



# ICT PSP CIP BRESAT

*Contribution of satellite systems to 100% EU  
broadband coverage*

*D2.4.1 “Satellite Capabilities and Evolution”*

*April 2013, London*

**THALES**

1. Scope
2. EC Digital Agenda Defined
3. Current Satellite Broadband Capabilities
4. Satellite Broadband Roadmap
5. Conclusions

Presentations showing the ability of satellite broadband to address the Digital Agenda speed targets in 2013 and 2020.

- This task will include the analysis of the expected capabilities of satellite broadband services from 2012 to 2020 showing satellite roadmap and service offerings.
- The analysis will draw on the experience of Thales in the current and future development of satellite technology. It will include the use of data produced for the ESA Terabit Satellite study and the expected services offered by the technology in such studies.
- The analysis includes inputs from Gilat and Hughes capturing the existing and future capabilities of satellite customer premise equipment (CPE). It will take into account the developments anticipated in the 2013 and 2020 timescales.
- The work package identifies the forecast roadmap for the industry together with expected ability of satellite broadband services to meet the objectives of the EC Digital Agenda and its 2013 and 2020 targets.

“The EU Digital Agenda includes the objective to bring basic broadband to all Europeans by 2013 and seeks to ensure that, by 2020:

- (i) all Europeans have access to much higher internet speeds of above 30 Mbps and
- (ii) 50% or more of European households subscribe to internet connections above 100 Mbps.

....To reach these ambitious targets it is necessary to develop a comprehensive policy, based on a mix of technologies, focusing on two parallel goals: on the one hand, to guarantee universal broadband coverage (combining fixed and wireless) with internet speeds gradually increasing up to 30 Mbps and above and over time to foster the deployment and take-up of next generation access networks (NGA) in a large part of the EU territory, allowing ultra fast internet connections above 100 Mbps.”

We interpret basic broadband to mean a minimum speed of 2Mbit/s (downlink) and figures to be headline speeds.

Ka band satellite broadband services are currently available across the whole of the EU from satellites such as HYLAS 1 & 2, and KaSat.

10 & 20 Mbit/s broadband speeds are typical with a 10GB usage allowance per month.

Such services typically cost €30 per month plus once-off charges of about €400 but prices increase for higher download allowances.

Larger higher performance satellites such as envisaged in the ESA Terabit Satellite studies and advancements in customer premises equipment are expected over the next 5-10 years increasing performance further.

Speeds of between 30-50Mbit/s are expected to be achievable by 2015.

Speeds of up to 100Mbit/s are expected by 2020

TIMELINE	2005	2010	2015	2020
<b>Generation</b>	•Ku-band satellites	•1st Gen Multi beam Ka-band satellites	•2nd Gen multi beam Ka-band satellites	•3rd Gen multi beam Ka-band satellites
<b>Service capability</b>	•Internet broadband	•High speed broadband internet	•Very high speed broadband internet	•Very high speed broadband internet
<b>Max Service rate (Download)</b>	•2-3 Mbps	•10-20 Mbps	•30-50 Mbps	•100 Mbps
<b>Number users per satellite</b>	•Few 100 K	•Several 100 K	•Above 1 M	•Above 1 M
<b>Example of service offer</b>	•Astra2Connect (SES), Tooway (Eutelsat)	•Tooway service via KaSat (Eutelsat) •SES Broadband Services based on enhanced Ka capacity (SES) •Custom/select offers via Hylas1 (Avanti)		
<b>Capacity per satellite (Gbps)</b>	•Around 5	•50 – 100	•150 - 200	•> 500
<b>Space segment enabling technologies</b>	•Broadcast satellites	•Antenna system with dishes up to 2 m diameters to allow beamwidth of <0.5° •Efficient Ka band feeds, amplifiers and filters	•Antenna system with dishes up to 3.5 m diameters to allow beamwidth of <0.3° •Wide band Ka amplifiers •Q/V band feeder Tx/Rx	•Antenna with dishes up to 5 m diameters to allow beamwidth of <0.2° •Flexible allocation of bandwidth among the beams •Improved pointing accuracy
<b>Ground segment enabling technologies</b>	•Return channel added to the broadcast channel •Adapted transport protocols for enhanced QoS	•Ka band radio front end •Fade mitigation techniques •Radio resource management compatible with the multi gateway topology	•Q/V band feeder link with space diversity scheme •Q/V band Amplifiers and antenna systems for the gateway •Radio interface with interference mitigation techniques against inter beam interference •Cognitive Radio techniques to exploit spectrum shared with Fixed Service	•Virtualisation of CPE base band processing •Self installation antenna for the terminals

Satellite broadband services are already offering 10-20Mbit/s today

Satellite broadband services are likely to be offering 30Mbit/s-50Mbit/s by 2015

Continued development means that satellite broadband services are likely to offer 100Mbit/s by 2020

High speed satellite broadband is now a reality and the EC Digital Agenda targets are therefore very likely to be achievable by satellite.





**ThalesAlenia**  
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■ Thank You