

GLOBAL FORUM

Broadband for Development

Socio Economic Contribution from the Space Infrastructure

Jean-François BUREAU – Eutelsat – November 18 2014

HOW SPACE APPLICATIONS ARE SPREADING INFORMATION AND COMMUNICATIONS TECHNOLOGIES, AND FIGHT THE DIGITAL DIVIDE

- ✓ **As of 1/8/2014 : 1235 satellites in operation, of which 458 at the geostationary orbit**
- ✓ **By functions (2012) (Tauri database of spacecraft):**
 - 38% commercial communications
 - 16% Government communications
 - 10% remote sensing
 - 9% space science
 - 9% R&D
 - 8% military surveillance
 - 7% navigation
 - 3% meteorology

The space economy highly relates upon telecommunications by satellites : Eutelsat orders represent 60% of the non institutional orders received by European satellite manufacturers during the last 10 years.

✓ Value chain of telecommunications satellites business (Euroconsult – 2014):

- Satellites manufacturing/launching : 4.4 Bns \$
- Terrestrial terminals selling : 5 Bns \$
- Satellite operators activities : 12.5 Bns \$
- Services / applications selling : 110 Bns \$

✓ UK Space Agency report (Sept 2014):

- In 2000 : upstream value : 624 M£; downstream : 3946 M£ (1 to 6,3)
- In 2013 : upstream value: 1219 M£; downstream : 10104 M£ (1 to 8,3)

Telecommunications by satellites have increased the downstream value (ripple effect) of their applications and services, the value of which is now estimated between 8 to 10 times more important than the upstream value.

Diversification of applications and services, increased competition among more many satellite operators are two of the key features of the time: end users and consumers should take benefit of it !

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✓ The history of the telecommunications by satellite industry is related to the development of the broadcast/TVs/videos activities, and their technical standards; it will continue:

- 35650 TVs were broadcast by satellites in 2013; they will be 47000 within 10 years;
- HD format (Mpeg 4) is replacing SD (Mpeg 2): 43% of all TV satellite channels are HD in 2013; it will be 90% in 2023;
- UHD (« like at cinema ») format (HEVC/4k pixels) is coming on satellites : 3500 TV in 2023;
- Connected TV is the other next change coming : OTT operators (Netflix...) offer TV channels on internet and mobiles, in a linear or on-demand mode. Satcoms will be a part of the answer, at least to offload the terrestrial networks from the linear consumption, in order to specialise them on the non linear consumption (VoD...).

Broadcast and Videos consumption will remain the leading driver of the telecommunications loading : hybridation between satellite and terrestrial networks will be the appropriate and affordable answer to feed the needs.

Far from being a « niche », the satellite contribution to the dissemination of information technologies will accelerate and extend.

Convergence between broadcast and broadband will be a new driving change which will require a wider based regulation in order to take the best of the different technological solutions.

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✓ **Telecommunications by satellites is having a key role to provide internet and connectivity:**

- In 2008 1,1 million householders were receiving internet by satellite; 2,25 millions in 2013. Forecast is 8,8 millions in 2023;
- Two main active areas are Northern America and Europe, but the satellite economic model especially fits the needs of the emerging world

✓ **Applications have diversified:**

- Governmental : administration, education/MOOCs, , health/telemedicine, security, defence; air safety);
- Development : agriculture, oil and gas industries , transport, banking;

✓ **Technological developments:**

- HTS (40 satellites HTS type under construction) and Ka usage (Ka Sat 90 Gbps; Viasat 1: 140 Gbps; next : 200 ?; internet delivered : 22 Mpbs (householders) to > 30 Mpbs (professional use); next : 50 to 100 Mpbs;
- IP trunking;
- Backhauling;
- Mobility (air / railroad);
- Virtual professional networks;
- Terrestrial networks back up

The satellite provides telecommunications and connectivity services which are more and more complementing the terrestrial ones.

✓ *The intrinsic advantage of the satellite:*

- A fixed cost whatever the distance : the most appropriate tool to provide services to far away populations from terrestrial networks (« the zero marginal cost economy »);**
- An investment which satellite operators finance upon their own resources (Eutelsat investment in new capacities : one third to half of the yearly turnover is invested since 2009): once satellites applications go to market, public money is not key to the investment; at a time of public resource crunch, it makes a difference**
- Readiness to provide immediate service once the satellite is operational (less than two months after launching): satellite accelerates the development of digital usages**

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SPACE ECONOMY MUST BUILD UPON ITS BEST ASSETS TO DELIVER ENDURING BROADBAND SERVICES FOR DEVELOPMENT

- ✓ **1/ Performance** : continuity of service must be the most valued asset; resilience and robustness must demonstrate readiness to guarantee the service continuity
- ✓ **2/ Ubiquity** : equal service to all potential consumers, wherever they are located, must strengthen ex ante cost / efficiency analysis to orientate investment decisions; public decisions to plan infrastructure should include such analysis in order to build upon a technological neutrality principle
- ✓ **3/ Innovation** : Space economy extends when new applications are provided by the satellite; innovation must speed up the transfer to market of space and satellite applications
- ✓ **4/ Complementarity** : space telecommunications infrastructure is part of the telecommunications economy : the space segment should look at reinforcing its added value to an increased supply of telecommunications applications (eg mobile internet) and stimulate more many hybrid solutions where terrestrial and space infrastructure complement each other (non linear / linear TV consumption)
- ✓ **5/ Partnership between emerging and emerged**: space is a public good which entails same rights for emerging and emerged to benefit from it; given the history of space and the current situation, the Space economy should be considered as a preferred domain of « win win » strategies for broadband development

INNOVATION, INVESTMENT, FLEXIBILITY, EFFICIENT USE OF SPECTRUM AND ORBITAL RESOURCES, CONVERGENCE, ARE KEY WORDS OF THE FUTURE