EUROPEAN PARLIAMENT

IMPA
Impact Assessment

Initial appraisal of a European Commission Impact Assessment

European Commission proposal for a Decision of the European Parliament and of the Council establishing a space surveillance and tracking support programme

Impact Assessment (SWD (2013) 55, SWD (2013) 54 (summary)) for a Commission Proposal for a Decision of the European Parliament and of the Council establishing a space surveillance and tracking support programme (COM (2013) 107).

• Background

This note seeks to provide an initial analysis of the strengths and weaknesses of the European Commission's Impact Assessment accompanying the proposal for a Decision of the European Parliament and of the Council establishing a space surveillance and tracking support programme.

Currently, the EU is not taking action in the field of space surveillance and tracking. The Commission, the European Parliament and the Council have expressed the need for a European space surveillance and tracking system in recent years.[1] In a Communication on a space strategy for the EU of April 2011, the Commission states that "Space infrastructure is critical infrastructure on which services that are essential to the smooth running of our societies and economies and to our citizens' security depend. […] Such infrastructure is at risk of damage or destruction by natural phenomena, such as solar radiation and asteroids, and by other spacecraft and their debris."[2] The Council consistently "underlines the need for Europe […] to develop a European capability for the monitoring and surveillance of its space infrastructure and of space debris".[3]

[1] Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions "Towards a Space Strategy for the European Union that benefits its Citizens" (COM (2011) 152); Council Resolution "Taking forward the European Space Policy" of 26 September 2008 (Council document 13569/08); Council Resolution on "The contribution of space to innovation and competitiveness in the context of the European Economic Recovery Plan, and further steps of 29 May 2009 (10500/09); Council Resolution "Global challenges: Taking full benefit of European space systems" of 25 November 2010 (16864/10); Council conclusions "Towards a space strategy for the EU that benefits its citizens" of 31 May 2011; Council conclusions "Orientations concerning the added value and benefits of space for the security of European citizens" of 6 December 2011 (18232/11); European Parliament report on the Commission's Communication on a a space strategy for the European Union that benefits its citizens of 30 November 2011 (2011/2148(INI))

[2] Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions "Towards a Space Strategy for the European Union that benefits its Citizens" (COM (2011) 152)

[3] Council Resolution "Taking forward the European Space Policy" of 26 September 2008 (Council document 13569/08)

- **Identification of the issue at stake**

The IA clearly presents the problem at stake in logical steps. Space infrastructure is identified as critical infrastructure that provides "applications which play a fundamental role in our everyday reality (TV, Internet or GPS), are critical to key areas of the economy, and help ensuring our security" (IA, p. 11). The implementation of EU policies, such as in transport, agriculture, fishery, science, environment, health and security, as well as technical progress and industrial innovation and competitiveness depend on it. Therefore, the protection of this infrastructure is said to be essential for citizens' safety and for the good functioning of economic activities. Furthermore, with Galileo and EGNOS, the EU itself 'will soon become one of the largest satellite operators in Europe' (IA, p. 11). In 2011, approximately 950 active satellites were orbiting the Earth, almost 20 per cent of which were of European origin. The market is expected to grow by 50 per cent in the coming decade, increasing the launch rate of satellites.

'However, space infrastructures are increasingly threatened by the risk of collision between spacecraft and, more importantly, between spacecraft and space debris' (IA, p. 11). Space debris includes discarded rocket bodies, fuel tanks, satellite components, non-functional satellites and debris (from collisions and explosions) that orbits the earth uncontrolled at high speed. Estimates suggest that 16,000 catalogued objects larger than 10 cm, up to 600,000 not-catalogued larger than 1 cm, and more than 300 million objects larger than 1mm orbit near earth in the outer space. Collisions with this space debris can cause complete destruction of or permanent damage to satellites. As the number of space objects increases, close approaches of space debris to satellites will rise from 13,000 a week in 2009 to 50,000 a week by 2059. The estimated annualised economic loss due to space debris is therefore predicted to increase from currently approximately € 140 million to around € 210 million. Furthermore, space debris can re-enter the atmosphere. On average, more than one object per day has done so since 1957, and 90 per cent of re-entries happen in uncontrolled manner. Most debris hits the earth far from inhabited areas, but nevertheless the re-entry of space objects poses a risk to citizens.

In order to protect space infrastructure and citizens, a European Space Situational Awareness (SSA) system is deemed necessary.[4] Collisions can be avoided by space surveillance and tracking (SST) activities that include three basic functions:

1. The *sensor function* includes identifying and tracking with radars and telescopes;
2. With the *processing function,* collected data are catalogued and analysed to determine the probability of collision or re-entry paths of space objects;
3. The *front-desk function* provides alerts to satellite operators and authorities.

These activities can serve both civil and military users. Hence, the information gathered is highly security-sensitive and "SST sensors need to remain under national control" (IA, p. 22).

Currently, Europe has no SST service. 'Existing sensors do not have adequate capacity to identify and track objects in space, they are not linked so that they can be used as a network, there is no adequate processing capacity in place and there is no front-desk function' (IA, p. 12). There is no operational global system for SST either. Europe thus depends on the SST system of

[4] While SSA includes the protection of space infrastructure from collision with both space objects, such as satellites or space debris, and Near Earth Objects, such as asteroids and meteoroids, the impact assessment in question only considers the threats resulting from space debris. Moreover, the IA deals only with SST activities targeting a risk reduction in the short-term, which are considered supplemental to long-term measures such as protecting satellites, removing space debris and preventing the creation of space debris.

the US Air Force that has the most extended sensor network, processing capacity and provides alerts. However, the Commission explains that this US system is not accurate enough, causing unnecessary and expensive anti-collision manoeuvres.

• Objectives of the legislative proposal

The *general* objective of the proposal is to safeguard the long-term availability and security of European and national space infrastructures and services essential for the smooth running of Europe's economies and societies and for European citizens' security. The *specific* policy objectives are: i) to reduce the risks related to the launch of European spacecraft, ii) to assess and reduce the risks to in-orbit operations of European spacecraft in terms of collisions, iii) to enable spacecraft operators to more efficiently plan and carry out mitigation measures, iv) to survey uncontrolled re-entries of space objects into the atmosphere, and v) to provide more accurate and efficient warnings to reduce the risks for the security of European citizens and terrestrial infrastructure. These translate into a number of *operational* objectives.

• Range of the options considered

The IA considers a baseline scenario and four options for establishing a European SST service, which differ in terms of governance, funding and the degree of performance. All four policy options foresee the following:

- The EU sets up a governance framework building on existing national assets;
- All Member States that are ready to contribute SST capacities establish a consortium;
- The services provided include the sensor, processing and front-desk functions;
- The front-desk function is entrusted to an existing entity, such as the EU Satellite Centre;
- All data is considered classified by default;
- The budget is redeployed from existing programmes;
- The introduction of a service fee is possible.

Option 1: Baseline scenario
In the baseline scenario, the EU is not involved in SST activities. Bilateral cooperation among Member States may continue.

Option 2, 3 and 4: Partnership approach and risk reduction by a factor of 3 to 5
Option 2, 3 and 4 suggest a collision risk reduction by a factor of 3 to 5. In order to achieve this objective, one tracking radar, one surveillance radar and eight telescopes, involving a budget of € 60 million, are required.

Option 2: EU funding for the front-desk function
- Co-funding with Member States in the consortium bearing € 58 million, i.e. providing for capital investments and operation of the sensor function and the processing function;
- The EU providing € 2 million for setting up and operating the front-desk function.

Option 3: EU funding for operation of sensor, processing and front-desk functions
- Co-funding with Member States in the consortium covering € 50 million, i.e. providing for capital investments in the sensor function and the processing function;

– The EU providing € 10 million for operating the sensor and processing functions and for setting up and operating the front-desk function.

The IA identifies option 3 as preferred policy option.

Option 4: EU-led SST development and funding

– EU is the owner of the SST system;
– With the integration of existing national assets, the sensor function is a shared responsibility of Member States and the EU;
– The EU covers the totality of € 60 million for setting up and operating the sensor, processing and front-desk functions.

Option 5: EU funding and risk reduction by factor 10

Option 5 suggests a risk reduction by a factor of 10. This requires two tracking radars, two surveillance radars and 14 telescopes, involving a budget of € 120 million. The governance would be as under option 4, with the EU covering the totality of € 120 million for setting up and operating the sensor, processing and front-desk functions.

The Commission does not give reasons for choosing these four policy options presented in the IA. The particular levels of sharing the funding and the factors of risk reduction are introduced as given, disregarding alternative options with different factors of risk reduction and distributions of funding. For instance, no options with a risk reduction by a factor of 10 and shared funding are examined. Although 'the US signalled openness to strengthen international cooperation in this domain' (IA, p. 14), no option based on advanced cooperation with the United States is considered.

• Scope of the Impact Assessment

The analysis of impacts includes the assessment of strategic and governance impacts, i.e. strategic independence and knowledge, of economic impacts in terms of industrial returns and reduction of risks with economic impact, of social impacts as creation of jobs, citizens' security and health, and of environmental impacts. Because of their similar design, options 2, 3 and 4 are collectively assessed. 'The three options would in principle deliver the same impacts' (IA, p. 44). The assessment of impacts is followed by a good overview of strengths and weaknesses of the options and a comparison in terms of effectiveness, efficiency and coherence with agreed policies. The Commission concludes that 'option 3 has been identified as the preferred option in terms of effectiveness, efficiency and coherence with Member States political will and other EU policies' (IA, p. 53). The IA focuses on issues of national security and the positions of Member States.

As the issue of space debris is of a technical nature and supporting studies are available, the Commission could have based the assessment of impacts on a clearer grid of criteria and proceeded more systematically. The structure of the assessment is not clear, since general information is mixed with the description of impacts, future developments and calculations of economic loss are included in the problem definition, impacts are mentioned in the part on options and quantitative and qualitative analysis are not distinguished. Also, the options differ mainly in terms of funding, so that the IA seems to be a partial assessment of implications related to funding.

Concerning the assessment criteria, the relationship between consortium members and Member States not participating in the consortium is not addressed. Possible consequences of asymmetric membership of the SST system – 'France and Germany [having] declared readiness to form the nucleus for such a consortium on the basis of their existing assets' (IA, p. 32) – are not considered in any detail. The IA does not discuss a possible service fee, which could have implications for the funding and use of the European SST system, e.g. in comparison with the freely available US system. The inclusion of the ESA members Switzerland and Norway in the European SST system as well as a possible use by non-European actors are not evaluated.

- **Subsidiarity implications**

The IA does not consider subsidiarity implications. Space policy is a shared competence (Article 189 TFEU introduced by the Lisbon Treaty) and the IA only mentions that 'there is a political consensus among Member States that the setting up of a European SST service should be led by the EU' (IA, p. 6). No reasoned opinions, raising problems with the application of the subsidiarity principle, have been issued by national parliaments.

- **Budgetary or public finance implications**

As the policy options described in the IA primarily differ in their budgets and in the division of funding between the EU and Member States, budgetary and public finance implications are closely considered. The preferred policy scenario of option 3 implies a yearly budget of € 60 million, co-funded between the Member States, providing € 50 million, and the EU, providing € 10 million.

- **SME test**

No SME test is included in the IA. The Commission argues that 'SME participation [in the sector] does not require specific measures and is not expected to imply specific burdens' (IA, p. 46).

- **Stakeholder consultation**

In 2009, the Commission held bilateral meetings with national space agencies, ministries in charge of space matters and representatives of the European space industry. The support study for the impact assessment in question also included stakeholder interviews.[5] Further, conferences and events on space policy were organized. In addition, the Commission carried out a public consultation with 608 responses from 25 Member States. The IA concludes that 'there is a consensus amongst Member States, satellite operators and other stakeholders on the need to protect space infrastructure, and notably to protect it against the risk of collision' and that 'there is a political consensus among Member States that the setting up of a European SST service should be led by the EU' (IA, p. 6). Concerning the funding, all Member States favour complete EU funding of the SST service and at least of all operating costs. While manufacturing industry and commercial satellite operators advocate the highest level of investment and performance (option 5), Member States are in favour of options 3 and 4 and all 'signalled readiness to support option 3' (IA, p. 7).

[5] "Evaluation of options for an EU space programme 2014-2020", Booz & Company, 16 May 2011.

Four different parts of the IA deal with the stakeholder consultation, resulting in a lack of a clear overview. The focus evidently lies on the positions of Member States that can voice their views in the decision-making process. Opinions of the other stakeholder groups above are barely mentioned. The Annex to the IA does not include information on the results of the consultations, but only conference conclusions that only marginally concern the issue of SST.

- **Quality of data, research and analysis**

In addition to the support studies mentioned above, DG ENTR indicates that the IA is based on technical studies conducted by the ESA. The Commission acknowledges that there is a 'lack and fragmentation of available information, (case) studies or statistics which made it in many cases difficult to quantify the risks and potential losses linked to the problems identified' (IA, p. 42). Based on a study by Booz & Company, the IA focuses on the calculation of economic losses caused by the risk of collision. Nevertheless, the assessment of impacts is 'a mix of qualitative and quantitative impacts' (IA, p. 42), because 'it is not possible to quantify risks related to uncontrolled re-entries' (IA, p. 42). However, it appears to be predominantly qualitative and referring only to the study by Booz & Company as scientific basis.

- **Commission Impact Assessment Board**

The Commission's Impact Assessment Board (IAB) issued a first opinion on 20 April 2012. A second opinion was given on 12 June 2012. As recommended by the IAB, the problem definition and the baseline scenario were strengthened, the value added of setting up the EU framework has been included, new infrastructure development needs were defined and the design of policy options more clearly distinguished. Furthermore, a preferred option was indicated and expected costs were clarified. However, the IAB's demands for discussing Member States' divergent interests and previous failure of EU involvement in SST, including opinions of all involved actors, ranking the options and acknowledging trade-offs between different user needs and interests were not incorporated. Also the willingness of Member States to participate in the consortium, the relationship between involved and benefiting Member States, SME-related aspects, consequences for bilateral cooperation, risks of budgetary constraints and a possible downscaling of the system are not discussed in the final IA.

- **Coherence between the Commission's legislative proposal and IA**

The proposal seems to be coherent with the IA in terms of the establishment of a European SST system as foreseen in option 2 to 5. However, options 2 to 5 differ only in the amount of investment and the distribution of costs between the EU and Member States. The figure of planned investment and the shares of funding by Member States and the EU are not part of the decision proposal itself and the coherence with the IA result of favouring option 3 can thus not be verified. Nevertheless, the Annex to the proposal suggests a budget for the EU of € 70 million, which does not correspond to any of the options considered in the IA, but approximates option 4, which foresees a budget of € 60 million, with complete funding by the EU. In this case, the legislative proposal is not coherent with the impact assessment that favours option 3 with a co-funding, of € 50 million from Member States and EU funding of € 10 million.

Author: Joana Elisa Maldonado.

Impact Assessment Unit
Directorate G for Impact Assessment and European Added Value
Directorate General for Internal Policies of the Union (DG IPOL)
European Parliament.

This note, prepared by the Impact Assessment Unit for the European Parliament's Committee on Committee on Industry, Research and Energy, analyses whether the principal criteria laid down in the Commission's own Impact Assessment Guidelines, as well as additional factors identified by the Parliament in its Impact Assessment Handbook, appear to be met by the IA. It does not attempt to deal with the substance of the proposal. It is drafted for informational and background purposes to assist the relevant parliamentary committee(s) and Members more widely in their work.

This document is also available on the internet at:
http://www.europarl.europa.eu/activities/committees/studies.html

To contact the Impact Assessment Unit, please e-mail: impa-secretariat@ep.europa.eu .

Manuscript completed in July 2013
Brussels © European Union, 2013.

ISBN 978-92-823-4656-3
DOI 10.2861/30283
CAT BA-03-13-344-EN-N