# HIGH THROUGHPUT SATELLITES:
## VERTICAL MARKET ANALYSIS & FORECASTS

2017 Edition | A Euroconsult Executive Report

A vertical market analysis of major drivers, strategic issues and demand take-up for HTS

- ✓ **Over 70 pages**
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  Including all forecasts in Excel files
- ✓ **Thousands of data points**
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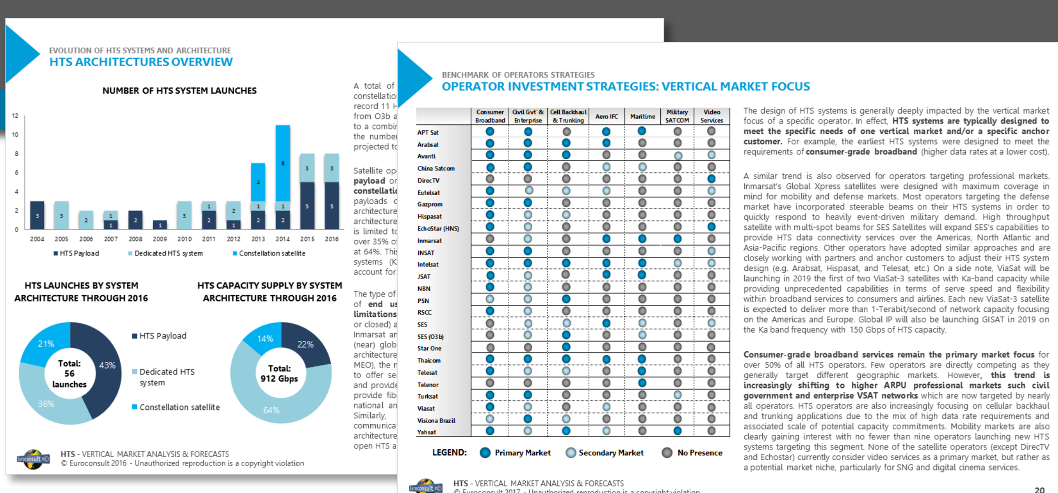
The total committed investment from the 30 satellite operators in HTS systems has reached nearly $19 billion. Compared to the 36 launches of GEO-HTS systems over the past decade, another ~100 GEO-HTS systems are expected to launch from 2017 to 2025, at an average of 11 launches per year. Of these ~100 GEO-HTS systems, roughly 60 have yet to be officially contracted and are still open to the market.

After relatively low net additions of HTS supply in 2015 and 2016, due in part to slippage of launch schedules, capacity supply is now set to more than double to nearly 2,000 Gbps by 2018, reaching roughly 3,600 Gbps by 2020. Nevertheless, the growth in GEO-HTS is to be overshadowed by the emergence of NGSO constellation projects. NGSO-HTS constellation projects are building momentum, promising massive volumes of capacity supply, low latency and global (or near-global) coverage. While it is highly unlikely that all will come to fruition, NGSO-HTS projects such as the continued expansion of SES' O3b fleet of MEO satellites, OneWeb, SpaceX, Telesat and LeoSat would combine to account for over $20 billion of required investment capital and add upwards of 40 Tbps of supply.

Total HTS capacity lease revenues are forecasted to reach more than $6 billion by 2025, generating over $36 billion in aggregate revenues over the period. As a sign of strong underlying and elastic demand, this impressive revenue growth is expected to be achieved despite the confluence of factors combining to drive capacity prices substantially lower, including growing supply, long-term bulk contracts and an increasingly commoditized market for telecom network services.



# **ABOUT** HIGH THROUGHPUT SATELLITES

## HIGHLIGHTS OF THE EXECUTIVE REPORT:

- ✓ Highlights the evolution of HTS systems & architectures over the last decade
- ✓ HTS system launches & order forecast
- ✓ Impact assessment of LEO constellations
- ✓ Identifies & assesses the HTS investment plans of all satellite operators
- ✓ Projected take-up profile by frequency band of each vertical market
- ✓ Bottom-up vertical market forecasts/projected market take-up by region and system type (GEO-HTS Ka, GEO-HTS Ku, NGSO-HTS) until 2025; regions include:

North America · Latin America · Europe · Russia & Central Asia · Middle East & Africa · Asia Pacific · Oceans

- ✓ Vertical markets include:

Consumer Broadband · Civil Government & Enterprise Networks · Military Satellite Communications · Cellular Backhaul & Trunking · Aero In-Flight Connectivity · Maritime Communications · Video Services

## METHODOLOGY:

Analysis, data and estimates found in the report rely on two complementary approaches:

- In-depth analysis containing interviews with over 20 primary stakeholders from around the globe.
- Secondary research includes a review of hard-to-obtain public information. Further, we relied heavily on our continuous research of the satellite sector from recurring publications, including reports such as Satellites to be Built & Launched, Satellite Communications & Broadcasting Markets Survey (SCBMS), and Aero IFEC.

## REPORT STRUCTURE

ANALYSIS

REFERENCE INDICATORS


CONSOLIDATED AND REGIONAL MARKET FORECASTS

HTS CAPACITY PRICING



**Regional supply and demand dynamics, length and size of contracts** and a number of other **factors influence HTS capacity lease rates.** For example, high volume contracts over the life of the satellite, typically leases of entire beams or payloads, are sold at significant discounts as operators benefit from reduced market risks and secured long-term revenue streams. Recent examples include Eutelsat's terminated lease on E-3B with Brastrading which was valued at $146/Mbps/month for ~5 Gbps. These lease rates are significant below spot prices of $700-$1,000/Mbps/month for smaller volumes.

The **impact of bulk leases** and the recent **entry to commercial service of O3b** ($150-500 Mbps/month) has caused the **average HTS capacity price to drop by more than 50% between 2012 and 2015.** Overall, **the increasing availability of HTS capacity coupled with gains in spectral efficiency** are projected to continue to drive down **the average HTS capacity price per Mbps** over the coming years **from ~$270/month in 2016 to ~$150/month in 2025**. The weighted average HTS lease rate is largely dictated by highly price sensitive segments, specifically consumer broadband and backhaul/trunking, which represent nearly 70% of capacity leased by 2025. Vertically integrated consumer broadband players will minimize bandwidth cost to optimize profit margins, while backhaul & trunking markets feel strong price pressure as customer-facing telecom operators focus heavily on controlling costs in order to remain competitive in the face of falling ARPUs. Other vertical markets such as **video, aero and maritime should observe HTS prices in a higher range** than the market average **as service requirements are higher, spectral efficiencies are lower and capacity leases are more short-term and/or event-driven.**

**Regional price differences** are still minor, as most regions have comparable usage patterns across market verticals. An exception are Oceans regions where the presence of premium priced markets (aero and maritime) pushes the lease rate 2x above the weighed market average. NGSO pricing will reach $142/Mbps/month by the end of 2025, decreasing by half from it's current threshold of $274/Mbps/month.

**HTS** - VERTICAL MARKET ANALYSIS & FORECASTS
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## WHO WILL BENEFIT FROM THIS REPORT:

- ✓ Satellite Operators
- ✓ Banks & Investors
- ✓ Service Providers
- ✓ Equipment Manufacturers
- ✓ Satellite Manufacturers
- ✓ Government Agencies

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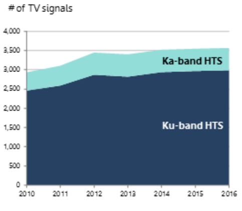
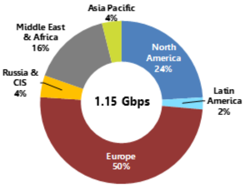
VERTICAL MARKET FOCUS

**VIDEO SERVICES — CURRENT USAGE**

**BREAKDOWN OF U.S. CHANNELS OVER HTS SYSTEMS BY FREQUENCY BAND**




**BREAKDOWN OF HTS CAPACITY USED FOR OCCASIONAL USE (2016)**




**BENCHMARK OF TV PLATFORMS USING HTS CAPACITY (1Q2017)**

| Broadcaster | Country | Type of service | Orbital position | Satellite used | Frequency band | No. of channels |
|---|---|---|---|---|---|---|
| 2RN | Ireland | DTT | 9°E | Ka-Sat 9A | Ka | 7 |
| Aora TV Satelit | Indonesia | DTH | 119.5°E | IPSTAR | Ku | 13 |
| Cambodian DTV Network | Cambodia | DTH | 119.5°E | IPSTAR | Ku | 18 |
| DirecTV | USA | DTH | 102.8°W | Spaceway-1, DTV-10/-12/-15 | Ka | 305 |
| DirecTV | USA | DTH | 99.2°W | Spaceway-2, DTV-11/-14 | Ka | 277 |
| Dish Network | USA | DTH | 129°W | Ciel-2 | Ku | 1,138 |
| Dish Network | USA | DTH | 110°W | Echostar-10 | Ku | 1,045 |
| Dish Network | USA | DTH | 119°W | Echostar-14 | Ku | 801 |
| TRBNA* | Armenia | DTT | 60°E | Intelsat-33e | Ku | 8 |
| Vivacom* | Bulgaria | DTT | 60°E | Intelsat-33e | Ku | 6 |

* Company does not specify if it uses wide beam or a spot beam to distribute TV channels

In the video market, HTS capacity is mainly used **for broadcasting local TV channels**, as the narrow spot-beam architecture is well adapted to distribute local content (news, weather, and advertising) to a specific region. The U.S. is currently by far the leading market in terms of HTS usage for video distribution services with close to 3,570 channels broadcast at the end of 2016 (99% of the world total), three quarters of which are local channels. Approximately 60% of local TV channels broadcast by DTH platforms in the United States use HTS systems. The number of U.S. channels using HTS capacity has remained largely stable in the past four years, with 120 channels added since 2012. Dish Network broadcast the most channels on HTS systems (close to 3,000 channels distributed on three Ku-band HTS systems – see table on the left), while DirecTV broadcast 580 channels on Ka-band systems.

**Outside of the U.S.**, the market has stagnated between 2013 and 2016, with the number of TV channels remaining stable at around 40 since then. Channels are distributed by two Asian DTH platforms: Aora TV Satelit (Indonesia) and Cambodian DTV Network and by 2RN, a DTT provider in Ireland. In 2017, the number of channels using HTS satellites is expected to grow. Two DTT services have already been rolled out on Intelsat-33e since the start of the year (TRBNA in Armenia and Vivacom in Bulgaria) and Aora TV has expanded its channel lineup. A package targeting Thailand has also started to use capacity on IPSTAR in 2017.

Although the use of HTS capacity for **occasional video services** is still limited (capacity leased: 1.15 Gbps in 2016), first market traction for newsgathering has been reported in recent years with Ka-band the dominant frequency band in 2016. Ka-band HTS solutions for news gathering are available in North America (ViaSat), Europe (Avanti, Eutelsat) and the Middle East & Africa (Avanti, Yahsat). Further, Ku-band occasional use solutions are being offered by Intelsat (since 2016 in Latin America via Intelsat-29e and since 2017 on Intelsat-33e in Russia and the CIS) and Thaicom via its IPSTAR system targeting the Asia Pacific region. Broadcasters and service providers such as Globecast, BBC, Talia and SIS Live are using HTS services. One of the latest companies securing HTS capacity for occasional use services is Romantis (February 2017). The company uses Intelsat-33e for services targeting Russia and the CIS region.

HTS - VERTICAL MARKET ANALYSIS & FORECASTS



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