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Editorial

Dear Colleagues,

The first semester of 2017 was an extremely productive period for the Institute: ESPI staff organised and took part in a considerable number of space-related activities, including three evening events in conjunction with the sessions of the UN COPUOS, the 19th European Interparliamentary Space Conference, the joint ESPI-ESA Conference on Space and SATCOM for 5G, as well as joint ESA-ESPI workshop on Space Data and Cloud Computing Infrastructure at ESRIN, in addition to a number of presentations and lectures in relevant European institutions. An overview of all these recent activities is provided within this Newsletter.

Along with the multitude of activities organised in and outside of ESPI, over the last six months, the Institute published a Report on “The Governance of Galileo”, and seven new issues in the ESPI Executive Briefs series. ESPI staff also published relevant articles and analyses within conference proceedings and the specialised press.

Furthermore, within the next few months ESPI will be publishing four new projects on the topics of the rise of the private actor in space, India’s space programme, Europe’s role in space security, national space legislations, and European launchers. A description of other ongoing and upcoming activities planned by ESPI as part of its Workplan 2017 is also provided within this Newsletter. Finally, the Newsletter provides a list of upcoming events and opportunities available at ESPI. We wish you nice reading!

The ESPI Team

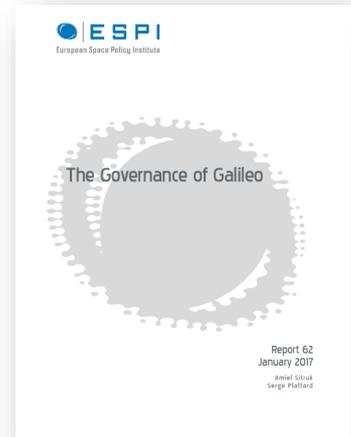
Recent ESPI Publications

ESPI Reports

Report 61: The Governance of Galileo

by Amiel Sitruk and Serge Plattard,

The initial services of Galileo have been declared on 15 December 2016. In the new context of system exploitation, this report proposes alternative governance schemes tailored for this new phase of the programme. The report begins with an identification of the political, economic and technical challenges faced by the governance of Galileo. It then provides an extensive analysis of the current state of play, based on three components - the EC, ESA and the GSA. The complexity of this state of play is such, that it could be problematic, or suboptimal, for the exploitation of the system. The third part of the report consists in the identification of those governance issues, classified in six categories: transversal, exploitation, security, international relations, marketing development, and system evolution. Those elements are finally used to build three scenario schemes tailored for the future governance of the programme.



ESPI Briefs

February 2017

Brief 9: Europe: Out of the Box

March 2017

Brief 10: Italy-China Collaboration

Brief 11: Delimitation of Outer Space

May 2017

Brief 12: Making Exploration Great Again

June 2017

Brief 13: Are We on the Verge of Suborbital Flight?

Brief 14: Satellite Data to Monitor International Agreements

July 2017

Brief 15: About the Enthusiastic Multiplication of Spaceports Worldwide



External Publications by ESPI Staff

Aliberti, Marco. "Revitalising Europe-India Strategic Partnership: The Role of Space". ORF Space Alert Vol. 5 (2): April 2017

Aliberti, Marco. "Sopra il Cielo: il Programma Spaziale Cinese tra Industria 4.0 e Geopolitica". Orizzonte Cina Vol. 8 (1): January/February 2017

Froehlich, Annette. "Treaty of Lisbon and its consequences for the ESA-EU-relationship: from Luxembourg to Lucerne". ZLW, German Journal of Air and Space Law, 2017, pp. 48- 57.

Froehlich, Annette. "Utilization – Consumption – Appropriation: Asteroid Mining is in the Pipeline". ZLW, German Journal of Air and Space Law, 2017, pp. 268- 281

Froehlich, Annette. "The US Space Act and Luxembourg's project for a new space law on the exploitation of space resources". Revue Française de Droit Aérien et Spatial, 2017

Plattard, Serge. "Enablers / Operating in a safe, secure, and sustainable space environment". The 2016 UCL Space Policy Workshop, Workshop Report, March 2017

Recent Events

24-25 January 2017. **ESPI at the 9th Annual Conference on European Space Policy in Brussels**

On 24-25 January, ESPI Director Jean-Jacques Tortora, and ESPI Resident Fellows Serge Plattard, Cenani Al-Ekabi, and Alessandra Vernile participated in the 9th Annual Conference on European Space Policy discussing a “Space Strategy for Europe: the road ahead” in Brussels, Belgium. Within six sessions, high-level Policy and Industry stakeholders discussed the European Commission’s new EU Space Strategy and New Space in light of competitiveness, service connectivity and economy, diplomacy, and defence; also addressed was Europe’s evolving SatCom industry and means in which the EU should help to facilitate and fund the future space market.



ESPI Director Jean-Jacques Tortora moderated two sessions during the event: the Fourth Session on ‘Space as key tool at the service of the European Security & Defence Policy’; and the Fifth Session on ‘A fully evolving European SatCom industry addressing new technological challenges and new needs.’ A closing address was given by former French minister for Research and Space, and incoming member of ESPI Advisory Council, Geneviève Fioraso.

The conference was organised by Business Bridge Europe, under the high patronage of: the European Parliament; the President of the European Commission, Jean-Claude Juncker; and the Vice Prime Minister and the Minister of Foreign and European Affairs of the

1 February 2017. **ESPI presents its activities at UN COPUOS**

At the 54th session of the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS) STSC, ESPI presented its on-going project on the Group of Latin America and Caribbean Countries (GRULAC), which is one of the five regional groups at the United Nations representing 17% of all UN members.

At the UNCOUOS, one of the largest Committees in the UN, 14 of its 83 member states belong to GRULAC. A detailed analysis on the space situation in Latin American countries and ways of interaction with European space partners was presented by Annette Froehlich, ESPI Resident Fellow. The presentation was well received by the subcommittee, with special mention by the representative of



1 February 2016. **ESPI Evening Event “India in Space: The Forward Look to International Cooperation”**

On 1 February 2017, ESPI hosted an event on the topic “India in Space: The Forward Look to International Cooperation” at the margins of the third day of the 54th session of the Scientific and Technical Subcommittee of UNCOUOS. As ESPI prepares to publish a book with a focus on the Indian space programme and the potential for stronger future space cooperation between India and Europe in the space sector, this event highlighted those areas of cooperation that can prove mutually beneficial in the future on the basis of already existing collaborations between the world’s largest democracies. Other key topics such as finding and building on common ground as well as overcoming hurdles that may inhibit a fruitful partnership were also discussed.



Five speakers, representing the Indian-, European-, French-, Italian- and German Space Agencies, contributed their valuable insights following the welcome address and introductory speech by ESPI Director Jean-Jacques Tortora: Imtiaz Ali Khan, Space Counsellor and ISRO Liaison Officer in Europe, Jean-Charles Bigot, ESA Administrator for International Relations, Celine Bouhey-Klapisz, International Relations Advisor at CNES, Sveva Iacovoni, Head of Multilateral Relations Office at ASI, and Marc Jochemich, Regional Manager at the International Cooperation Unit of DLR.

Following the presentations, this well-attended event involved an enthusiastic discussion with the audience moderated by ESPI

Director Jean-Jacques Tortora.

8 February 2017. **ESPI presents on UNISPACE +50**

At the 54th session of the COPUOS STSC, on the 8 February, ESPI Resident Fellow Dr. Stefano Ferretti presented ESPI Report 60: “Engaging with Stakeholders in Preparation for UNISPACE+50”.



The ESPI presentation focused on the implementation of the UN Agenda 2030, presenting the outcomes of the 10th ESPI Autumn Conference “Space for Sustainable Development” and other relevant discussion fora with relevant stakeholders. This collective effort of Stefano Ferretti, Jean-Jacques Tortora, Elisabeth Veit and Alessandra Vernile, also looked forward to the upcoming UNISPACE+50 conference, which aims at giving new impulse to the mandate of the COPUOS for the years to come. The presentation was very well received by the subcommittee delegations.

20-24 February 2017. **ESPI contributes to a Master Course on Space Studies**

From 20 to 24 February 2017, Dr. Annette Froehlich lectured at the University of Cape Town for the Master in Space Studies and its course “Space and Society”. The course was attended by students from various African countries and African space agencies.

The module in which Dr. Froehlich lectured covered legal aspects, economic issues of space activities and space policy related issues. The team project of this year was the redaction of a “Position Paper on Integrated Space for African Societies” to support decision makers in African countries. During her stay in South Africa, Dr. Froehlich also gave a talk on “international space law and current challenges” at the Space Engineering Academy at Somerset West.



16-18 February 2017. **ESPI Participates at the 3rd ORF Kalpana Chawla Space Policy Dialogue**



From the 16th to 18th February 2017, ESPI Director Jean-Jacques Tortora and ESPI Resident Fellow Marco Aliberti participated, in their capacity as Dialogue Sponsors, in the 3rd ORF Kalpana Chawla Annual Space Policy Dialogue in New Delhi.

The Observer Research Foundation (ORF) – a leading Indian think tank providing

independent and in-depth analyses to diverse decision-makers in governments, business communities, and academia – organises this annual policy dialogue in honour of Ms. Kalpana Chawla, the first Indian-American woman in space, with the aim of highlighting the success of India’s cooperation with all the major spacefaring powers and creating a global platform for exchanging views on space issues.

The third edition of this annual space policy dialogue, held over two and half days and attended by more than 50 speakers from around the world, included nine broad panels covering the topics of space finance, India’s private players, Satellite internet for Digital India, Transponder capacity for broadcasting and broadband over India, Derivatives from space, Emerging space actors, Collective governance of Global Commons, Current and evolving challenges to space sustainability, Role of satellites in HA/DR contingencies, Making the case for India’s national space policy.

The ESPI Director participated in the panel “Current and Evolving Challenges to Space Sustainability” and provided a comprehensive assessment of the many outstanding issues in the current space governance and the major threats to long-term sustainability. Mr. Aliberti took part in the panel “Making the case for India’s National Space Policy and discussed the importance of having a declared and comprehensive space policy as a tool for unlocking the full potential of international cooperation between India and Europe.

The programme, presentations and videos of the event can be accessed here: <http://www.orfonline.org/kspacedialogue/>

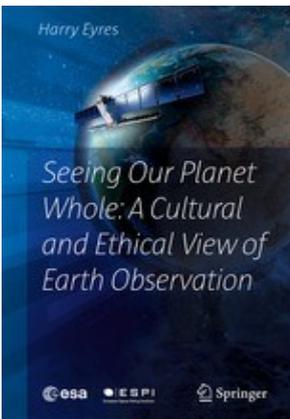
17 March 2017. **ESPI-GRULAC meeting on the Delimitation of Space**

On 17 March 2017, ESPI Resident Fellow Annette Froehlich and David Nader hosted representatives from Embassies and Permanent Missions from Latin American Countries based in Vienna to discuss the delimitation of outer space.

This issue has been debated at COPUOS for over half a century. Following a brief presentation to review the topic and highlight various approaches to the matter, discussion ensued and various open questions were addressed.

28 March 2017: **ESPI Evening Event: "Seeing Our Planet Whole: The Cultural and Ethical Implications of Earth Observation"**

On 28 March 2017, ESPI hosted its traditional evening event at the margins of the Legal Subcommittee of UNCOPUOS. This year's event was dedicated to the presentation of Harry Eyres' book "Seeing Our Planet Whole: The Cultural and Ethical Implications of Earth Observation" (Springer, 2017), which came out of a collaboration with ESA and ESPI where he was a part-time Senior Fellow.



In this book, Harry Eyres – a well-acclaimed journalist and writer – poignantly shows how our new-found ability to observe the Earth from "the necessary distance" through the use of satellites not simply provides relevant socio-economic benefits, but also carries wide and profound cultural and ethical implications, in particular for protecting the environment by monitoring the effects of climate change.

The well-attended evening event was opened by a keynote speech of the ESPI Director Jean-Jacques Tortora, who set the scene for Harry

Eyres' presentation by providing an overview of the overarching topics covered in the book and of the increasing relevance of Earth Observation. Following this, Mr. Eyres, offered a new and timely perspective on the debate on climate change and other environmental concerns by showing how satellite earth observation can transform our knowledge, understanding and feelings. In doing so, he provided a uniquely board view of Earth Observation by linking it to major topics such as the evolution of environmental ethics, the aesthetic potential of earth observation and the implications for environmental democracy of the free and open access policy for EO satellite data.

27 March 2017. **ESPI presents its Galileo report at the GSA in Prague**

On 27 March 2017 ESPI was invited to present its report 62 on the "Governance of Galileo" to the administrative board of the GSA, the European GNSS Agency.

This presentation was given by Jean-Jacques Tortora, ESPI Director, and Serge Plattard, ESPI Senior Resident Fellow, in GSA premises in Prague, Czech



European
Global Navigation
Satellite Systems
Agency

Republic.

28 March 2017. **ESPI Presents at UN COPUOS**

At the 56th session of the UNCOPUOS Legal Subcommittee, Dr. Annette Froehlich presented the on-going project with the Group of Latin America and Caribbean Countries (GRULAC) offering a detailed analysis of the space situation in Latin American countries. The presentation was well received by the subcommittee, with special mention by various delegations. In addition to the report, the ESPI-GRULAC cooperation comprises monthly meetings on space activities related to the work of COPUOS .

2 May 2017: **ESPI lectures at SIOI in Rome**

On 2 May 2017. Dr. Annette Froehlich, Senior researcher seconded by DLR (German Aerospace Center) to ESPI, lectured in current space law and policy challenges at the "Master in Space Policy and Institutions" in Rome organised by SIOI, the Italian Society for International Organization.

The programme of the Master in Space Policy and Institutions comprises four major modules: scientific aspects, legal topics, policy and institutional relations, socio economic affairs and industrial items.



5 May 2017. **ESPI presents at the TOChina Spring Seminar in Torino**



On 5 May 2017, ESPI Resident Fellow Marco Aliberti was invited to deliver a lecture on the international dimension of China's space activities at the University of Torino. The lecture was part of the Spring Seminars that the university holds every year in the context of its Master's degree in International Studies. Together with Prof Wang Guoyu of the Beijing Institute of Technology and Prof Wu Xiaodan of the Central University of Finance and Economics, Mr. Aliberti discussed the current status and future potential of Europe-China Space Cooperation, by highlighting the need to transform political constraints into more pro-active policy action.

On the same day, Mr. Aliberti, participated in a Stakeholder Roundtable convened by the TOChina Hub on the topic of Sino-Italian cooperation in the space domain. The TOChina Hub is a joint research & training platform established by the University of Torino, the Torino World Affairs Institute (T.wai) and ESCP Europe Business School. This informal closed-door gathering saw the participation of approximately 20 interlocutors from the academic, corporate and institutional domains. Introductory remarks were offered by the speakers, which subsequently engaged in an open conversation with the roundtable's participants.

In conjunction of these well-attended events, T.wai released a special issue of OrizzonteCina dedicated to the Chinese Space Programme. ESPI Resident Fellow Marco Aliberti contributed with a piece entitled "All Above the Heaven: China's Space Programme Between Industry 4.0 and Geopolitics", in which he addresses recent and upcoming developments of Chinese space activities in light of Beijing's industrial policies and

13 June 2017. **ESPI Evening Event: "Space Security: Some Perspectives"**

On 13 June 2017, ESPI hosted its traditional evening event at the margins of the Plenary session of UN COPUOS. This ESPI evening event aimed to shed light on the current initiatives meant to maintaining a safe, secure and sustainable environment for outer space activities, a multifaceted challenge growing in complexity, requiring convergence on a plethora of technical, policy, legal and political issues.

To set the scene and provide up to date information on the status of a number of ongoing initiatives, three speakers gave their views starting with an overall approach: Serge Plattard, ESPI on "Safe, secure, and sustainable space activities: for how long?", moving to a specific Conference on Disarmament topic; Guoyu Wang, Beijing Institute of Technology, dealing with "What flaws in the PPWT? The way forward for arms control in outer space", and to one of the major subjects addressed currently by the COPUOS; and Peter Martinez, University of Cape Town / Chair UN COPUOS working group on long term sustainability of space activities) about "Ensuring a long-term sustainability of outer space activities. The role of UN COPUOS".

2 June 2017. **ESPI-GRULAC Meeting**

On 2 June ESPI's Dr. Annette Froehlich and Vincent Seffinga organised the ESPI – GRULAC space meeting for representatives from Embassies and Permanent Missions from Latin American countries in Vienna. The meeting was co-hosted by the Peruvian Embassy to discuss the use of satellite data to monitor international agreements. The meeting started with a brief presentation which gave an overview of the current use of satellite data to monitor international agreements, the use of satellite data before the International Court of Justice and examples of international agreements which could make use of satellite data to monitor whether the State Parties fulfil their obligations and commitments. Thereafter, a number of questions were addressed in a discussion between the participants. The ESPI – GRULAC space meeting will from now on be extended beyond GRULAC to include the

27 June 2017. **ESPI Presents at the National Defence Academy**

At the occasion of the Vienna Conference on Strategy, Dr. Annette Froehlich gave a talk on the strategic use of outer space at the NDA (National Defence Academy). The presentation highlighted the use of outer space from the times of the cold war and its strategical-political use for ideological purposes. Potentially harmful consequences of space activities for the long sustainable use of outer space



13 June 2017. **Student Visit from the ASI-SIOI Master**

On 13 June ESPI hosted a group of students from the Master in Space Policies and Institutions programme organised by the Italian Space Agency (ASI) and Italian Society for International Organization (SIOI).

In the framework of their professional visit to Vienna, the students visited ESPI and received a presentation of the Institute activities by ESPI Director, Jean-Jacques Tortora, and the Coordinator of Studies, Sebastien Moranta. Following this, four ESPI Resident Fellows presented their activities: Alessandra Vernile on her report “The rise of the private actor”; Serge Plattard on “The Governance of Galileo”; Stefano Ferretti made a presentation of the report “Engaging with stakeholders in preparation of UNISPACE +50”; Matteo Tugnoli presented its upcoming report “European access to space”.

Finally, a presentation of the activities of the Space Generation Advisory Council (SGAC), was given by SGAC Executive Director Minoo Rathnasabapathy.

7 July 2017. **ESPI-ESA Workshop on Space Data and Cloud Computing Infrastructure**

On 7 July, ESA and ESPI jointly organised in ESRIN a one-day Workshop around the topic of policies and regulations for Space Data in cloud computing infrastructures. The Workshop gathered more than 70 participants, from European Institutions and Organisations, to space agencies, aerospace companies, cloud services providers as well as start-ups working with space data, space science researchers and legal experts on data policies.

The opening session was kick-started by Josef Aschbacher, ESA Director for Earth Observation, followed by a keynote speech read by the ESPI Director Jean-Jacques Tortora. This high-level policy session continued with a joint presentation by Nicolaus Hanowski, Head of Ground Segment and Mission Operations Department in ESA/EOP and Daniel Quintart, Policy and Legal Expert at EC DG GROW, and concluded by an intervention from Martin Kessler, Head of Operations Department, ESA/SCI. The first session was then dedicated to give an overview of experiences, challenges and needs of users of cloud infrastructures across the astrophysics, Earth Observation as well as fundamental physics communities. In the afternoon, the second session presented the perspective of major cloud computing commercial providers and publicly-funded partnerships. Finally, a roundtable among selected speakers provided reflections particularly around the question “What are the key challenges in terms of policies, regulations and general legal aspects to pave the way for optimal technical solutions?”.

27-28 June 2017. **ESPI-ESA Conference on Space and SATCOM for 5G—European Transport and Connected Mobility.**

ESPI and ESA jointly organized in Brussels the conference “Space and SATCOM for 5G - European Transport and Connected Mobility” on 27-28 June 2017. In preparation of this event, ESPI participated to a roundtable with industry at ESA, which led to the signature of a joint statement by ESA and 16 satellite industry on collaboration over “Satellite for 5G”, signed at the Paris Air and Space Show. The subsequent Brussels Conference was attended by distinguished representatives from the European Parliament, European Commission (DG-CONNECT, DG-MOVE and DG-GROW), Space Agencies, industry and operators and by representatives of the transport sector at large. ESA was represented by a wide delegation led by TIA Director, Magali Vaissiere, and the Head of the Programme Officer, Hermann Ludwig Möller, while ESPI was represented by its Director, Jean-Jacques Tortora, and Resident Fellow, Stefano Ferretti.



The various speakers shared a sense of urgency for a coordinated action and encouraged to develop transparent solutions to the users, enabling ubiquitous connectivity to all citizens. Policy aspects were debated underlining the advantages of satellites and the need that these are well understood by all stakeholders, to avoid that European policies are not too fiber-centric, in particular the ones being developed for the Digital Single Market.

The European Strategy on Cooperative Intelligent Transport Systems was described as a milestone towards cooperative, connected and automated mobility. Several aspects of the transport were discussed, covering future road transport, 5G railways connectivity, future smart cities and connected mobility. Both the transport associations of users and automotive parts manufacturers presented their views on potential ways forward as well as joint partnerships with the space stakeholders.

Ongoing and Upcoming ESPI Activities

Projects Under Publication

The Rise of the Private Actor in the Space Sector

Project led by ESPI Resident Fellow Alessandra Vernile

A much discussed phenomenon in recent times has been the rise of the private actor in a domain that historically has been dominated by state activity, at least outside telecommunication. Entrepreneurs like Elon Musk have shaken up views on how and who to do things. Although the private actor in the US is not as independently and extensively involved as the public debate would have it, an asymmetry is evolving with more and more prominence given to the private actor in the United States, with Europe in a middle position, and many emerging space-faring nations (and Russia) being firmly in the traditional 'state activity' camp.

This project aims to offer a thorough understanding of the current state of play by: searching and collecting relevant information and data available publicly on the topic of the "rise of private actors in space"; organizing and consolidating this information into homogeneous and coherent themes; identifying the main stakes and challenges for space policy actor; and formulating recommendations for future space policy research. The scope of this study is intentionally kept broad to encompass all trends, including political, financial, legal and technological trends, driving or resulting from the rise of private actors in the space sector. Given the nature of the new dynamic, the study focuses predominantly on emerging private actors in the upstream part of the space value chain. Finally, and from a geographical perspective, the study covers essentially the situation in the US and in Europe where the rise of private actors is principally taking place.

India in Space - Between Utility and Geopolitics

Project led by ESPI Resident Fellow Marco Aliberti

The project starts out by looking at the historical path of India in space and where this path has crossed those of external partners. It will then look at India's rationales for engaging in space with a narrow focus, and how the support for the narrow focus was structured politically. The change in approach of recent years will thereafter be analyzed in the context of the changing geopolitical situation and in the context of domestic Indian politics. The study will conclude with an extensive analysis of India's path forward, the toolbox India has at its disposal for indigenous versus cooperative endeavors, how India can be assumed to choose its partners, and in which fields, and to which extent India is being driven towards a rethink of its strategy by the glaring light of China's ambitions, not only in exploration, but through the use of tools such as APSCO.

Given the shared democratic values of India and Europe one would assume that there is fertile soil for far more extensive cooperation between them. And India's demographics and current strong path towards prosperity spell mutual opportunity. Surely Europe cannot afford to ignore a future behemoth! A central part of this final analytical part will be to see what the opportunities of Europe are to create mutually beneficial cooperation with India, both at the pan-European and individual nation level, and to which extent Europe can be a catalyst also for broader multilateral cooperation.

National Space Legislation: A Comparative and Evaluative Analysis

Project led by ESPI Resident Fellow Annette Froehlich

The report informs the reader of the current existing national space legislations, the approaches taken therein by the various States and the underlying rationale for those approaches. Furthermore, it provides an analysis of the different approaches. Based on these analyses, the approaches will be considered in a European context with the aim to inform and provide guidance for European States seeking to adopt or revise national space legislation.

Ongoing ESPI Studies

Space for Society

Project led by ESPI Resident Fellow Stefano Ferretti

The challenge of space for society has clearly been taken up by ESA DG through its Space 4.0 initiative. As a matter of fact, new innovation models are increasingly spread across sectors and disciplines, including Space, which is becoming an integral part of many societal activities (e.g. telecoms, weather, climate change and environmental monitoring, civil protection, infrastructures, transportation and navigation, healthcare and education).

Building up on the outcomes of ESPI studies “Europe in the future and the contributions of Space”, “Space for Sustainable Development”, and “Challenges and Opportunities for Space in listening to the field”, it is clear that it is timely to have a fresh look at the wider perspectives and strategies to be implemented in actionable programmes in the coming years. The project will review the achievements of the ESA Ministerial Conference and of the EC Space Strategy for Europe, and propose a roadmap, involving key stakeholders and representatives of the civil society in selected areas, in order to map out the available options and summarize the ideal programmatic conditions for successful implementation. Special attention will be given to ways to improve the dialogue with NGOs and civil society so as to make them aware of the potentialities of space, and how Space actors may listen to the field and collect its needs, in order to fully design, implement and exploit future space programmes. For example, it will be investigated how new Copernicus services will capture citizen’s needs, and to what extent targeting sustainable development may open up opportunities for Europe to play a new role worldwide. It will be assessed how Galileo may be used beyond its original intent, addressing new needs and services (e.g. new vehicles like drones and self-driving cars). Satcoms are also on the verge of an evolution with the emergence of new applications related to the connectivity of objects, together with the emergence of high-flying drones or balloons to potentially provide link to underserved areas. Thus, the project will consider the conditions to be met so as to ensure that satellite operators will be able to come up with competitive new connectivity concepts and business cases, with mobile applications and innovative services to be made available to the users at an increasing pace.

Hence, the report will identify how space is increasingly becoming the link among systems of systems, and how its enabling function may therefore represent the new element actively contributing to a sustainable future.

European Access to Space: Addressing full spectrum capabilities

Project led by ESPI Resident Fellow Matteo Tugnoli

With the approval of the Ariane-6 programme, Europe has initiated the development of a new launcher that will provide Europe with a competitive offer for all medium-range launch service needs. This project will then focus on the two ends of the market: small and super-heavy launchers. The recent evolution of worldwide launch records clearly demonstrates the dramatic increase of the number of micro-satellites projects, although Europe seems to be still lagging behind in this matter. The question then is to analyze the structure of the associated launch service market. As a matter of fact, the strategy for launching most of these satellites is mostly based on piggybacking or on launch in batches. From an economic standpoint, this raises the question of the existence - or not - of a market for small launchers dedicated to microsats. Then the question is to devise whether such market could be handled on a purely private basis or if there are any governmental stakes that might justify a public initiative in this domain.

At the other end of the spectrum, the foreseen discontinuation of Ariane-5 will leave Europe without any heavy-launcher capabilities. This implies that it would rely on non-European sources to provide for the transportation segment for all future potential space exploration endeavors, including the Moon village currently promoted by ESA. The project will thus consider all the various options available to mitigate such reliance, from an increased role of private actors to new schemes for international cooperation in this area traditionally not open to cooperative schemes.

Ongoing ESPI Studies

Looking for an Enhanced Role of Europe in Space Security

Project led by ESPI Senior Fellow Serge Plattard

The project will embrace the various current concerns regarding security of access and security of operations in space, their treatment within the established venues, and offer possible lines along which Europe could be key to unlock the standstill situation on the matter. After analysing recent reports dealing with this topic and going through a number of interviews, the study will come up with a set of concrete recommendations and propose initiatives regarding short and medium term European space policy evolution in these matters in terms of debris mitigation, in-orbit avoidance and space weather forecasting.

The report will particularly highlight the necessary continuity from Space Surveillance and Tracking (SST) to Space Situational Awareness (SSA) and ultimately to Space Traffic Management (STM), and will reflect on the institutional as well as technical means necessary to ensure a consistent implementation of the required regulations. The dual nature of the threats currently dealt with separately by the Conference on Disarmament and the COPUOS will be analysed in detail. Indeed this institutional allocation is a major stumbling block preventing real progress towards tangible solutions enhancing space security.

Legal Implications of Active Debris Removal

Project led by ESPI Resident Fellow Annette Froehlich

The Space Debris Mitigation guidelines were elaborated at various levels to avoid space debris or to reduce potential space debris in the course of future space missions. Even if this is a good initiative for a long sustainable use of outer space, it is vital to resolve the problem of the existing space debris in outer space as well. From a scientific and technical point of view various studies are ongoing to analyse the feasibility of active debris removal. Nevertheless it has to be highlighted that outer space is an international area where various actors with different legal and political concepts are operating, a situation that leads to different approaches concerning such activities.

The project will therefore analyse the various legal and political concepts to ensure a peaceful use of outer space, which is of utmost importance to ensure a pragmatic approach to the resolution of this issue. This might also lead to a better understanding and acceptance of the European initiative of the International Code of Conduct of Outer Space Activities.

Space Resource Utilization: A View from an Emerging Spacefaring Nation

Project led by ESPI Resident Fellow Annette Froehlich

This publication for the first time analyses the aspect of space mining from the point of view of developing countries, especially South Africa which is not only an emerging space nation, but also possesses vast amounts of natural resources, as is the case with many developing countries. Space mining is considered a brand new avenue which could bring along countless economic opportunities, yet it may have adverse impacts on the economies of emerging countries, which more often than not find themselves to be in politically and/or economically fragile situations. These countries very often have a history of exploitation of natural resources that led to civil unrest and conflicts. Realizing that mining has a profound impact on the national GDP, but also on the environment and physical well-being of workers, asteroid mining brings along an unprecedented challenge, thus fostering interest and prompting the need for new technologies and industries. It requires the political system, the public, educational institutions and media entities to increase their awareness of the emerging phenomenon of natural resource gathering in outer space. Policy leaders in particular should take advantage of this new domain and stimulate a debate on how this new activity may be beneficial to their own countries by assuming an active leadership position. The US has taken one of the first steps in assuming such a leadership position by adopting its US Commercial Space Launch Competitiveness Act, while other countries swiftly announced to follow suit; especially countries facing a scarcity of natural resources. It is time to take action; even for those nations currently in possession of a plethora of natural resources, as those highly demanded resources are expected to be exhausted within the next century.

Other ESPI Activities

ESPI Diplomatic Meetings

Project led by ESPI Resident Fellow Annette Froehlich

Taking advantage of the fact that ESPI is based in Vienna, where the UNCOPUOS sessions are held, this initiative has been set up to raise awareness on space topics among diplomatic staff to the United Nations. These so-called space meetings are more specifically drafted for colleagues from the diplomatic field from emerging space countries like GRULAC, African or GROUP 77 countries. The purpose is that they acquire knowledge in this field and transmit the information to the relevant ministries and institutions in their home countries. Focus is given on space law and policy, especially how space can improve daily life and how civil societies and citizens may benefit from space applications (education, health, e-government and disaster management etc.). The meetings are also covering agenda points of the UNCOPUOS sessions like 'Delimitation of Outer Space'. Additionally, these meetings are intended to highlight possible uses of space applications for the diplomatic field like the 'Use of Satellite Data to Monitor International Agreements'. This successful meeting started with a brief presentation giving an overview of the current use of satellite data to monitor international agreements, the use of satellite data before the International Court of Justice and examples of international agreements which could make use of satellite data to monitor whether the State Parties fulfil their obligations and commitments. Thereafter, a number of questions were addressed in a discussion between the participants. This space meeting was successfully co-hosted by the Peruvian Embassy. Therefore, those space meetings for diplomats continue to be co-organized by representatives of participating UNCOPUOS member states turning them in concrete example of space cooperation on international scale to foster space knowledge and understanding.

Global Space Law Essay Competition: Fresh view on the Outer Space Treaty

Project led by ESPI Resident Fellow Annette Froehlich

On the occasion of the 50th anniversary of the Outer Space Treaty, ESPI jointly organised together with the German Aerospace Center (DLR) and the Space Generation Advisory Council (SGAC) a "Global Space Law Essay Competition: Fresh view on the Outer Space Treaty". Students and young professionals were globally invited to submit a paper which offers a fresh view on the Outer Space Treaty. This fresh legal view, however, should not just be an interpretation or perspective in the interest of one or a minority of States. The new legal obligation or solution should take into account the needs and interests of the whole international community and thus should be able to gain the acceptance of said whole international community. This international cooperation initiative is intended to provide first scientific research experience. The most innovative, interesting or well-written papers are currently edited and will be published soon. Moreover, the selected papers will be used as working material to support the discussion of the 16th Space Generation Congress Working Group titled "Outer Space Treaty: The Next Fifty Years".

Opportunities to Publish

In its "Voices for the Space Community" series ESPI welcomes the submission of short papers, from both experts as well as young professionals, students and the general public, presenting a concise analysis on innovative ideas in the field of space policy. Topics can also cover the space economy, the societal impacts of space technology, outstanding issues in space law as well as space security, and more. To ensure a smooth review and editing process, which will be conducted on a joint basis with the author, we highly recommend not to exceed four pages in length, and to provide exhaustive references. We further invite authors to submit their paper using the template available at the ESPI website.

For further information, and to submit your "Voice", please write to: matteo.tugnoli@espi.or.at

ESPI Upcoming Events

11th ESPI Autumn Conference: “Innovation in the New Space Economy”

12-13 September 2017

ESPI, Vienna, Austria

For more information and registration, please visit the dedicated webpage:

<http://www.espi.or.at/11th-autumn-conference/about>

Other Upcoming Events

September 2017

14-15 September
Summit on Earth Observation Business
Paris, France

21-23 September
6th Space Generation Congress,
Adelaide, Australia

25-29 September
International Astronautical Congress 2017
Adelaide, Australia

November 2017

6-9 November
UN/UAE High Level Forum
Dubai, UAE

16-17 November
NewSpace Europe
Luxembourg City, Luxembourg

28-30 November 2017
2017 Conference on Big Data from Space
Toulouse, France

October 2017

10-11 October
The Climate Needs Space
Toulouse, France

18 October
Space: Innovation, Programs and Policies Summit
McLean, United States

24-26 October
Space Tech Expo Europe
Bremen, Germany

December 2017

5-7 December
The Space Commerce Conference
Houston, Texas

4-8 December
51st ESLAB Symposium - Extreme Habitable Worlds
ESA/ESTEC, Noordwijk, The Netherlands

11-14 December
UN/SA Symposium on Basic Space Technology
Cape Town, South Africa

Conferences, Symposia and Workshops organised by ESA
available at:

<http://www.congrexprojects.com/list-of-events>

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