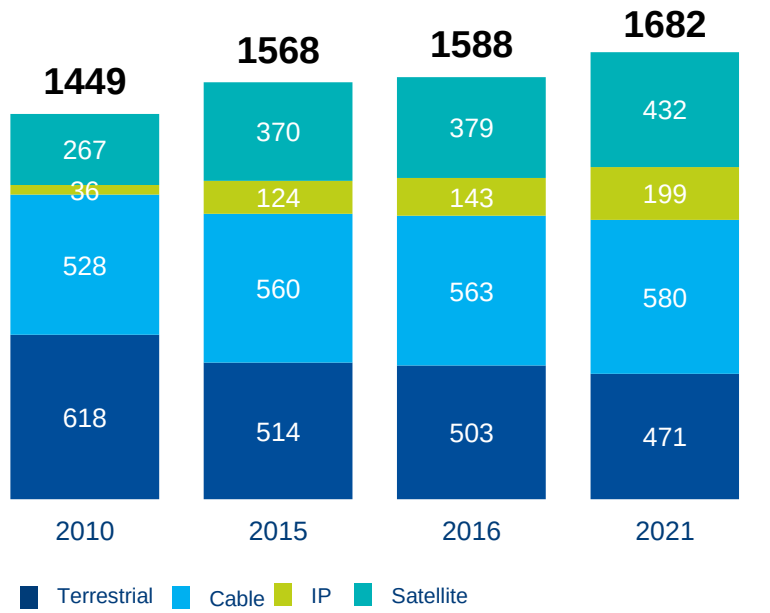
Video: Higher signal quality driving worldwide growth of satellite marketshare

EVOLUTION OF IMAGE QUALITY *(NUMBER OF CHANNELS)*



Source: Euroconsult 2014, APAC

MILLION TV HOMES BY DISTRIBUTION MODE - GLOBAL

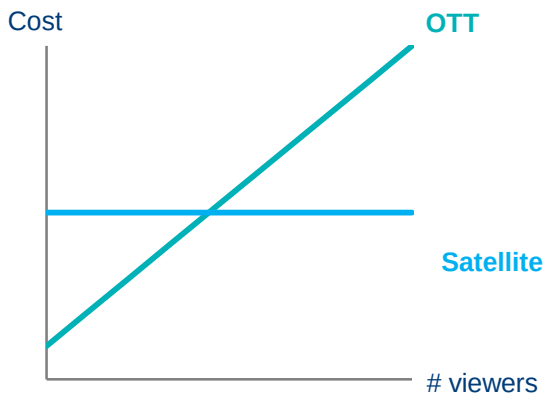


- **Total number of TV homes to increase by 95 million to 1.7 bn by 2021**
- **Satellite reception to grow by 50 million homes to 430 million by 2021**
- **Satellite market share to rise from 24% to 26%**

Source: Digital TV Research, June 2016

Video: Satellite's competitive advantage over OTT / IP

COST-EFFICIENCY

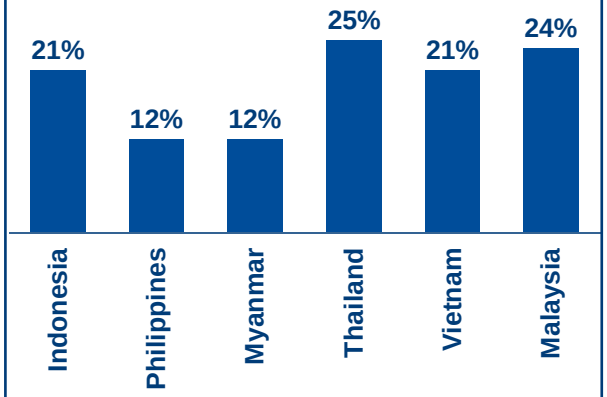


- Satellite a fraction of TV platforms operating costs
- CDN costs rise in line with audience growth

Satellite more cost efficient above 50k viewers in Western Europe

UNIVERSAL REACH

FIXED BROADBAND COVERAGE (>30Mbps)

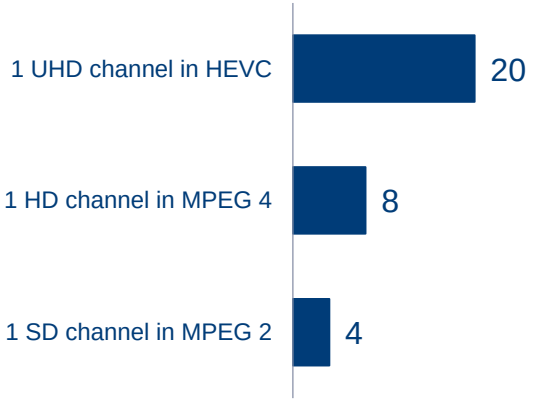


- High cost of fibre roll-out
- Terrestrial networks cannot reach entire population
  - Lower image quality
  - Or even no service

Satellite provides full coverage of a market

SERVICE QUALITY

BANDWIDTH REQUIREMENT (Mbps)



- Higher quality of image leading to increased bandwidth usage
- Congestion of terrestrial networks
  - Video will represent ~80% of consumer internet traffic by 2019

Satellite and hybrid solutions give unimpaired viewing experience

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Source: Eutelsat analysis, European Commission - Broadband Coverage in Europe 2015, CISCO VNI 2015

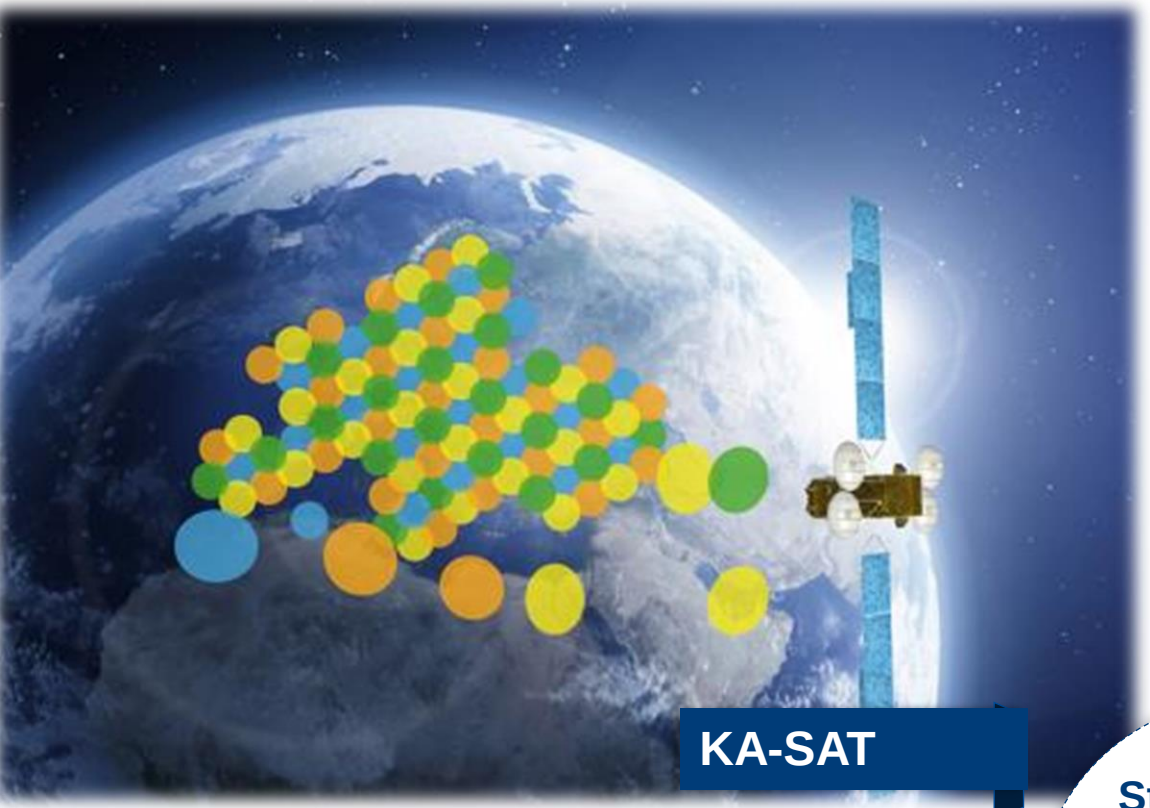
Fixed Broadband: Preparing for mass market adoption

BRIDGE DIGITAL DIVIDE

IN-MARKET PROPOSITION	INDUSTRIAL TRANSLATION	TIMING
► Deliver fibre-like capacity (30 Mbps) ► Reach fibre-like pricing (~€30 / month)	► VHTS satellites	► 2020-21
► Lower barriers to adoption	► Terminals < $200	► C.2019
► Assess adressable market	► Refine assessment of fibre deployment	► 2018 onwards
► Develop appropriate distribution	► Test and validate business models	► 2016-18

Use the time to VHTS to prepare for mass market: optimise existing or committed assets (KA-SAT, Russian and African Broaband) and validate go-to-market models

HTS value proposition: Consumer broadband in Europe



82 Ka-band spotbeams
Frequencies reused 20 times

+90 Gbps throughput

Example of service offer in Europe

ViaSat

Technology & Service partner

Standard terminal

- → ***IDU box***
- → ***Antenna 77cm***
- → ***3W ODU***
- → ***75W power***

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Mobile Connectivity: Market foothold with existing assets

BRING FIBER-LIKE CONNECTIVITY IN MOBILITY

	IN-MARKET PROPOSITION	INDUSTRIAL TRANSLATION	TIMING	MARKET DRIVERS
IFEC	► Deliver streaming-like experience for IFEC	► VHTS satellites 1 Terabyte satellite	► 2020-21	
IFEC	► Deliver on-the-move fiber-like Connectivity for ground transportation	► VVHTS ► Flat terminals	► 2025-2035+	
MARITIME	► Ubiquitous coverage for connectivity	► Widebeam satellites covering the oceans and HTS complementary coverage on coastal areas (high traffic)	► …2017+	► Number of vessels equipped expected to multiply by 2.5 between now and 2020 ► Huge potential in cruising, ferries, yachts, merchant marine, fishing boats ► Crew welfare

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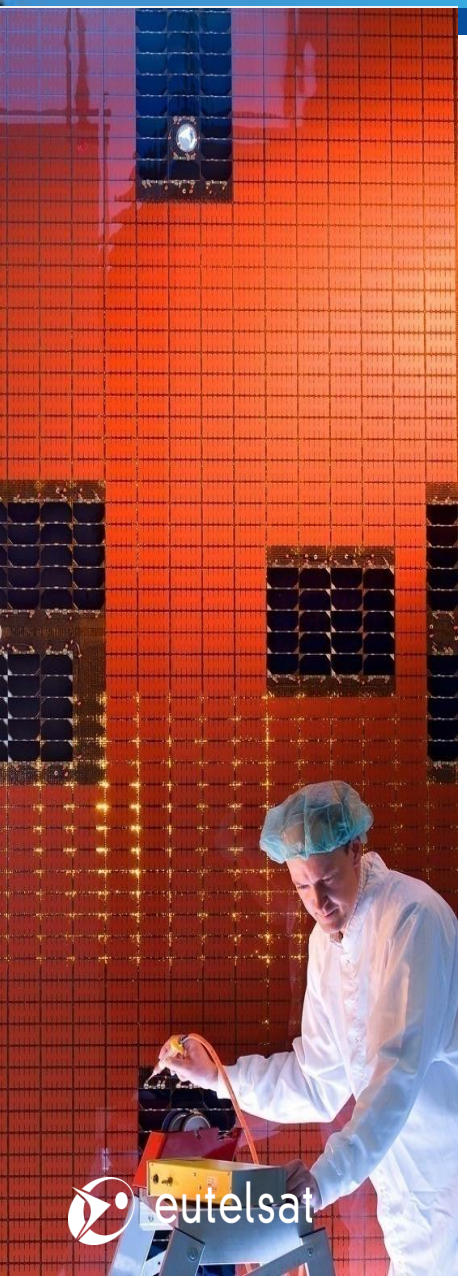
INNOVATION - Part of Eutelsat's DNA



- **Innovation is a key element for success in a very competitive telecommunication market**

- **Eutelsat has always been at the forefront of satellite innovation**
  - 1984: First transmission in DVB-S standard
  - 1996: Development of DiSEqC standard
  - 2000: First satellite with electrical propulsion (E16C)
  - 2000 & 2002: Maiden flights of Atlas 3, Atlas V, Delta IV
  - 2002: First satellite with on-board multiplexing
  - 2003: First HD demo channel
  - 2004: First satellite with Lithium-Ion batteries
  - 2010: Highest capacity satellite ever launched (KA-SAT)
  - 2013: First UHD demo channel

- **Innovation - all about finding the right balance between creativity and rigor**

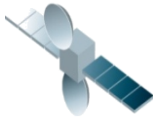
- **Open innovation**
  - Continuous effort in collaboration with customers and other external partners: research institutes, work shops, etc.
  - Evolution of the offer in our core market but also objective to address new or emerging markets (e.g. Internet of Things)
  - Invest into highly innovative projects and companies

SIGFOX
One network A billion dreams

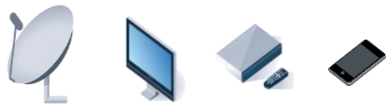
- **Looking beyond the satellite itself**
  - Satellite is part of a system including ground segment
  - Innovation can be at satellite level, but it can also be on the ground, in products and services or in the interaction between the satellite and the ground equipment

smartLnb

Eutelsat is focused on 4 innovation priorities



IN SPACE



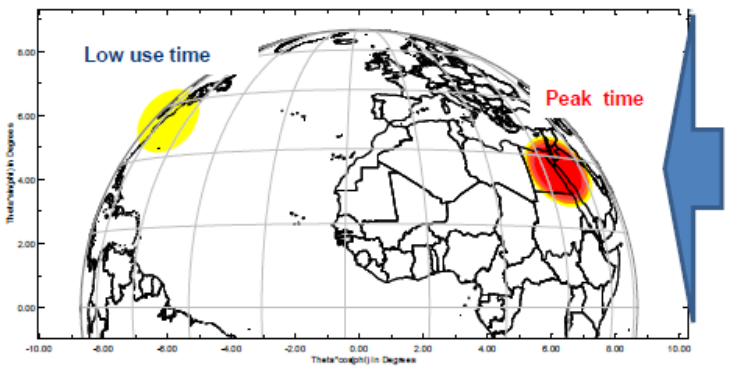
ON GROUND

Improve the value-for-money of our capacity	➔ Electric propulsion ➔ New multi-spot HTS architectures developed for fast growing markets	➔ New encoding schemes for higher compression ➔ Enhanced access protocols for Interactive TV satellite services
Ensure protection of satellite communications		➔ Signal prevention / detection techniques ➔ Increased resilience to jamming
Increase the flexibility of our satellite resources	➔ Reconfigurable satellite payloads ➔ On board power allocation to optimize commercial capacity	➔ Multi-band reception systems ➔ C/Ku, Ku/Ka ➔ Hybrid set-top boxes
Enhance end-user experience		➔ Smart LNB for DTH Connected TV - low cost terminal for consumer market ➔ Multi-screen home IP distribution ➔ Home Automation and Internet of Things ➔ Mobile broadband

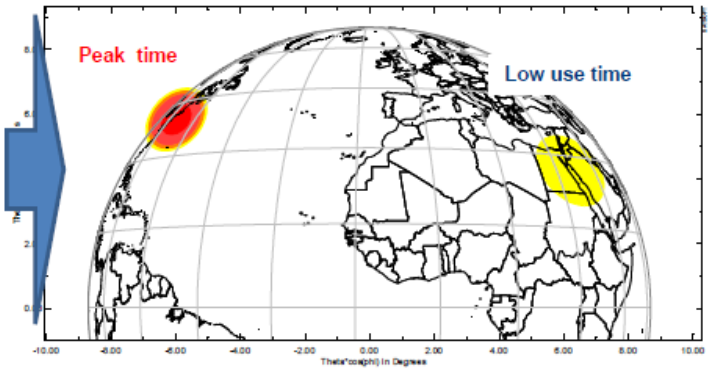
Eutelsat Quantum: Cutting-edge technology

- **Software-defined class of satellites**
- **First satellite to be launched in 2019**
  - Manufactured by Airbus Defence and Space
- **Incomparable flexibility in terms of:**
  - Coverage
  - Bandwidth
  - Power and frequency configurability
- **Premium capacity through footprint shaping and steering, power and frequency band pairing that customers will be able to actively define**
- **Targeting for users operating in Government and Mobility markets**

Example of a coverage hopping between 2 markets



Most of the capacity is devoted to Cairo, during day-time in Africa



Most of the capacity is devoted to NYC, during day-time in Americas

How can we contribute to accelerating the digital revolution?

- **Continue to evangelise the economic and social benefits of satellite technology**
- **As an industry:**
  - Unite our forces to promote standards & innovations
  - Continue to innovate for long term growth…
- **… but in order to unlock short-term potential, focus**
  - On customer premise equipment (cost & design)
  - On marketing & distribution
  - On integration with other networks
- **On the regulatory front:**
  - Lobby to simplify regulatory framework for satellite broadband (blanket terminal authorisations, Ka-band authorisations, out-of-country gateways, Open-Sky policy …) and for DTH
  - Create a level-playing-field for all technologies, including satellite in National Broadband Plans and ensuring access to subsidies for satellite broadband projects
  - Incentivise States to use satellite broadband for emergency and law enforcement services, connecting schools, local administrations, etc.
- **… and especially true in this part of the world: collaborative partnerships**