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The Development of Public-Private Partnerships in the European Satcom Sector

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Public-Private Partnerships (PPPs) could help to enhance the societal benefits of communication satellites. However, European public entities must avoid the mistakes made during the Galileo concession negotiations.

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The use of Public Private Partnerships (PPPs) for European space projects is often associated with the spectacular failure of the Galileo concession project in 2004-2007. This is only one side of the story however, as a fair number of space-related PPPs have been initiated successfully Europe in recent years, in particular in the field of Earth Observation (EO) and military satellite communications (milsatcom). This trend has also reached the rest of the satellite communication sector (satcom), as PPPs have progressively become the cornerstone of ESA's satcom policy and are increasingly considered for the EU's big satellite infrastructure projects.

Bearing in mind the on-going difficulties encountered by Galileo and GMES to secure long-term funding, PPPs could represent a very interesting option for the sustainable financing of space projects. More generally, PPPs are seen as cost-effective solutions to set-up ambitious infrastructure projects at a time when both public budgets and private investment capabilities are under stress. The most important thing, however, is that the use of PPPs for space projects allows to tackle the central challenges of the European Space Policy (ESP). Indeed, PPPs could contribute to enhanced use of satcom for public service in Europe. PPPs may also strengthen the European space industry, and particularly its R&D capacities. Finally, PPPs could also constitute new experiments in European space governance, bringing together the two main institutional space actors in Europe, ESA and the EU.

In this respect, analyzing PPPs in the satcom sector sheds light on the future orientations, governance architecture and funding mechanisms of the ESP. After briefly introducing PPPs in general and in the current European context (1), this paper will identify the specific rationales and advantages of PPPs in the satcom sector (2). This will explains the current multiplication of PPP projects at all institutional levels (Member States, EU and ESA) (3). Despite these positive aspects, it is necessary however to draw the lessons from past failures in order to fully reap the benefits of PPPs in the satcom sector (4).

The growing importance of PPPs in Europe

All PPPs share a set of common features aimed at providing specific benefits to public and private actors. The European context is particularly favorable to the emergence of PPPs, with the European Commission (EC) recently issuing a Communication on this matter.

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Concept and characteristics of PPPs

PPPs are ways to finance public infrastructure that include both public and private actors, a departure from the traditional public procurement. Originally, PPPs were mainly used in the transport sector, but in recent years they have developed in the areas of public buildings and equipment, and the environment[i]. Four key characteristics of PPPs can be identified:

- The relatively long duration of the relationship between the public and the private partners;
- The funding of the project that comes partly from the private sector;
- The important role of the private operator (participating in different stages of the project);
- The distribution of risks between the public partner and the private partner.

The responsibilities, costs and risks are defined in the contract, and each party retains its own identity[ii]. The main criteria is the degree of involvement of the private and public actors in the various possible stages of a project[iii]. The combination of all the possible options provides a great number of partnership types[iv].

PPPs in Europe: a structural opportunity

PPPs progressively gained importance in Europe in the last two decades. Between 1990 and 2009, 1300 PPP contracts have been signed in the EU, representing more than €250 billion. There are strong disparities between countries though, as the UK still accounts for 2/3 of all PPP projects, followed by Spain (9%) and France, Germany, Italy and Portugal (2,5% each)[v]. The financial and economic crisis also had implications for PPPs, as several European governments used them to stimulate their economy, even though it also became more difficult to leverage funds, both for public and private stakeholders[vi]. In line with this new trend, the EC released a Communication in November 2009 setting up a framework for encouraging the use of PPPs by Member States[vii]. In the framework of crisis recovery, PPPs can help public authorities to invest in public services, infrastructures and research in a long-term perspective, thus boosting innovation and creating jobs.

For the EC, the potential benefits of PPPs for public actors are the following: First, the use of PPPs is likely to improve the delivery of projects, in terms of both budget and schedule; PPPs also guarantee better value for money from the infrastructure, by exploiting the efficiency and innovative potential of the private sector; They improve risk sharing between public and private actors and spread the cost of financing the infrastructure over the lifetime of the asset. Finally, and most importantly in the case of space-related projects, PPPs boost sustainability, innovation and Research and Development (R&D) efforts[viii].

All in all, there is a favorable environment in Europe for the development of PPPs. The crisis had a dual effect in this respect. On the one hand it increased the budgetary constraints for public actors and reduced the ability of private actors to invest, which led to a reduction of PPP projects started. At the same time, the EC has identified the structural and long-term benefits potentially induced by PPPs, and decided to foster their development.

PPPs and satcom: reaping the social and economic benefits of the ESP

These general benefits of PPPs translate particularly well to the satcom sector. Additionally, developing satcom projects under a PPP could increase their value as public service assets.

Satcom projects are investments in infrastructure

Satcom projects feature all the characteristics of a public infrastructure program: huge investments (in R&D, satellite manufacturing and launching), long operational lives (around 15 years for a geostationary satcom) and possible use as a public service.

As opposed to Earth observation or satellite navigation, the satcom sector is almost purely commercial. As a consequence, satcom PPP projects offer good commercial incentives to attract private partners. In addition, using a PPP scheme for such projects allows to develop the infrastructure at a faster pace than in a strictly commercial logic[ix]. Compared with a strictly public project, on the other hand, PPPs ensure larger sources of funding and the reduction of delays[x], two crucial factors in a satcom project. Maybe more importantly in the case of satcom

technologies, the heavy competition between private actors in the selection process for the PPP operation phase is deemed to foster innovation more efficiently, both regarding payloads and services provided. Finally, PPPs enable a smooth transition between the R&D phase and the commercial exploitation phase, and ensure that innovations are effectively brought to the market.

Satcom applications for public services

Satellite communications are usually perceived as a purely commercial sector. It is indeed the main component of the downstream segment of space economy, including satellite operators and providers of space-enabled products and services[xi]. While the first European actor dealing with satcom was the public intergovernmental organization Eutelsat[xii], founded in the 1970's, private actors started to emerge in the 1980's, and the trend towards privatization was accelerated in the 1990's[xiii]. Nowadays, satcom applications constitute by far the biggest commercial market of the space sector[xiv], with revenues soaring worldwide despite the crisis. In 2009, the global revenues of satellite communications services amounted to $91 billion, including: $75,3 billion for Direct Broadcasting Services, $14,4 billion for Fixed Satellite Services and $2,2 billion for Mobile Satellite Services[xv].

Satcoms also have public service applications, however, and are as such a pillar of the ESP. They are used in a broad range of public policy areas, such as broadband internet, emergency communications, maritime communications and surveillance, transport, aid and development, environment, energy or security and defense[xvi]. Despite this relevance for public policies, satcom applications are insufficiently reflected in the ESP official documents[xvii]. PPPs in the satcom sector could help to fulfill the three central public policy objectives of the ESP. First, they could facilitate the setting up of military satcom programs. Second they could contribute to the inclusion of satcom applications in the long-term socio-economic plans of the EU, by concretely contributing to the Europe 2020 Strategy. Finally, they could strengthen the global competitiveness of the European space industrial basis by fostering innovation. Each of these policy objectives is implemented at a different level: while military satcom projects are in the realm of national actors, the EU is planning to use satellite applications to implement the Europe 2020 Strategy and ESA is the main European actor fostering a space industrial basis.

A pragmatic solution for milsatcoms

The worldwide military demand for bandwidth is increasing exponentially, and dedicated governmentally owned milsatcoms are by far not sufficient to satisfy this demand. Instead of multiplying the number of dedicated milsatcoms – an expensive option – several militaries decided to rely on the commercial sector by leasing capacity from private operators. This approach however has weaknesses as well, mainly focusing on the lack of control of the military over the system and on the lack of guarantees on the availability of the service. PPPs could in certain cases provide a pragmatic option. From the public perspective, they can allow (i) to get a payload tailored to the military specifications, (ii) to cut costs, especially if this spacecraft also embarks a commercial mission, with which fixed costs can be shared, and (iii) to keep a certain degree of control over the system. For the private partners, such PPP arrangements guarantee commercial revenues on the long term, and can even allow third party capacity sale in some cases.

Contributing to the Europe 2020 Strategy

The EU recognized the potential of satcom applications and technologies to help boosting Europe out of the crisis in the short term, and to strengthen the development of a knowledge-based society in the long term. In May 2009, the 6th Space Council called for the inclusion of satellite communications technologies in the European broadband strategy, elaborated in the frame of the European Economic Recovery Plan (EERP)[xviii]. Satcom technologies also have an important long-term role to play in the "flagship initiatives"[xix] outlined in the 2020 Strategy. The latter aims at boosting competitiveness, productivity, growth potential, social cohesion and economic convergence[xx]. One specific area of the 2020 Strategy where satcom technologies could make a difference is the so-called "Digital Agenda"[xxi]. Indeed, they could help bridging the digital divide by providing broadband services to remote areas, and ensure a full coverage of the European territory[xxii], thus avoiding billions of public spending that would have been needed to increase the reach of terrestrial networks, whereas far less costly alternatives exist. As an

example, Eutelsat launched in December 2010 a new-generation satellite, called KA-SAT, designed so that it can provide broadband access via satellite with the same level of quality as existing wired networks, for up to 1 million households out of the reach of terrestrial networks[xxiii]. PPPs were also recognized as key instruments to reach these goals, notably through the Joint Technology Initiatives (JTI)[xxiv]. These JTI are to be implemented by a specific FP7 instrument, the European Technology Platforms (ETP). One of these ETP is specifically dedicated to satcom technologies[xxv], and already called for the setting up of PPPs to include satcom technologies in the overall EU policy framework[xxvi]. Although no satcom PPP schemes have been launched by the EU yet, EU instruments were already used to support ESA PPP programs. Specifically, the European Investment Bank (EIB) provided a €225 million grant to Inmarsat to help financing Alphasat, as the project is in line with the Europe 2020 objectives[xxvii].

Enhancing the competitiveness of the European satcom industry

Besides helping to face the great European societal challenges, satcom technologies are also critical for the European space industry. Indeed, both the satellite manufacturing sector and the European launch industry[xxviii] are dependent on the satcom sector. It is therefore vital to maintain the competitiveness of the European satellite industry on global markets. This is one key goal of ESA's dedicated satcom program, the Advanced Research in Telecommunications Systems (ARTES). It intends to do so by promoting the use of satellites in general, introducing new techniques for satellite systems and closely working together with industry and operators for future telecom missions. ARTES is composed both of generic, "envelope program" elements and of specific mission-oriented program elements, all these elements being independent and financially autonomous[xxix]. PPPs play a central role in this architecture, as all specific missions currently developed within ARTES are based on PPPs. A particularly important feature in this regard is the innovation potential of PPPs, which is a key driver for global competitiveness. PPPs allow ESA not only to develop and test new products, but also to make the transition to the commercial exploitation phase easier. ESA is financing the R&D phase, after which private partners take over for the in-orbit validation and exploitation of the innovation[xxx]. By doing so, it facilitates the development by the European industry of innovative and competitive new products

The rise of PPP schemes for European satcom projects

The combination of an adequate political environment (need to fight the crisis and invest in innovation-intensive sectors on the long run) and the subsequent development of tailored instruments has led to a multiplication of PPP schemes in the European satcom sector. These projects, developed by ESA, both strengthen the European space industry and contribute to EU public policies.

PPPs schemes for European satcom projects were initially introduced for military projects. The British Skynet, the German SatComBW or the Italian Sicral 1B satellites are examples of such arrangements.

The first PPP to be implemented by ESA was Hylas, launched in November 2010 and operated by the private UK company Avanti. This highly adaptable satellite has two main objectives: simplify future payload development by using "off the shelf" components, and provide high quality broadband services at a cost comparable to terrestrial services. This will represent a tangible contribution to the bridging of the digital gap in Europe[xxxi]. ESA also used PPPs to develop two products for the commercial market. Alphabus constitutes the European response to the emerging market of high power satcoms. The Alphasat mission based on Alphabus will be operated by Inmarsat and launched in 2012. At the other end of the spectrum, the GEO project intends to develop a generic and cost-effective European platform for the segment of small GEO satcoms. Hispasat will operate the satellite, validating the platform in-orbit and providing flight heritage[xxxii]. These three projects show the benefits of PPPs and the division of tasks between public and private actors: ESA invests in R&D activities and the private operator gets a satellite platform "for free", while dealing with the in-orbit validation process and the exploitation risk.

Another PPP is the European Data Relay Satellite (EDRS). EDRS will ensure Europe's strategic independence in the key area of data relay while also providing commercial opportunities -as there is a number of potential customers for data relay services: EO, rescue teams, security forces and relief forces. Astrium Services was selected to operate EDRS and the mission is

supposed to start in 2012[xxxiii].

Finally, ESA is also considering using PPPs to implement two of its future projects: the Iris Program for Air Traffic Management (ATM) communications via satellite and the space-based Automatic Identification System (SAT-AIS) project. These two programs also imply close cooperation between ESA and the EU, as Iris is part of the Single European Sky Air Traffic Management Research Program of the EC (SESAR), and SAT-AIS is a common project between ESA and the European Maritime Safety Agency (EMSA).

Lessons from past projects: negotiate an adequate PPP model

The blatant failure of the Galileo PPP negotiation reminds us that public authorities should carefully prepare any PPP project, satcom included. In the specific case of the satcom industry, this statement is reinforced by two factors. The first one is the relative lack of experience of public actors in this field. Only a few PPP-based space projects have been launched, and even fewer have been run long enough to get sufficient feedback on possible obstacles or constraints. The second point is that a number of risks specific to the satcom industry have to be taken into account in addition to the usual risks associated with PPPs[xxxiv]. These risks focus mainly on the regulatory aspects, at the national, European and international level[xxxv].

The reasons for the failure of the Galileo PPP were thoroughly analyzed in a report by the European Court of Auditors[xxxvi]. It concluded that the PPP was inadequately conceived and prepared. In general, three steps must be followed to set up a functional PPP: defining the project requirements as clearly as possible, find the most suitable form of partnership and finally, assess the submitted bids carefully[xxxvii]. Specifically, the public authority should assess private-sector capabilities, evaluate potential benefits, examine alternative ways of meeting its needs, investigate the appropriate risk allocation, consider affordability and likely value for money and outline a business case in the preparatory phase. Moreover, sufficient time should be allocated to the preparation of the PPP and appropriate management resources should be available within the public institution preparing and negotiating the PPP[xxxviii]. Finally, effective competition has to be ensured throughout the bidding project, and regular reviews of the ongoing projects are necessary to make sure that it continues to offer value for money[xxxix].

Conclusion

The recent development of PPP schemes in the European satcom sector is linked to a conjunction of factors. At the political level first, the need to find new instruments to continue investing in public infrastructure in times of constrained public budgets was a strong driver. Besides being cost-effective instruments to fulfill public services, PPPs also bear a strong innovation potential. This aspect is particularly relevant in the satcom sector, as continuous innovation is a crucial condition for a competitive industrial base. Finally, and maybe most importantly, PPPs can contribute to unleash the potential of satcom technologies in tackling grand societal challenges.

Despite the potential public benefits of using PPPs for satcom projects, most current programs were launched on an ad hoc basis for pragmatic reasons. There is no integrated and structured policy framework for the use of satcom PPPs at the European level. While PPPs only represent a useful tool and not a goal by itself, they could nevertheless help reaping the public benefits derived from satcom applications by being recognized and integrated into the ESP. As such, they would be instrumental in strengthening satcom policies as the third pillar of the ESP, besides EO (with GMES) and navigation (with Galileo).

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