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EUROPEAN RESEARCH & INNOVATION IN TELECOMMUNICATIONS

SUCCESS STORIES

SATELLITE BROADBAND: A NEW GROWTH OPPORTUNITY FOR THE EUROPEAN SATELLITE INDUSTRY

The value of broadband access as a socioeconomic benefit is not disputed. Governments worldwide place an increasingly high value on the ability of their citizens to participate in the knowledge economy through broadband internet in order to stimulate economic growth.

Increased speeds and equality of access are the key criteria and political motivators for broadband services. While in Europe's towns and cities, optical fibre networks are being deployed, citizens in rural areas are still struggling with narrowband connections. European funded research projects such as FP6 TWISTER, Rural Wings or SATLIFE together with European and national space agency projects have addressed many of the technical and non-technical (typically user acceptance) challenges associated with a satellite broadband service. This has led to private sector investments by satellite operators in broadband dedicated satellites (Ka band multi beam) such as HYLAS and Ka-Sat which deliver ubiquitous broadband to remote and rural areas throughout the EU. Operators are now able to propose satellite broadband services for subscription prices and with performances comparable to ADSL. The cost of Customer Premises Equipment (CPE) supporting speeds of 10's of Mbps is falling rapidly as the market develops and leasing solutions become widely available. Furthermore, European Regional Funds can be used to subsidise CPE purchase by the end users.

The European Digital Agenda aims to ensure that 30 Mbps is available to all Europeans by 2020. Current research projects such as FP7 BATS (Broadband Access by Integrated Terrestrial and Satellite Systems) aim for ten fold improvements in satellite capabilities by 2020 which will be needed to deliver high speed broadband. Methods to more closely integrate satellite technologies with other terrestrial access technologies will also be required.

TIMELINE	2000-2005	2005-2010	2010-2015	2015-2020	2020'S
Satellite Launches			• HYLAS 1 (2010) • Ka-SAT (2010) • HYLAS 2 (2012) • YaSat 1B (2012)		
Speed/ Capacity	• 1Mbps per user		• 10Mbps per user • 100Gbps per satellite	• Several 10Mbps per user • Several 100Gbps per satellite	• >100Mbps per user • 1Tbps space segment
EC funded research on Satellite Network		• **FP6 Satsix:** Promotion of the IPv6 protocol in SatComs and definition of new cost-effective satellite access solutions to encourage universal access to e-services. • **FP6 SATLIFE:** Creation of Ipv6 based broadband services over a Regenerative DVB-RCS Satellite Platform. • **FP6 VIVALDI:** Advanced interactive broadband satellite access via optimal convergence of services over the European Standard DVB-RCS.	• **FP7 MUSCADE:** Generation of production equipment, tools, transmission and coding formats for 3D display over existing and future broadcast channels. • **FP7 BATS:** Integration of Terabit/s satellites with other technologies in the context of future internet & EU Digital Agenda objectives. • **FP7 Corasat:** Development and demonstration of cognitive radio techniques in SatComs for spectrum sharing.		
EC funded Market Development & Pilot Projects		• **FP6 Rural Wings:** Satellite communication for tele-education applications in remote and rural areas. • **FP6 TWISTER:** Hybrid satellite-wireless services for internet access in rural regions. • **FP6 OURSES:** Satellite and wireless technologies for e-health assistance platforms.	• **ESA SAHEL:** Medical e-Content and e-health management via satellite. •**FP7 SFERA**: Provision of assistance to European regions to make optimal use of structural funds for deployment of innovative ICT networks. •**CIP – ICT BRESAT/SABER** Definition of guidelines for present and future satellite broadband procurement schemes to support the EC Digital Agenda.		

SOME OF THE EUROPEAN PROJECTS WHICH HAVE HELPED TO DEVELOP STANDARDS, ESTABLISH NEW SERVICE PROVIDERS AND VALUE CHAINS AND WHICH HAVE PROVEN THE TECHNICAL AND COMMERCIAL CAPABILITIES OF SATELLITES IN THIS EMERGING MARKET.

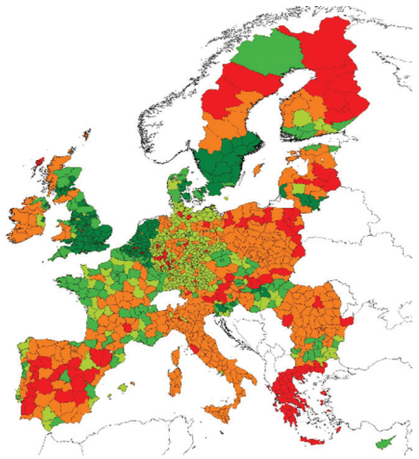
THE EUROPEAN SATELLITE INDUSTRY ROADMAP FOR BROADBAND IS ILLUSTRATED BELOW (SOURCE FP7 BRESAT PROJECT):

TIMELINE	2005	2010	2015	2020
Technology	• Ku-band satellites	• 1st Gen Multi beam Ka-band satellites	• 2nd Gen multi beam Ka-band satellites	• 3rd Gen multi beam Ka-band satellites
Service capability	• Internet broadband	• High speed broadband internet	• Very high speed broad-band internet	• Very high speed broadband internet
Max Service rate	• 2-3 Mbps	• 10 Mbps	• 50 Mbps	• 100 Mbps
Number users per satellite	• Few 100 K	• Several 100 K	• Up to 1 M	• ~ 1 M
Example of service offer	• Astra2Connect (SES), Tooway (Eutelsat)	• KaSat (Eutelsat) • A2C enhanced Ka capacity (Astra), Hylas1 (Avanti)		Capacity per satellite (Gbps)
Capacity per satellite (Gbps)	• 5-10	• 50-100	• 150 - 200	• > 500

Universal access to broadband is not just a European need - there is a worldwide market worth €100bn over the next 10 years. Although three of the first six Ka-band dedicated satellites were built by the European manufacturers, the industry needs further public support to develop the next generation technologies needed to i) remain in the race in a highly competitive market (especially in face of US players who have been awarded the recent satellite broadband contracts) and ii) deliver an increased broadband performance in a manner economically comparable to terrestrial solutions. The Horizon 2020 programme must participate in this public support for R&D, while other European Funds can trigger a wider deployment of those solutions (typically the Structural Funds). The future 5G network will benefit from future satellite broadband to bolster its resiliency and to extend its service coverage to under and un-served areas as well as to passengers on board vessels, trains and aircraft. This will lead to a connected Europe, increased European exports, high value manufacturing in European factories and job creation across the Continent.

Current satellite broadband services have origins in collaborative research co-funded by European institutions.

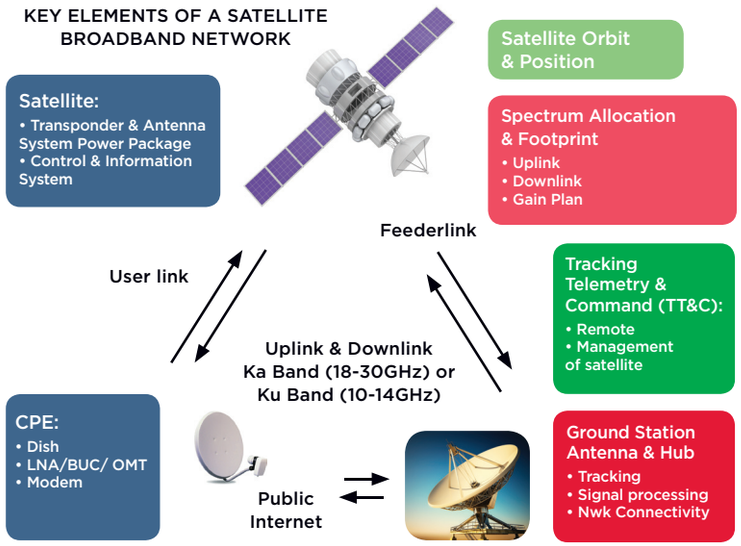
The investment of Framework Programme funds towards "Broadband for All" coupled with satellite technology investment by the European Space Agency has created a community of experts from industry, academia, finance and government which has a leveraging technology to contribute to the fulfilment of Digital Agenda for Europe objectives.



EU27 - Households without superfast broadband 2010 - Percentage of households without a superfast

- *68 to 98%*
- *51 to 68%*
- *43 to 51%*
- *27to 43%*
- *1 to 27%*

According to studies by Broadband Consultancy firm Point Topic, 33 Million European homes will be unable to obtain Superfast (30Mbps) broadband in 2020. The Council of the Regions has estimated that meeting the EU's Digital Agenda targets without satellite technology will cost as much as €270 bn of which only €50bn is expected to be invested by the private sector [1].



1. Council of the EU 'Proposal for a Regulation of the European Parliament and of the Council establishing the Connecting Europe Facility', Brussels 21 May 2012, Inter-institutional File: 2011/0302 (COD).

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