

The Economic Potential of Space – Towards a Long-Term Perspective

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The economic potential of space applications has been clearly acknowledged in the recent years in Europe. On the background of the economic crisis, several official EU documents highlighted the role space has to play to help economic recovery, to boost innovation and to contribute to growth. However, the real challenge for the space sector is to nurture sustainable and wide markets in the future. To reach this goal, it is necessary not only to master successfully the shift from a technology-push approach to a demand-pull perspective, but also to put emphasis more clearly on the transversal nature of space, and thus on its societal importance. This requires an integrated approach of space, based on strong political signals at the EU and national levels on the one hand, and on the deepening of initiatives to support new downstream markets on the other hand.

1. From Technology Spin-Offs to Mass Markets

For many years, space was not considered as an economic sector as such, but rather as a limited scientific and technological domain. In the early space age, space activities were mainly seen as serving scientific goals and were used as strong symbolic political instruments. The only economic benefits derived from space that were highlighted were the technological spin-offs. This however, represented – and still represents – a marginal phenomenon, both in terms of market size and revenues. Thus for a long time, the space economy was equivalent to the space industry, the core of which consists of launcher and satellite manufacturers. The economic potential of this sector remained weak, due to its inherent characteristics: high concentration, structurally limited market and strong influence of governments. In addition, the rationale of the space industry was not to exploit an economic potential or to expand markets, but rather to establish a technological and industrial capability.

With the end of the Cold War however, a more favourable political and economic context paved the way for a paradigm change in the space economy. Political decision-makers, in particular in Europe, became increasingly

aware of the emerging potential of new space applications. In order to fully exploit their economic and societal potential, the need for a new demand-pull approach, to replace the technology-push logic, was recognised.¹

In the 1990's, the economic importance of the space sector became more obvious, due to the rise of new space applications with wide societal implications.

Consequently, the space economy started to be considered as a sector by itself and to be defined with a broader view. For the OECD for example, the space economy comprises “all public and private actors involved in developing and providing space-enabled products and services.”² New downstream markets linked to the three main space applications emerged. The striking difference between these high-potential and fast-growing markets and the limited economic potential of the traditional upstream segment (space asset manufacturing and launching) was also acknowledged.³ The

¹ See for example: Commission of the European Communities. Communication to the Council and the European Parliament. “The European Community and Space: Challenges, Opportunities and New Actions.” COM (92) 360 final of 23 Sept. 1992. Brussels: European Union.
² OECD. The Space Economy at a Glance 2007. Paris: OECD, 2007.
³ OECD. Space 2030 – Tackling Society’s Challenges. Paris:

economic importance of space cannot be overseen today, and in 2008, the Space Foundation estimated the size of the space economy broadly defined at 257,22 billion euros.⁴ This economic importance of space is directly linked to the broad societal impact of space applications.

2. The New Political Setting in Europe

On the background of the economic and financial crisis, a series of recent official European documents acknowledged the economic importance of space, along two main axes. First, space was seen as a potential contributor to fight the economic crisis. From a more structural and long-term perspective then, the role of space within the Lisbon strategy was put forward. In line with these two orientations, a concrete focus was put on the development of new markets based on space applications, mainly in the frame of the two European flagship programmes Galileo and GMES and in the field of telecommunications. Whereas the 5th Space Council Resolution from 26 September 2008 and the Resolutions adopted at the ESA Ministerial Council on 26 November 2008 indicated general ways to unleash the economic potential of space, the Brussels European Council on 11-12 December 2008 and the 6th Space Council on 29 May 2009 dealt specifically with the consequences of the crisis.

The resolution “Taking forward the European Space Policy (ESP)” adopted at the 5th Space Council, identified the contribution of space to the Lisbon strategy⁵ as one of the new priorities within the ESP. Moreover, the resolution called for the inclusion of space in the Lead Market Initiative (LMI).⁶ On a similar line, the resolutions adopted by the ESA Ministerial Council highlighted the necessity for the European space sector to be competitive on global markets and emphasised the central role of SMEs in this respect.⁷

Recent EU documents acknowledged both the potential contribution of space to fight the crisis and the long-term economic and social benefits of strong downstream markets.

The European Council of 11-12 December 2008 was dedicated to the European response to the crisis, and called for the inclusion of space in the European Economic Recovery Plan (EERP) and in the European Plan for Innovation.⁸ The 6th Space Council on its side, focused on the concrete contribution of space to innovation, competitiveness and economic recovery. The resolution adopted at the Council called again for the inclusion of space in the EERP and in the LMI.⁹

These decisions take a clear political stance by articulating the idea that space can generate economic and social benefits at the same time. The very fact that space can provide solutions to global challenges such as environmental degradation, climate change, mobility issues or global security, implies the existence of markets for such applications. This increasing inclusion of space in the broader European socio-economic framework was also noticeable in all the recent EU documents related to Galileo, GMES and satellite telecommunications. Indeed, the economic potential of these applications and the necessary support of the related emerging markets were always extensively advocated.

3. Effectively Include Space in the European Macroeconomic Policies

However, this paradigm shift – from a technology-push towards a demand-pull approach – has still to be translated into concrete actions. It is indeed important to mention the innovation potential of space, as an investment in the future, and through this to highlight its potential contribution to fight the crisis. It is also necessary though to understand that space is more than just a high-technology innovative domain that can be occasionally helpful to boost Europe out of a crisis. The long-term benefits of space can only be reaped if its

OECD, 2005.

⁴ Space Foundation. The Space Report 2009. Colorado Springs: Space Foundation, 2009.

⁵ The Lisbon strategy is an ambitious agenda for reform launched by the European Council in 2000. Its overarching goal is to make Europe the most competitive and dynamic knowledge-based economy in the world.

⁶ The LMI was launched with a Communication from the European Commission from 9 January 2008. It aims at entering fast growing worldwide markets with a competitive advantage. 6 promising emerging markets were identified to become LMIs, excluding space.

⁷ ESA. Resolution on the Role of Space Delivering Europe's Global Objective. Doc. ESA/C-M/CCVI/Res.1 (final) of 26 November 2008. Paris: ESA.

⁸ Council of the European Union. Brussels European Council. 11 and 12 December 2008. Presidency Conclusions. Doc. 17271/1/08 of 13 February 2009. Brussels: European Union.

⁹ Council of the European Union. Council Resolution. The Contribution of Space to Innovation and Competitiveness in the Context of the European Economic Recovery Plan and Further Steps. Doc. 10500/09 of 29 May 2009. Brussels: European Union.

societal implications and economic benefits are fully and effectively taken into account in the European macroeconomic policies. This is not the case yet, as there is still a discrepancy between the political intentions expressed in the official documents listed above, and the absence of concrete realisations. The three examples of the contribution of space to the EERP, to the European Plan for Innovation and to the LMI are illustrating this situation.

The flagship measure to include space in the fight against the crisis was the call for its integration in the EERP, in particular through the initiative “factories of the future”. This research programme is one of the three Public-Private Partnerships (PPP) included in the EERP, intended to support the manufacturing industry in the development of new and sustainable technologies. So far, one call has been issued within FP7 under the title “factories of the future” and closed on 3 November 2009. However, space was not part of it: 60 million euros were devoted to nanoscience, nanotechnologies, materials and new production, while 35 million euros were dedicated to Information and Communication Technologies (ICT).¹⁰

There is still a gap between the ambitious strategic policy framework laid down for space economy at EU level and the absence of concrete implementation measures.

Furthermore, the European Council of December 2008 stated that space technologies should be included in the European Plan for Innovation. While the Plan itself will be presented in Spring 2010, the policy process to design it is still ongoing. As a part of it, a vast public consultation on European innovation policies took place between September and December 2009, involving among others Member States Ministries, EU Associations, Private Companies, NGOs or Research Centers and Universities. Strikingly, no significant actor of the space sector contributed to this process.¹¹

Finally, both the European Council and the 6th

Space Council called for the inclusion of space in the LMI, as space was not one of the 6 markets initially identified in the 2007 EC Communication that launched the initiative. A mid-term progress report, which was published in September 2009, carefully analysed the first phase of the initiative and called for a revision of the criteria for selecting new lead market candidates.¹² This suggests on the one hand that the inclusion of space is not likely to occur immediately after the mid-term report, as initially envisaged, but also that the window of opportunity to include space has to be exploited.

As a whole, it seems both urgent and possible to take concrete measures to integrate space in these three initiatives. It is first urgent, because this would not only be of economic interest for Europe, but would also give a strong political signal needed to anchor space on the long run in the European socio-economic landscape. Especially the inclusion of space in the LMI and the European Plan for Innovation would be in line with the broader goal of contributing to the Lisbon strategy. It would represent a clear acknowledgement of the fact that space policy is at the crossroads of different overlapping political issue-areas. Secondly, the combination of the crisis and the designation of a new European Commission makes it possible by creating a unique political momentum to give space a new and broader socio-economic dimension. Finally, a common feature in the policy process of both the LMI and the European Plan for Innovation is the focus on the societal aspects. It is clearly stated in the LMI mid-term report and in the summary of the public consultation for the European Plan for Innovation that economic factors will continue to play a role, but that societal benefits will constitute the main criteria of selection for new innovation policies. This seems to be perfectly tailored for space applications, given the wide societal implications of space-based navigation, Earth observation and telecommunications.

4. Deepen and Broaden the Existing Demand-Side Innovation Policy Instruments

Besides supporting space applications at the macroeconomic level, it is also important to continue fostering downstream markets at the microeconomic level. Indeed, the creation of new markets and the growth of existing ones

¹⁰ Call title “Factories of the Future”- 2010. FP7-2010-NMP-ICT-FoF. Published on 30 July 2009.

¹¹ For an overview of the consultation process and its results, see the dedicated page on the DG Enterprise and Industry website: http://ec.europa.eu/enterprise/policies/innovation/future-policy/consultation/results_en.htm.

¹² Commission of the European Communities. Commission Staff Working Document. Lead Market Initiative for Europe. Mid-term Progress Report. SEC (2009) 1198 final of 9 September 2009. Brussels: European Union.

represent the concrete expression of the above mentioned macroeconomic policies. Several effective instruments already exist, the main ones being prizes and cluster networks. It is however necessary to deepen and broaden their use to maximise their efficiency.

The European Commission already launched space-related networks, mainly in the frame of the Europe Innova Initiative managed by DG Enterprise and Industry. Both cluster networks and financing networks were launched in 2006, with the aim of bringing together public and private innovation support providers to tackle the two main weaknesses of European space entrepreneurship, namely financing and cross-fertilisation between different actors. Two structures, INVESat, FinanceSpace, were launched as pilot projects within FP6, while three cluster networks are currently in activity: ENCADRE, CASTLE and KIS4SAT. The European Commission acknowledged the importance of such networks, and identified precise weaknesses and shortcomings that should be removed. At the end of the FP6 pilot project INVESat, it made a series of policy recommendations that could be generalised to all future networks.¹³ Among others, it highlighted the central role of SMEs in a market-pull approach, found out that network-based business models are more efficient, called for the creation of European based partnerships in order to reach a critical mass and stated that investors should be trained for the specific space market. Thus it is first important to implement these measures. A second step could be to broaden their scope both in time (permanent structures instead of projects with limited duration within the FPs) and geographically (build-up such networks everywhere in the Community, especially in the new Member States with no established traditions in space).

The effective instruments of prizes and networks should be used more intensively, by broadening their geographic and thematic scope.

The second useful instruments to stimulate innovation and help the development of new markets are prizes. Examples from the U.S. showed that prizes constitute strong incentives for private actors to invest in space technologies and to explore innovative

applications. However, in Europe such a competition exists only in the field of navigation. The European Satellite Navigation Competition was launched in 2004 in the Free State of Bavaria, and is now supported by the GSA (GNSS Supervisory Authority). The winner receives both a grant in money and the possibility to realise its project within an institutional incubation programme or with the help of industrial partners. It could be useful to expand such prizes also to the two other applications, Earth observation, within GMES, and satellite communications, within the European broadband strategy.

5. Put a Strong Emphasis on Communication and Visibility

To reach both goals, enhance the political visibility of the economic potential of space and support downstream markets with concrete tools, it is important to make an effort on communication and the spread of information. Indeed, there is an information deficit at both levels.

At the level of the general public first, the idea that space has a tremendous societal and economic potential is not widespread. There is a striking gap between the points of view expressed in the EU documents and the lack of information and thus of knowledge among the majority of European citizens on the impact space has on their lives. A “PR campaign” should be launched both at the European and national levels to favour a rise of consciousness, similar to what happened for the topics “green energy” or “green innovation” for example.

The lack of information, both within the general public and for potential end-users of space applications, is a major obstacle for the development of sustainable downstream markets.

It is also crucial to spread the relevant information at the level of potential users of space applications, mainly consisting of SMEs. Indeed, non-space actors are often not aware of the economic potential of space applications. A multiplication of targeted public information events, such as the Galileo applications days, which will take place on 3-5 March 2010, is necessary to build more bridges between the space and non-space sectors. It is in particular important to broaden such initiatives also to the

¹³ European Commission Directorate General Enterprise & Industry. INVESat. Policy Recommendations and Major Lessons Learnt From the Project. June 2008.

other applications, and to promote an integrated approach of space applications geared towards end-users. In this respect, a good medium that could be exploited intensively is the ESA programme on Integrated Applications Promotion (IAP). It aims at developing “new concepts, new capabilities and a new culture in order to respond to a multitude of needs from users who are not yet familiar with space systems.”¹⁴

Rather than focusing on a particular application, it addresses themes, such as health, transport or energy. By doing so, it perfectly bridges the gap between the technological potential of space applications and their economic and social benefits.



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¹⁴ IAP website: <http://iap.esa.int/what-is-iap>.