



Space Telecommunications Challenges of a key sector for Europe

The European space telecommunications manufacturing industry is a sector mostly acting on the worldwide commercial scene. Its sustainability is increasingly put at risk by non-European competitors, benefiting from a significant Public support. The situation is totally unbalanced for the European industry which future is at stake. The sector has thus identified institutional supportive actions, which will help it to remain in the race.

► A key Space sector addressing EU priorities...

Today, the communication satellites manufacturing sector (SatCom) is:

- **Recognised by the EU Space Industrial Policy** as “instrumental in sustaining Europe’s space industry”;
- **Contributing to more than 50% of the revenues of the European Satellite manufacturing industry** which represents today 35000 highly qualified jobs across Europe.

► ...subject to market uncertainties and suffering from an uneven playing field with the non-European competition.

Broadcast is the core SatCom market but the evolution of TV will impose to innovate at infrastructure level. Furthermore, the take-up of broadband, is slower than expected. **Concurrently, the European SatCom sector is put at risk by non EU-players** who benefit from huge supports on their domestic markets (allowing them to develop leading-edge technologies) as well as on the export fronts.

► The European SatCom sector needs to equally benefit from political, financial and regulatory EU support in order to remain in the race.

Because it acts on a worldwide competitive commercial scene, the European SatCom manufacturing industry needs the support of European institutions to establish a level playing field:

- **Ambitious and sustainable R&D programmes dedicated to the European SatCom industry, duly coordinated across Europe (ESA, EC and national agencies)**
 - Enhance European satellites performances and overall competitiveness
 - Achieve the European non-dependence on both critical technologies and components
 - Develop novel architectures to answer ICT market trends
- **Appropriate framework and legal instruments to enable the deployment of innovative SatCom infrastructures to serve the EU agenda** (especially the Digital Agenda for Europe and the Common Security and Defence Policy):
 - Foster the European governmental markets (e.g GovSatCom)
 - Set-up innovative Public financial schemes to support both infrastructures and services
 - Manage market demand aggregation, support awareness and demand stimulation
- **Set-up European standards, regulations and international policies**
 - Address regulations: preserve and enlarge the necessary frequencies spectrum
 - Address standards (e.g protocols and interfaces) for the satellite infrastructures and network (space and ground segment) and the inter-working with other networks.
 - Support and incentivise operators and user’s to buy European satellite infrastructures and solutions (be they from the EU or not)
 - Support the European industry on identifying and developing new export markets.

For a thorough analysis please consult the annex of this position paper available at:

www.eurospace.org ► Research & Publications ► Position Papers ► Space Telecoms

Space Telecommunications: a key sector for Europe

► A key Space sector...

Space solutions enable a wide range of services involved in the day-to-day activities of European citizens, companies and governments. The space manufacturing industry relies on a small but highly qualified workforce (35,000 persons, 65% holding a PhD or an engineering degree) across Europe. Within this sector, Telecommunications holds a specific and important position:

- **The core of the space manufacturing sector:** Satcom today contribute to more than 50% of the European Satellite manufacturing industry revenues (space and ground infrastructures)
- **A mostly commercial market:** export and private customers generate currently about 85% of the European SatCom manufacturers' sales, in turn supporting the competitiveness of the industry on the governmental market.
- **The anchor customer of the launch industry:** telecommunications operators are the main customers of European launch services (87% of the Ariane launches over the last 3 years – out of which only 9% are governmental).
- **A domain in which SMEs develop:** hundreds of SMEs are active and continue to develop on the entire Satcom value chain.

While the Satcom market open to competition is a strong pillar of the space manufacturing industry, it remains small. Any evolution has an immediate, potentially strong and structural impact on the European space manufacturing industry and its jobs. These highly qualified jobs and technological skills took a long time to get but could be lost quickly.

► ...addressing EU priorities

The SatCom industry addresses key societal challenges and policy objectives of the EU agenda:

- **It is at the heart of the European Space policy:** The SatCom manufacturing industry is recognized by the EU Space Industrial Policy as “instrumental in sustaining Europe’s entire space industry”.
- **It is an enabler to reach EU Digital Agenda objectives:**
 - **Broadband for All:** today, 4.3 % of the European population live in areas where there is no access to terrestrial or mobile Internet. The most recent satellite-based broadband solutions perform evenly with terrestrial ADSL solutions. While they are the ideal solution to immediately serve the remaining white areas, they remain under-used by the regions needing it. This mostly results from a lack of awareness, a lack of marketing efforts and a lack of immediate profitability for commercial operators. Both Europe and States-aids could certainly bridge the gap.
 - **Paving the way to the upcoming 5G network** which architecture includes multiple layers, diversified and integrated technologies (wireless, wireline and satellites). It will in addition provide an overall improved spectrum, energy and cost efficiency as well as higher resiliency of current and future network infrastructures.
- **A building block for the Common Security and Defence Policy:** Autonomy of decision-making and of actions at an EU level requires autonomy of operational infrastructures and of access to information. The SatCom capacity to instantly cover most of the world, to provide a back up to strategic communication, to provide secure and resilient communication are thus relevant. EDA’s European satellite communications procurement cell (pooling and sharing initiative) already brings added value to EU capabilities and is a welcome precursor to more ambitious mechanisms and procurements currently in discussion.

An industry increasingly challenged

► Market uncertainties...

The European SatCom manufacturing industry is highly performing on the world-wide scene but is increasingly challenged: its share stalled from 32% in 2009 to 26% in 2012), whereas the European industry sustainability relies on at least one third of this market.

- **A limited market size:** The market open to competition has stabilised at around 20 opportunities per year shared amongst an increasing number of world-class manufacturers (today 8 to 10 of them) from which 2 are European. More competitors therefore means fewer opportunities for Europe whereas the smallest market size variation (be it caused by technological, regulatory, political or financial evolutions) has a significant impact on the sector (jobs and competitiveness).
→ Foster competitiveness through innovation and cutting edge technologies.
- **Market evolutions:**
 - Broadcast will remain the core market for SatCom. Because of on-going major changes observed on the TV markets, SatCom Broadcast infrastructures have to evolve, therefore requiring more R&D funds and spectrum.
 - The next growth opportunity has taken shape with high throughput satellites, enabling higher internet-by-satellite speed. While the European industry competes with the most advanced American ones, the low institutional European demand does not allow the necessary market take-up in Europe nor any short term development on its domestic markets.
→ Secure the broadcast spectrum, support the emergence of innovative satellite solutions and the take-up to new broadband services in Europe.
- **New launch services:** Satellite electrical propulsion introduced by Boeing allows “lighter spacecraft” which can be launched by the newest generation of medium-lift launcher (namely the US Space-X - Falcon-9). The package “satellite + launch” therefore appears economically more attractive to the operators while it benefits from enormous US Government supports. Europe should react to this new market distortion.
→ Manage attractive European solutions (satellite + launch) and encourage the procurement of European infrastructures to fulfil European Public objectives (e.g. the Digital Agenda and the CSDP).

► ... and an unbalanced playing field

Non-EU competitors (American, Chinese, Russian, Japanese and Indian industries) benefit from large and determined Public supports leading to outstanding competitive advantages when they address the commercial markets:

- **Large non-European governmental markets:** most non-EU players benefit from large governmental programmes (institutional and military) which embed a high level of R&D&I funds. Governmental contracts values are often twice as expensive in the US than in Europe for similar deliverables (infrastructures or services). American governmental programmes are in addition developed on a much higher scale.
Over the last years, more than 20 major contracts have been awarded to the US industry in this context. They include 10 WGS, 6 AEHF, 5 MUOS and 3 TDRS satellites. Government contracts represent more than 50% of the US manufacturers business while they represent only 15% of the European ones. In comparison, the European governmental market remains too small to generate a level of activities sufficient to develop novel technologies re-usable on the commercial scene.
- **Bi-lateral governmental barter agreements:** non-EU competitors also benefit from bi-lateral governmental agreements, for example in Australia, Africa and South America where US and China industries managed new captive markets. On one side the US administration delivered WGS network services to Australia against a space infrastructure contract to Boeing and on the other side China delivered satellites to Nigeria and Congo against raw material and crude oil.

EU support to the SatCom industry

In this context, the European SatCom manufacturing industry, calls for urgent initiatives from the European Union. At stake is no less than the competitiveness and sustainability of an essential sector for Europe.

- **R&D&I: specific, sustainable and focused supports duly coordinated across Europe (ESA, EC and national agencies)** to enhance the satellites performances and attractiveness while providing a sound answer to the overall ICT market. H2020 should therefore contribute in the following areas:
 - H2020 ICT should better address users and network-centric activities fostering disruptive combinations of terrestrial and satellite network technologies to build future network infrastructures (including 5G). In coherence with the percentage of European citizens for whom only the satellite is accessible, 5% percent of the networks architectures research budget should be accessible to the communication satellite industry.
 - H2020 Space should address research on enabling and breakthrough space communication technologies organized around a sustainable and focused vision. For example i) Low TRL technologies, including the development roadmaps up to IOV/IOD, and ii) terrestrial technologies spin-in and techniques relevant to the EU societal challenges and EU policies. At least 20 M€/year should be earmarked for this purpose.
 - H2020 Security and H2020 Societal Challenges should support specific SatCom R&D) and contribute to the deployment of SatCom solutions in support to EU policies (e.g through large scale pilot projects and services).
- **Technologies and components non-dependence:** set up an industrial policy addressing EU non-dependence so that the European industry no longer depends on its competitors.
- **Enhanced the use of SatCom services in Europe:** foster the deployment of innovative SatCom infrastructures to serve the EU agenda (in particular Digital Agenda for Europe, Common Defence and Security Policy and data collection and distribution for Environmental monitoring):
 - New financial schemes involving Public support to facilitate for example IOV/IOD,
 - Market demand aggregation schemes and support actions,
 - Pan-European harmonisation of standards and regulation frameworks (e.g ensure interoperability with terrestrial networks),
 - Enlarged governmental markets.
- **Spectrum policy:** reserve, protect and enlarge the necessary frequency spectrum.
- **Institutional support on the export scene to bring the European industry on a level-playing field with its non-EU competitors:** bring the European satellite industry on a level playing field with its non-EU competitors in particular in the field of:
 - Competition rules: manage fair evaluation rules with criteria encompassing in particular costs/benefits, assessment of the strategic character of the procured item and the identification of potential governmental support to non-EU competitors.
 - Competitiveness: R&D&I at a level allowing fair level playing on the international front.
 - Bi/Multi-lateral agreements to support the export market: access to finance, to European services, to R&D, to transfers of technologies, to sharing risks (technologies, markets, etc.).