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The Continuing Story of Europe and Space Security

A conference organized by Ifri and the Secure World Foundation

Brussels, October 4 and 5, 2010

Space Policy Program

The Institut Français des Relations Internationales (Ifri) is a research center and a forum for debate on major international political and economic issues. Headed by Thierry de Montbrial since its founding in 1979, Ifri is a non-governmental and a non-profit organization.
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This project was the result of a partnership between Ifri's Space Policy Program and SWF. Secure World Foundation (SWF) is a private operating foundation dedicated to the secure and sustainable use of space for the benefit of Earth and all its peoples. The Foundation has offices in Superior, Colorado, Washington, DC, and Brussels, Belgium.

PROMOTING COOPERATIVE SOLUTIONS FOR SPACE SECURITY

Disclaimer : the present report was prepared by Ifri and SWF and does not necessarily reflect the opinions of individuals.

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'THE CONTINUING STORY OF EUROPE AND SPACE SECURITY'

A conference organized by Ifri and the Secure World Foundation

in Brussels, on October 4 and 5, 2010

Conference Report

While European institutions continue to discuss the use of space for security as well as the need for a stable space environment, the United States organized a series of space reviews this past year. To explore these issues and foster an original debate, Secure World Foundation, with a newly established office in Brussels, joined forces with Ifri's Space Policy Program to organize a conference.

U.S. Space Policy: What has changed? (Keynote Speech)

Marcia Smith, President of the Space and technology Policy Group, LLC

In the opening speech of the conference, Ms. Smith analyzed the new U.S. "National Space Policy", presented by president Obama on June 28, 2010. She compared some of the most relevant changes made by the Obama administration to the priorities that guided space policy during the Bush years.

The Bush administration policy, she noted, had a nationalistic and often belligerent tone, somewhat dismissive of cooperation with other States. The Obama administration, on the other hand, has set to change the tone in which it presents its policy, interests and objectives. Two important events may have contributed decisively to this switch: the Chinese anti-satellite test of January 2007 and the financial crisis. The Chinese test was severely criticized for its militaristic implications and for causing space debris, but it surely got the message across that America was no longer in a position to consider itself an undisputed player in space – and it seems the Obama administration took the hint. The financial crisis reinforced the sense that it is not financially feasible for the U.S. to do it all on its own and that, in order to achieve great things, new partnerships must be created. The Obama administration has therefore developed a more outward-looking and inclusive space strategy that builds on a logic of cooperation with other nations and the promotion of a sense of shared responsibility to tackle common problems. For instance, the U.S. is now ready to consider discussion of international texts on space security, providing they are equitable, verifiable and in the interest of U.S. national security.

Past policies have not been entirely dismissed, however. The Obama administration still considers any purposeful interference with U.S. space systems unacceptable. It also reserves the right to develop control systems capable of preventing hostile interferences and weapon proliferation in space, to name only two examples. What changed is the way the current administration states its priorities and goals – the tone – and its willingness to create objectives and projects in which other nations are welcome to participate by providing both funding and knowledge.

The main challenge facing the current administration is how to execute a policy of this kind. Space policy is a sensitive issue and cooperation can be hard to achieve, even within the same country. The U.S. is itself a good example of that. For instance, the Obama administration's plan to develop a partnership between NASA and the (U.S.) private sector, in which the latter would come to play a leading role, has generated great controversy since Congress does not necessarily want to entrust this sort of know-how to someone other than public entities. The failure of "interagency partnering" between the Department of Defense (DoD) and the National Oceanic and Atmospheric Administration (NOAA) over the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) is another example. The Obama administration is considering putting an end to this concept of interagency partnering, though the costs of such a rearrangement would be staggering.

Dialogue with the audience:

- Ms. Smith stresses that while the U.S. military may be more willing to cooperate, some key elements of the U.S. space fleet can never be shared. The military and intelligence space posture review has been postponed until the National Space Policy is out. It is now expected for the beginning of 2011.

- Also, we should be aware that the export control regulation may be changing at last.

PANEL 1: THE EVOLVING MANAGEMENT OF SPACE ISSUES IN EUROPE

Moderated by Laurence NARDON, Head of the Space Policy Program at Ifri

With the participation of **Paul Weissenberg** (Director for Space, Security and GMES, EU Commission), **Claude-France Arnould** (Deputy Director-General, Crisis Management and Planning Directorate, General Secretariat, Council of the European Union) and **Xavier Pasco** (Senior Research Fellow, Fondation pour la recherche stratégique (FRS)).

Article 189 of the recently-adopted Lisbon Treaty made space a shared competency of the European Union and its Member States. This is bound to strengthen the role and action of the EU in terms of security and defense.

The EU and the Lisbon Treaty

Europe's history in space started long before the Lisbon Treaty came into force, namely with the establishment of ESA. The recent creation of an EU-level competency in space should in no way generate any sort of competition between ESA and the EU. Rather, the European Space Policy should be centered on cooperation with ESA, the Agency providing the technological basis upon which programs should be developed and implemented. The EU and ESA are have complementary roles, not competitive ones.

The Lisbon Treaty marks a milestone in the history of Europe and space, as the treaty gives the EU a role in crafting space policy for Europe. Space affairs will now gain a political dimension in Brussels and become an element of Europe's evolving political identity. Actions developed under this new competency of the EU should not be of a technical nature, but rather of a political nature. Also, a truly effective European Space Policy will not be possible unless we also add Member States to the equation and build a triangle of cooperation among the EU, ESA and Member States.

The Lisbon Treaty brought about institutional changes with the creation of a new Space Council. This new Space Council is a formation of the Competitiveness Council, and will replace the former Space Council, which was a joint meeting of the Competitiveness Council of the EU and the Ministerial Council of ESA. A Space Policy Working group was recently created to prepare future Space Councils. According to the new arrangements, the

EU will only take action if its decision has added value and does not create competition with ESA. Examples of good cooperation to be pursued between the EU and ESA can be seen in the work related to Galileo and GMES – Europe's flagship programs.

The creation of the EU-level competency brings new concerns to the agenda of European institutions. The EU can now actively pursue objectives related to security of space, namely through the development of a Space Situational Awareness (SSA) capability. In addition to monitoring space weather and establishing the orbits of space debris, the European SSA program will also monitor threats caused by Near Earth Objects (NEO). It is not meant to compete with the U.S. system, but rather to be complementary to it. Additionnally, the EU will also be looking at security from space – i.e. security in a broader sense, comprising not only military aspects but also concerns related to civil security or climate change.

Finally, article 189 mentions exploration as an EU objective, including R&D as well as missions. As stated before, this new competency is not to be read in terms of a mandate for Research & Development, a responsibility that belongs to ESA. Rather, it has a political significance.

The role of Space in the EU 'Common Security and Defense Policy'

Space systems are increasingly important in terms of providing operational support for EU missions of both military and civilian nature. The EU Satellite Center in Torrejon (EUSC), which responds to the High Representative for Foreign Affairs and Security Policy, has proved particularly useful in supporting military operations and has delivered good results. First examples of such missions include the recent EU operation in Chad, the Atalante mission against piracy in the high sea, and the EU Monitoring Mission in Georgia. In this area, cooperation with the U.S. is important. For instance, it would be beneficial to improve access of European actors to U.S. commercial imagery. Cooperation with the U.S. started during the recent soccer World Cup in South Africa.

However, space systems do not contribute much to the Common Security and Defense Policy (CSDP) yet. The EU must continue to actively pursue the creation and reinforcement of military-civilian synergies, in order to improve the capabilities of current space systems. However, it should not be fogotten that space is only one among many factors that come into play in improving security and defense capacities. Space is not a solution, it is a component in a system of systems.

Finally, Europe needs to improve the security of its space infrastructures. Considering that there is a wide variety of users who want to have access to space systems for distinct purposes, a number of challenging issues related to data protection, privacy rights and general misuse of information are brought up. The increase in the number of actors accessing these systems raises the potential for conflicts of interests.

The Organization of Military Space in Europe: Issues and Constraints

Recent progress in the management of space in Europe results from two primary motvations: 1) a public policy motivation that addresses space-related industrial development or environmental concerns that would be better covered by space assets; and 2) a more international and political motivation linked to the EU struggle for a political identity.

In addition to this, one should not forget that space and defense policy have been closely intertwined for years, so the management of space at EU-level will also take defense issues into consideration while trying to reinforce the EU defense policy.

When trying to manage the governance of space, the EU should take advantage of existing national programs. The latter can play a very significant role as they are already in place and functioning. The main challenge is how to integrate existing European-level systems - such as Galileo and GMES – with the national-level systems of France, Germany, Italy, etc. These countries are reluctant to pursue common defense policies and to share intelligence data. Other complications are brought by budgetary concerns; the different pace of institutional evolution on the one hand and industry programs on the other; and finally by issues of international cooperation.

There are four additionnal high-level obstacles. The uneven involvement of European countries in space policy makes their national systems very disparate in terms of capability (1) and in terms of available investment level (2). For example, very few European countries develop space-based early-warning systems. Obviously, a common governance structure for military space would be very difficult to put in place. Even the creation of a military-class data-sharing policy would be very sensitive (3). Current data-sharing policies in Europe involve exchanges rather than actual sharing. Finally, the availability of high performance systems remains limited (4) and is generally based on considerations of foreign policy. For instance, the development of high-resolution military earth observation systems is closely linked to the level of military external operations of a given country.

Another difficult issue is that future European space systems may have to serve both military and civilian users simultaneously. The different users and their distinct purposes could be potentially conflicting. The European Space Policy should be able to address issues of military security effectively, but also of civilian security.

In the end, the main obstacles the EU must address in its military space policy can be summed up in three simple dichotomies: national-level versus EU-level management of systems; civilian versus military concerns; public versus commercial assets.

Dialogue with the audience:

- Discussions between NATO and the EU will take place, but they are not relevant to space for now.

- One member of the audience wishes to emphasize the role of Member States in the conduct of the European Space Policy.

PANEL 2: SPACE FOR CRISIS MANAGEMENT, THE USE OF SPACE ASSETS IN THE AFTERMATH OF THE HAITI EARTHQUAKE

Moderated by **Agnieszka LUKASZCZYK** (Space Policy Consultant, Secure World Foundation).
With the participation of **John Bevington** (Senior Project Scientist, ImageCat), **Jörg Szarzynski** (Senior Expert, UN-SPIDER)), **Luca Del Monte** (Security Policy Officer, Security Strategy and Partnership Development Office, Director General's Policy Office, European Space Agency (ESA)).

The Use of Space Assets in the Aftermath of the Haiti Earthquake

Space systems can provide much-needed information in the management of crises. The Haiti earthquake of Januray 2010 was a good test of the usefulness of these assets. Within 48 hours, 50cm-resolution optical data collected by satellites allowed analysts to evaluate the extent of destruction extensively and accurately. This was a crucial source of information for post-disaster knowledge. This kind of data also proved useful in the medium-term as it provided a comprehensive assessment of recovery. In other situations, such as the floods in Pakistan, radar satellites are more useful.

An effective use of space systems relies on a few conditions. First, it is important to provide data explanations to make the information intelligible and useful to policy-makers and rescue teams on the ground. This implies a good level of investment in training and resources made available to analysts collecting and interpreting data. A good articulation and communication between information providers and the different end-users is key, so that analysts know exactly what kind of information to provide. The link between policy-makers and analysts must be forged in advance in order to create common goals and maximize the utility of space assets in crisis management.

WorldWide Responsive Space

The mission of the United Nations platform for SPace-based Information for Disaster management and Emergency Response (UN-SPIDER) is to collect space-based information and make it accessible to actors involved in crisis management. This UN platform focuses on technical assistance and training of personnel in processing and interpreting data. UN-SPIDER conducts its work based on international cooperation mechanisms such as the International Charter for Space and Major Disasters. It has offices in Vienna and Bonn and will soon have one in Beijing.

The creation of networks is a key concept to UN-SPIDER. Producing relevant information implies receiving inputs from different actors and systems around the world. Likewise, teamwork is also fundamental as expertise can only be created if actors with access to different assets and resources cooperate to build a final information product that is coherent and useful. UN-SPIDER organizes workshops and technical expert missions in the different regions of the world that might be affected by natural disasters, where they train people and engage in capacity-building activities.

In the future, the work conducted by UN-SPIDER could be much improved if there is an effort to integrate local and regional capacities in terms of data collection and information production.

The ‘Responsive Space for Crisis Management’ Project

Crisis management has gained a lot of attention within the Agency. ESA is currently studying the development of an architecture for crisis management based on the concept of “responsive space”. The project is called Global Integrated Architecture for iNnovative Utilisation of space for Security (GIANUS).

When developing crisis response and management systems, it is important to adopt a holistic approach. First, system developers should be aware of the existence of different users’ perspectives. ESA only has an observer status in the consultation process required to set up access to these system. It is however an enriching experience that helps making future systems more adequate. Second, system developers must take note of the kind of operational needs the system will have to respond to, in order to guarantee that the information produced will be of any use.

An effective crisis management system needs to guarantee access to services (1), sustainable and operational services (2), and a good response of space components (3). In the develoment of the GIANUS project, ESA has estimated that synergies will have to be developed with military assets, so as to fill capacity gaps and make the most of existing capacities. The creation and reinforcement of networks to maximize the utility of existing assets is also a priority. However, developing further gap-filling structures is also crucial. However, even if space can play a big role in crisis management, non-space assets continue

to be very valuable. An effective response to any crisis will ultimately depend on the capacity to develop an articulation between these two types of assets.

Finally, ESA should pursue cooperation with the European Defense Agency (EDA). Letters have been exchanged by the two institutions and ESA will provide assistance to EDA in the development of ISR means. Constraints related to the merging of military and civilian requirements may slow down the process to some extent.

Dialogue with the audience:

- Imagecat is a commercial company. When it provides imagery for disasters, The World Bank pays. Images are then provided free to the end-user. By definition, it is difficult to evaluate in advance the volume of help needed.

PANEL 3: TRANSPARENCY AND CONFIDENCE-BUILDING MEASURES (TCBMS) IN SPACE

Moderated by **Ray Williamson** (Executive Director, Secure World Foundation). With the participation of **Dick Buenneke** (Deputy Director, Space Policy, Office of Missile Defense & Space Policy, Bureau of International Security and Nonproliferation, U.S. Department of State)**, Lars Höstbeck** (Deputy Head, Division of Defence and Security Systems and Technology, Swedish Defence Research Agency (FOI)), **Jean-françois Mayence** (Head of the Legal Unit "International Relations", Belgian Federal Office for Science Policy).
This panel was conducted under the Chatham House rules of non-attribution.

How can we make countries less wary of each other so as to allow effective cooperation towards sustainable space?

What are TCBMs in Space?

Between 1957 and 1979, the issue of Transparency and Confidence-Building Measures (TCBMs) in space only concerned two actors: the U.S. and the USSR. Discussions were mostly bilateral and revolved around fears of the use of nuclear weapons and nuclear explosions in space; the use of orbital trajectories to launch missile attacks; and the improvement of recognition and targeting capabilities. Multilateral discussions took place between 1981 and 1994, as more and more States were brought into the discussion on space issues. After the end of the Cold War, talks gained a broader scope and became less focused on military security, bringing into the agenda issues related to commercial security, the physical security of systems as well as the security of services. The production of the UN Space Debris Mitigation Guidelines is a good example of an outcome of this broader discussion. More recently, however, the looming danger of an anti-satellite weapons (asat) arms race, with all the implications the use of such weapons could have in terms of space debris and threat to space systems, has highlighted the importance of higher-level actions in terms of confidence-building and transparency.

One way of devising Transparency and Confidence-Building Measures in space is to follow the life cycle of space systems: Pre-launch TCBMs (1) should include having a declared national space policy, conducting cooperative space programs and sharing information on planned activities; Launch-related TCBMs (2) would cover pre-launch

notifications, pre-launch demonstrations and the invitation of foreign observers to space launches. Post-launch TCBMs (3) could be the creation of a space traffic management system and of a database or register for space systems and possibly a cooperative space surveillance system; TCBMs for the decommissioning and re-entry of spacecrafts (4) could include re-entry notification and an active policy for the mitigation of space debris.

The actual implementation of such measures, though, is far more complicated than their conception. As of today, it seems very unlikely that a treaty for the "Prevention of an Arms-race in Space" (PAROS) can be adopted in the short-term. It may be possible however, to start discussions on an asat treaty.

Progress of the EU Draft 'Code of Conduct for Outer Space Activities'

The development of the EU draft Code of Conduct was initially a response to Russian and Chinese ideas sketched in a joint working paper presented to the Conference on Disarmament in 2006 (an actual treaty was proposed by the two countries in 2008). The idea for the Code stems from the Hague Code of Conduct on the prevention of ballistic missile proliferation, adapted to issues of space security and safety.

Other events stressed the need for more stability in space. The Chinese anti-satellite test raised concerns of an asat arms race; the collision of the Iridium and Kosmos satellites and the drifting of the Galaxy Satellite showed how acute the congestion in space has become. These different kinds of events reinforced the need for a new behavior in space, based on safety and security and guaranteeing the long-term sustainability of space in the face of a constant increase in the number of actors. It is worth mentioning that this Code began to be elaborated before the Lisbon Treaty was approved, so it was not a consequence of the new responsibilities the EU would have in space policy.

The Code of Conduct fills a gap in the present international regulatory framework for space and the protection of space systems. It could reinforce some of the existing initiatives by providing a new framework for the execution of those commitments. The Code establishes a number of cooperation mechanisms such as notification, registration, information-sharing and consultation procedures, with information being the keyword. It also plans the constitution of a database as a support for these procedures. The Code is a non-binding agreement and States will remain the central actors. Success will depend on their willingness to make the system work.

An added bonus for EU space officials was that the elaboration of this Code of Conduct gave them the rare opportunity to discuss security-related aspects, which are always contentious topics difficult to raise in other contexts. For instance, a difficulty in the elaboration of this Code was the need for consultation with the 27 EU officials on disarmament issues and for constant articulation with CODUN (the EU "Working Party on Global Disarmament and Arms Control"). Another difficulty was that this framework comes under the auspices of the EU's Defense and Security Policy –an entity not staffed with space

experts. Also, the Code does not give a significant role to space agencies or to the private sector and its impact on space operators is unclear.

Ultimately, the efficacy of the Code rests on voluntary information-sharing by participating countries. This may hinder or slow down the adoption of the Code by non-European space-faring nations. Finally, abiding by this new Code will require an unspecified amount of funding, which can also constitute an obstacle to its adoption by other countries.

International acceptance of Space TCBMs and of the 'Prevention of an Arms Race in Outer Space' Process

The Code of Conduct proposed by the EU is not restrained to the EU at all. The U.S. are giving it its utmost attention as it is in the interest of America - in the view of the Obama administration - to establish a common ground for all nations on the matter of space activities. "Mutually beneficial cooperation" is the word of order for the Obama administration in international matters, so much that even the concept of "collective self-defense" has been put forward by this administration, breaking away from a long tradition of American preference for a more independent and autonomous line in terms of security and defense. The current administration has stressed the need for a responsible and sustainable use of space, and is committed to actually implementing a new agreement on the matter, unlike what has happened with former proposals.

A framework promoting more transparency and confidence in space affairs is very well-regarded by the Obama administration. Accidents such as the collision between the Iridium and Kosmos satellites have the potential to trigger tensions between States, and the U.S. is seeking to mitigate the risk of mishap, misperception and misconduct. The handling of the collision by American and Russian authorities is cited as a good step forward towards more cooperation in space affairs. It started a space security dialogue between military officials, based on the exchange of procedures and notifications. This could be a model for future dialogue with other countries.

The Obama administration wants to go beyond a merely discursive support for TCBMs, and actually follow through an eventual agreement. They just received the new version of the EU Code proposal and are reviewing it. However, the U.S. does establish a number of conditions. First, it wants to make sure that space experts take an attentive look into any agreement so as to avoid committing to something nonoperational. Furthermore, any agreement must be not only equitable in terms of duties and responsibilities, but also objectively verifiable and in the interest of U.S. national security. This is quite difficult to define, especially when it comes to space weapons: what constitutes a space weapon? Therefore, a commitment from the U.S. to such an agreement will not be made easily, and the discussion of military aspects is likely to slow down the process.

Dialogue with the audience:

- Given the more cooperative spirit of the current U.S. administration, wouldn't it be possible to make the draft EU Code of Conduct stricter? Answer: We should proceed and not waste time. Possibilities of future evolution are mentioned in the Code.

- Is there a commitment to integrate the Code provisions into domestic law? Answer: No. This would be considered binding. However, in the spirit of the Code, domestic law should and will be adapted.

- What countries are involved in the Code project? Answer: The 27 countries of the EU are co-authors of the text. Other major space-faring nations have been consulted and we now have a modified version. This text will be presented at the UNGA session next week. The EU will not re-open negotiations, but adaptations may be possible.

PANEL 4: THE BENEFITS OF SPACE SUSTAINABILITY

Moderated by **Theresa HITCHENS** (Director, UN Institute for Disarmament Research (UNIDIR)).
With the participation of **Erwin Duhamel** (Head of the Security and partnership Development Office, Director General's Policy Office, European Space Agency (ESA)), **Lt Col Brandon Jaeger** (USAF, Joint Staff Space Policy Planner) and **Brian Weeden** (Technical Advisor, The Secure World Foundation).

The Benefits of a Stable Space Environment for the Military

"The only way to win is not to play". This quote of Sun Zu's "The art of War" pretty much sums up how the U.S. military views international relations and conflict in space. A stable environment is of major interest for the military. There are several reasons for this:

The fact that space has no territorial dimension and that the concept of sovereignty and the traditional defense prerogatives of States do not really apply in that environment make the development of any sort of deterrence strategy very troublesome. The concepts of deterrence in the air, on the sea and on the Earth do not transfer easily to space. It is, for instance, extremely difficult to determine the proportionality of a retaliation action in space. Besides, applying kinetic force causes debris and is therefore not an interesting military option.

Space is already a civilian environment where very expensive private and commercial vehicles are operating. Space congestion is an unavoidable issue that must be taken into consideration by any operator. As it happens, the military has no traditional experience in space traffic management since this is a job performed by specialized agencies.

These are some of the reasons why it is in the interest of the military to have a stable space environment where intentional and accidental collisions are avoided. For this, we need rules of the road. Attribution capacities are also of the essence: a high-level, "exquisite" Space Situational Awareness system (SSA) is needed. Another issue we should research is the means to destroy dangerous debris.

In conclusion, space stability translates into stability on earth as well. The military is interested in avoiding the development of a new conflict arena in space as this would be not only complex to manage, but the results would also be completely unpredictable. However, the U.S. cannot renounce the principle of applying force if needs be.

European Projects for Space Situational Awareness

Space is now so congested and exposed to so many sorts of man-made debris and near earth objects (NEO), that risks of collision are registered every week. ESA is currently looking at four projects that will merge to form a Space Situational Awareness (SSA) architecture. First, it is looking to develop a space survey and tracking system. This involves a catalogue registering satellites in space so as to better manage space traffic. Second come long-term studies of space weather conditions; third, a program concerning NEOs that should go into implementation phase; and finally a networking and data center.

ESA is developing the architecture of this SSA system of systems. This involves the assessment of existing capacities in Europe, the identification of capability gaps, and the definition of new systems and sensors – telescopes, radars, and satellites – that may be necessary. This will be presented at the next ESA ministerial conference. In parallel, a data policy defining conditions of access by users as well as a governance for the system have to be developed. The EU is in charge of this latter work. A good articulation between the EU and ESA is of the essence.

The Space Data Association, an Original Effort

Space situational awareness (SSA) started as a military effort to track objects in space but eventually developed into a broader system capable of providing insight into what is going on in the space environment, be it in terms of space weather or the characterization of objects in space. This transition from a military-focused system to a broader scope meant that SSA started to be used daily by all sorts of users and for all different kinds of purposes. Governments are not the sole actors anymore.

The establishment of an efficient SSA system depends on 1) a geographically distributed network of different kinds of sensors (telescopes and radars for instance) in coordination with satellites and 2) regular declarations by space actors of their activities and assets (for instance through a register). As of today, no country can expect to do a good job all by itself.

The purpose of the Space Data Association (SDA) is precisely to contribute to this system by collecting data and processing it in order to avoid accidents and/or determine responsibilities if they take place. SDA is an NGO registered on the Isle of Man. It provides services aimed at the prevention of collisions in space (at the moment in geosynchronous orbits) and radiofrequency interference. Members of SDA are currently satcom companies who provide and receive data. The association established a differentiated membership depending on the size and type of operators. “Executive members” are the larger companies (3 out of 5 are currently members), “standard members” are the smaller satcom operators and “associate members” are those not flying their own satellites.

SDA is sensitive to concerns of data privacy and is therefore committed to data secrecy – SDA does not share data, but pools it and then provides analysis. Also, the

association has clearly defined what users can and cannot do – for instance, use of information for marketing purposes or for radiofrequency attribution is proscribed, and members are liable for not complying with the terms of contracts.

Governments are still crucial providers of important data, particularly for debris. However, in a congested space filled with commercial systems, it is important to know the exact position of these assets, and no one can give more accurate information on this than operators themselves. SDA has discussions with the U.S. government as well as ESA and the amateur telescope network ISON.

The U.S. government was quite wary of the emergence of this association at the beginning. Up to now, governments and companies had no one else to go to but the U.S. to obtain information of this kind. The loss of this "monopoly" was initially perceived as a potential liability for American intelligence and defense.

The fact that SDA deals with both military and commercial systems has generated some criticism as well, in particular from governments wary of the security of their military assets. SDA answers that government systems today are just as dependent on data from commercial operators as the opposite. An efficient system should integrate both sets of data.

Dialogue with the audience:

- Regarding the European SSA architecture: No space-based systems are currently considered, as it would be too expensive.

- Regarding the European SSA governance: A new European agency could be created, or an existing one could be used (there are 20 possible candidates, including the EUSC). This is currently being discussed.

- Regarding the accessibility of space data: Why keep your secret satellite data when everyone can see where they are? You cannot classify the laws of physics! Another panel member notes that new means of hiding satellites will certainly be developed (new stealth paint, etc.), followed by the discovery of new means of discovering them. This is the usual story of technical progress in the field of defense. One solution would be to put in place a security zone around satellites as a general rule, with a police to enforce this rule. Also, ways to retrieve troublesome debris must be explored. This is a model to prepare for the next decades.