



10th Annual Conference on European Space Policy
“More Space for More Europe”

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Welcome Address

Federica Mogherini, High Representative of the Union for Foreign Affairs and Security Policy and Vice-President of the European Commission, opened the annual Conference stressing that the space policy in Europe is all about innovation, autonomy and cooperation. She presented the current and future role of Europe as a “*space power in the making*”, with EU’s investments equivalent to the second budget worldwide.

Then, the High Representative put forward major European achievements in the domain of security possible thanks to space tools and data, stressing, in particular, the key role played by the European Union Satellite Centre (SatCen). The latter makes use of Copernicus services as well as private providers’ data and extensively exploits Earth Observation applications for addressing both natural disasters-relief and terrorism related challenges.

The positioning of European Union in GNSS services is ensured through the progressive completion of the Galileo constellation in orbit. Indeed, it will result in the provision of innovative, autonomous and cooperative services through a top class, resilient European infrastructure, opening partnership opportunities with international players.

In such a context, added Federica Mogherini, it is worth mentioning that other European initiatives are coming up, namely Space Traffic Management in order to protect European assets in space, GOVSATCOM to deliver secure transmissions globally for the benefit of European institutions, as well as the setting up of a Defence Fund, shared by 25 Member States and which represents the first Permanent Structured Cooperation in this matter and will provide new perspectives for the Space sector. In this respect, as far as research is concerned, she reminded the need to seek economies of scale and to further strengthen the long-term planning.

Ms Mogherini also indicated that she met with CEOs of the European space industry to discuss the European autonomy and cooperation with third countries. The European Union plays at its best its role in Space, demonstrating, according to MS Mogherini, the untapped potential of our Continent laying in the shared construction of initiatives and programmes that could not be beard by any single national state alone. This concept particularly demonstrates, in her opinion, all its relevance in an operational context, where European citizens can benefit from Copernicus rapid mapping services, which are also provided for free on a broad international basis.

She argued that it is timely for Europe to position itself as a responsible Space power and to assert its ambitions and views to the key upcoming international events of 2018, namely the Second International Space Exploration Forum (ISEF-2) taking place in Tokyo in February and the UNISPACE+50 Conference of the United Nations in Vienna in May.

Space, Ms Mogherini concluded, is key for the European Foreign Policy, providing tools in the field of economic diplomacy with more than 140 countries worldwide and supporting new businesses globally. In

this framework, the European approach is definitely the one of promoting the spirit of collaboration towards autonomy and coordination, which can be summed up in the motto: “no single country can reach the stars alone”.

Elżbieta Bieńkowska, European Commissioner for Internal Market, Industry, Entrepreneurship and SMEs, took the floor as the second speaker of the Welcome Address and presented the European Commission’s perspectives for the future of EU space-related activities.

She strongly reinstated the high relevance of Space for the European Commission, underlining the participation of six Commissioners at this Conference, and stressed the major challenges to be taken up in the next twenty months related to the substantial work to be completed before the next European elections.

She noted that at this stage the European flagship programmes, Copernicus and Galileo, are on track and hold within the allocated budget, delivering services above expectations and proving to be strong European successes!

Copernicus is, as Ms Bieńkowska stated, setting world standards in the field of the Earth Observation services, covering multiple policy areas, which will expand even further in the near future (e.g. pollution over cities). She recalled that, to ensure data availability and its accessibility to anyone and anywhere, the EC will launch the innovative DIAS platform in May 2018. Indeed, she pointed out that one of the major benefits of Copernicus is to offer, through the activities of the European private sector that must be increased, the potentiality of the creation of a full ecosystem of applications and services for user communities, as well as further developments of European space infrastructures.

As the Commissioner recalled, Galileo has entered its operational phase, favouring its widespread use with a rate of more than 95% of new GNSS chipset compatible, 75 million of smartphones connected and the new European cars built as Galileo-equipped. Today, Galileo is the most accurate GNSS system worldwide, with an excellent performance since the resolution of an initial malfunctioning of some on-board clocks, and being ready for the successful delivery of innovative services such as the Search & Rescue.

Mrs Bieńkowska was proud to remind that Europe is currently the second space power in the world and, in order to consolidate this position, it should take appropriate actions, namely to:

- Develop Space for the European society by keeping user-centred and creating solutions meeting users’ needs, and by focusing on service delivery.
- Enable EU Space cooperation in security and defence by consolidating activities in the context of the next MFF (e.g. more than 1 Billion euro devoted to EDIDP after 2020 to which space capabilities are natural candidates).
- Support the private sector in a changing environment through innovative financial instruments (e.g. space equity pilot for space start-ups).

Therefore, underlined the Commissioner, 2018 will be crucial for the space sector. Indeed, the European space policy framework will now need to reach a good balance between continuity and evolution of programmes as well as expand into new priorities, such as climate change and security, and, in this perspective, the EU must secure the necessary investments for its space infrastructures (Copernicus and Galileo).

The Commissioner remarked that the Space Research requires, to be successful, the collaboration of industry, and she welcomed the setting up of a JTI (Joint Technology Initiative) adapted to the space sector in order to better cope with current budgetary constraints.

She also clearly stated that the European Union is ready to support the European launchers' sector by investing in the next generation of launchers technologies and by aggregating the demand for launchers services for all EU space programmes. In this respect, she announced a legislative proposal from the European Commission to be presented still in 2018. But she also added that while the EU is clearly committed to ensure the European autonomous access to space, it expects Ariane 6 and VEGA C to properly deliver in a cost-efficient and timely manner.

Following the Commissioner, **Didier Reynders**, Deputy Prime Minister and Minister of Foreign Affairs and European Affairs of the Kingdom of Belgium, equally underlined the importance of the space sector, being, in his opinion, an integral part of the 4th industrial revolution. He stressed in particular the fact that the digital age is characterized by a large amount of data capable to address several societal challenges (e.g. climate change, migrations, energy, critical infrastructures...). In this context, he recalled, Europe is planning more than 1-billion-euro investment in super-computing infrastructures. On the other hand, Mr Reynders emphasised that, while the EU represents 20% of the global space economy, it weighs only 4% in terms of private investments.

Moreover, Mr Reynders also called for a better protection of space infrastructures against cyber-attacks and emphasized the need to use public-private partnerships (PPP) and financial instruments in addressing the issue of the budgetary constraints.

To conclude, the Deputy Prime Minister remarked that the year 2018 will be particularly relevant for the space sector at large since it will commemorate the 50th anniversary of the first UNISPACE conference. He emphasised that Belgium is fully supporting the cooperation in space for the benefit of all humankind, particularly regarding the needs of emerging countries and the implementation of the Sustainable Development Goals of the UN Agenda 2030.

On his part, **Johann-Dietrich Wörner**, **Director-General** at the European Space Agency (**ESA**), presented the strategy "Space 4.0" developed by its Agency, underling that there are relevant changes already taking place (motivation, actors, content, roles and technologies) and, thus, impacting space activities. A first significant step was, to his eyes, the signature of the Joint Statement by the European Union and ESA in October 2016, addressing the issues such as the full integration of space in the European economy and society, the need for a globally competitive European space sector and the European autonomy in accessing and using Space. In this new context, he stressed, Europe is already at the forefront : firstly, thanks to its Copernicus programme, delivering more than 40 Petabytes of data and offering a free, full and open data policy, and, secondly, thanks to its Galileo programme, the most accurate GNSS system worldwide. Furthermore, as Mr Wörner added, Europe is planning a GOVSATCOM service to enable future secure telecommunication services at the level of the EU Member States, and ESA is already working on a precursor activity, currently in the R&D phase.

Furthermore, Mr Wörner explained that ESA is already working on the preparation of new space initiatives that will be presented at the next ESA Ministerial Council (C-MIN) in 2019. In this ongoing process, the roles and the interactions of the Agency are evolving (customer, partner, shareholder, contractor, etc.). The ESA's approach will be to address five main programmatic clusters: applications, science and exploration, space

transportation, operations and technologies with appropriate provisions regarding administration, industrial policy and procurement, safety and security.

For the Director-General, space is nowadays a “chain of motivation” which encompasses the stages of fascination, inspiration and motivation. Therefore, it is highly relevant that European actors recognize this and act accordingly. As concluded by the Director-General, seen from Space, Earth has no borders and we should evolve in the upcoming year towards a United Space in Europe.

Last speech of the Welcome Address was done by **Jean-Loïc Galle**, President of Eurospace, highlighted that 2017 has been positive for the space sector globally, with a continued increase of consolidated turnover figures worldwide: 7.7 Billion euro in Europe, around 44 Billion euro in the United States, a 10% budget growth in Russia, as well as significant increase of investments in China and in India.

However, continued Mr. Galle, 2018 will be characterized by the EU negotiations for the next Multiannual Financial Framework (MFF) and the preparations of the ESA’s C-MIN 2019, which represent key events for the post-2020 space strategy implementation process. Europe is, in his opinion, in an excellent position to build on past investments, currently exporting more than 40% of its production worldwide. It seems now crucial to further focus on autonomous access to space and technology independence, on policy consistency across European institutions, space agencies and member states, while supporting innovation and reducing manufacturing cycles. In this respect, Mr Galle warmly welcomed the initiative of the European Commission to set up a Joint Technology Initiative to better support innovation and competitiveness in the frame of a coherent institutional EU roadmap with the inclusion of private actors.

Underlining the full alignment of industry with the EU in this matter, he confirmed the support for the EU Space Strategy and the achievements of the flagship programmes: Copernicus, Galileo, EGNOS. He indicated that the most important step at this point would be to secure and ensure continuity of the ongoing activities. However, he made a vibrant call to launch additional flagship projects on connectivity in order to address the digital divide, reminding that with the in rural areas satellite broadband solutions are the most cost-effective.

In this perspective, the President of Eurospace insisted that the next MFF will certainly need to be very ambitious and will hopefully allocate significant funding to space, while creating synergies with the defence and environmental sectors, especially in areas such as secure communications, maritime surveillance, space surveillance and tracking (SST), including the removal of space debris and upgrade of space assets, climate change and pollution monitoring. He concluded by making the reference to the Conference’s title, with the statement “*our future is space, our future is Europe*”.

First Session: Space Strategy for tomorrow – the steps forward

Speakers of the first session:

- **Lowri Evans**, Director-General, DG GROW, European Commission
- **Franck Proust**, Member of the European Parliament
- **Kai-Uwe Schrogl**, Chief Strategy Officer, ESA
- **Nicolas Chamussy**, Executive Vice-President, Airbus Space&Defence
- **Marco Fuchs**, CEO, OHB (replaced by: Fritz Merkle, Member of the Executive Board, OHB)
- **Jean-Loïc Galle**, CEO, Thales Alenia Space
- **Alain Charneau**, President, ArianeGroup
- **Luigi Pasquali**, CEO, Telespazio

Lowri Evans, Director-General of DG GROW, introduced the session by underlining the significant steps already achieved by Europe in the space sector over the period covered by the current EU Multiannual Financial Framework (MFF). She underlined that acknowledging European achievements is especially important at the time of the preparation of the next MFF beyond 2020. Ms Evans also highlighted some recent major changes which will likely influence future developments in the space sector, namely:

- The field of Security and Defence has gained more importance and, thus, a new status for the European Union with new policies and activities shaping up;
- The space policy is now widely recognized as a central component of the data economy and society;
- As a result, the space industry is no longer addressed as isolated but rather as a crucial element of the value chain contributing to boosting European economy and creating jobs;
- International cooperation made substantial steps toward global action against climate change with the Paris Agreement.

Questioned on the position of the European Parliament with regards to achievements and challenges ahead for Europe in space, **Mr Franck Proust, Member of the European Parliament**, shared some perspectives on the evolution of the geopolitical situation of Europe, standing today between the US of Mr Donald Trump, China, -ambitious in a variety of industrial sectors, and a growing number of emerging countries. In his opinion, this situation requires Europe to be realistic about challenges lying ahead and to identify critical areas of action to support the future of Europe in space, such as, for instance, to:

- Promote competitiveness of the industry and an economic diplomacy supporting European exports;
- Acknowledge the “dual” dimension of space systems and of the industrial sector;
- Promote European preference to secure a European Strategy for Europe.

Mr Proust concluded with optimistic views of the future position of Europe in space, foreseeing that ambitions, capabilities and ideas of Europe will support a strong European standing in space.

Kai-Uwe Schrogl, Chief Strategy Officer at ESA, shared with the public the ESA perspective as well as a positive assessment of the European achievements in space programmes. He described and developed on the implementation of the three objectives of the EU-ESA Joint Statement on Space Strategy for Europe:

- **maximise the integration of space into European society and economy:** ESA undertook various sectorial initiatives, as requested by Member States. Furthermore, the Agency has recently demonstrated the numerous benefits of space systems in achieving the United Nations Sustainable Goals. Last but not least, ESA signed various agreements and memoranda of understanding with organizations such as EDA or SatCen to multiply opportunities to effectively maximize benefits of space for society and economy;
- **foster a globally competitive European space sector:** acknowledging changes in the structure of space activities and of the space sector, ESA has taken steps, such as a reform of the Agency's procurement processes, aiming to gain efficiency. In overall, the Agency is proactive in a variety of domains affecting European competitiveness including education.
- **European autonomy to access and use space in a safe and secure environment:** ESA has developed a long-standing activity in this field, with for example the CleanSpace initiative or, among others contributions to international space debris mitigation guidelines.

Mr Schrogl concluded that ESA is already actively supporting European strategic objectives and that, in this frame, the EU-ESA Joint Statement correctly highlights the complementarity of ESA and the EU to achieve the Space Strategy objectives.

On his part, **Mr Nicolas Chamussy, Executive Vice-President at Airbus Defence & Space**, recalled a few figures of the European space industry, drawing a rather positive image of the current situation with, in particular, multiple successes in the fields of space programmes, access to space and on export markets. In particular, he stressed that 40% of space industry sales (thus 8.2B€ in 2016) are "commercial", thus performed without public support. Figures only highlighting the importance for the European industry to be competitive.

He insisted also that today key topics for industry competitiveness include:

- Permanent optimisation of the industrial structure and product portfolio;
- Digital transformation, including end-to-end product lifecycle management (efficiency-oriented), data analytics, robots and cobots, new methods imported from other industries (applied for example on OneWeb, whose first satellite will soon be delivered);
- Permanent innovation: for example, in the field of Electric Propulsion, Airbus delivered the most powerful full-electric satellite in the world to Eutelsat with a second one for SES that will soon be launched on Ariane.
- Cooperation within the European industry.

Mr Chamussy welcomed the target to double the European investment in space programmes for the next Multiannual Financial Framework (2021-2027), underlining that this level of resources will actively support the European space sector in facing the strong changes in the global space ecosystem. Furthermore, economic diplomacy actions at national and European level would be, in his opinion, crucial to support the export of European solutions.

For **Mr Alain Charmeau, President of ArianeGroup**, one of the main steps forward will be Ariane 6. The programme has the ambitious objective to divide launch costs by two, while maintaining the current levels of performance and reliability and gaining in flexibility. The result will certainly be disruptive. Complementarity of Ariane 6 and Vega C will also answer the future needs of Europe. Today, the mobilization of the industry for innovation and optimization, is extremely intense at all levels of the supply chain. In 2017, the Ariane 6 Programme progressed well and is now under control. Important milestones were reached including the first successful test for the Vulcain 2.1 engine.

Mr Alain Charmeau shared also a positive assessment of the current situation: in 2017, Arianespace maintained its market shares and its launch log despite aggressive competition. Mr Charmeau was very enthusiastic by stating *“Europe is still here and for long”*. Nevertheless, he stressed that some challenges exist and the complementarity between industry and institutions effort is essential to take them up. From this perspective, the public commitment to launch on Ariane and Vega is essential and more than legitimate.

Mr Jean-Loic Galle, CEO of Thales Alenia Space, addressed the topic of defence and security, recalling, firstly, that the space assets are already essential in this field and will even take a central role in the secured telecommunication or the maritime and terrestrial border surveillance for example. Coming back to the next steps ahead of the EU, Mr Galle explained that the main breakthrough expected to influence future evolutions of the space sector is the switch to constellations for telecommunication and remote sensing systems. In this field, he recalled that the European industry has been selected for major constellation projects which, in his opinion, shows that European companies are extremely well positioned, at the forefront, of innovation. Another example of the European excellence in innovation, he gave, is the recent development of a full digital satellite mock-up, which will revolutionize the system development techniques. And, also, other digital tools and practices which are actually implemented along the entire supply chain and across the entire lifecycle. All those examples prove, in his opinion, that the traditional image of the European industry standing behind in terms of innovation is actually not fitting the reality.

Mr Fritz Merkle, Member of the Executive Board OHB, explained that, for the defence and security purposes, Europe has already, with Galileo and Copernicus, operational assets providing excellent data and services relevant for various areas. Moreover, one shall not forget the existing national assets and their complementarity with the European assets, which will become increasingly important. Mr Merkle called for courage to be a driver of the next steps taken by Europe in space rather than concern. In his opinion, with the current set of expertise and competencies, Europe is on the right track. Mr Merkle noted that beyond this, importance must be given also to education to ensure that Europe has continuous access to the necessary expertise.

Mr Luigi Pasquali, CEO of Telespazio, provided perspectives on system applications and service delivery, since Telespazio already developed multiple solutions in various fields and, in addition to that, is a shareholder of SpaceOpal. The latter was selected to ensure delivery of Galileo services. Moreover, Mr Pasquali pointed out that the market of space services is very fragmented and extremely competitive, yet, at the time of New Space, the downstream part of the value chain is becoming central with a growth of market-driven applications. In this field, innovation is, in his opinion, the main driver, required at all levels, from data analysing algorithms to user terminals. With the digital transformation, dependence on data gave, as he argued, a new dimension to both the cybersecurity and security of space infrastructure. Lastly, for Mr Pasquali, budget is a central topic, in particular with the upcoming preparation of the next MFF. Nevertheless,

the CEO of Telespazio concluded that one should not forget other important topics such as market-oriented actions for example to aggregate European demand and create conditions for sectorial growth and users benefits.

Ms Lowri Evans thanked the participants and concluded, summarising what was for her the main messages of the session, namely:

- Europe is today in a good place in the field of its space programmes and technologies;
- Space is an essential sector for generating jobs and growth across Europe;
- More efforts are still required to maintain and enhance this situation.

Finally, Ms Evans recalled that the next milestone for Europe will be the next MFF. She highlighted the central role of the European Parliament and, indirectly, of the European citizens. This is why, in her opinion, raising awareness, through an efficient communication plan about the sector achievements and benefits is so crucial.

Second Session: Space for a prosperous and sustainable Europe – Case study: GNSS, Copernicus and Satcoms for mobility

Speakers of the second session:

- Violeta Bulc, Commissioner for Transport, European Commission
- Dominique Riquet, MEP, Vice-Chair of TRAN Committee, European Parliament
- Philippe Brunet, Director at DG GROW, European Commission
- Matthias Petschke, Director at DG GROW, European Commission
- Paul Verhoef, Director of NAV, European Space Agency
- Philippe Citroën, Director General, UNIFE
- Johannes Von Thadden, Senior Vice-President, Head of ISI, Airbus Defence&Space

The moderator, **Marc Paoloni**, Partner at Business Bridge Europe, introduced the session by strongly emphasizing the extent which European space services offered by EGNOS, Galileo and Copernicus bring more and more constructive contribution for numerous policy areas.

Building up on that reflection **Violeta Bulc, Commissioner for Transport, European Commission** underlined that if the development of Space technologies can contribute to the long-term dream of human habitation - in outer Space, they can also serve the needs on the planet Earth, through the downstream applications. Therefore, she stressed that there is ~~also~~ a vast untapped potential of Space technologies to provide innovative services to the citizens on Earth, namely in the transport sector. Already now, this sector is highly benefitting from space-based services, for instance through the applications informing on the mobility conditions in cities or allowing sharing options for vehicles (cars, bikes, etc.), navigation solutions, real-time traffic information and safe traffic management.

In the future, as estimated by Mrs Bulc, the development of mobility will demonstrate, to a much larger extend, the benefits of space, starting from Galileo high-precision downstream services. The transport sector at large will be revolutionized, from railway transport providing higher capacity, precision and speed, to heavy trucks monitored through smart; from high precision navigation in urban canyons, to innovative drones-based delivery services and flying cars; from EGNOS applications for the aviation sector to the maritime automatic fleets.

The Commissioner put also a special emphasis on the importance of cross-sectorial partnerships, like the one on 5G networks and transport, where a close collaboration between terrestrial operators and space services providers is essential to ensure a proper coverage with hybrid networks, capable of supporting the full and successful deployment of autonomous cars.

Other areas of R&D collaboration as she added, include innovative lighter materials and processes which can be applied to the future space technologies as well as to transport vehicles.

Europe, in the opinion of Commissioner, is currently supporting also the definition of traffic management rules, which should become integral part of space policies, and should extend to other organizations operating in the realm of aviation and maritime sectors, possibly encompassing also space logistics commercial services. It is therefore important for Member States to embrace the idea of competition in economic development, while ensuring an inclusive approach in the exploitation of space.

Dominique Riquet, Vice-Chair of the TRAN committee, European Parliament, underlined, on his part, the significant advances made for the transport sector in recent years, going beyond the contributions of space alone. In fact, according to Mr Riquet, space is proposing to the maritime and aviation sectors improved approaches with high expectations, particularly addressing heavy vehicles and large volumes. It is more difficult to predict its efficiency on road transport and railways, but certainly space has an important role to play in transmodality solutions which will inter-connect all transport actors in the near future.

Matthias Petschke, Director of EU satellite navigation programmes, European Commission, outlined the benefits related to the new Galileo services, designed to meet users', current and future, needs. He was happy to announce that the performance of the system is now exceeding the initial expectations in the provision of the Galileo initial services. This will allow, according to Mr Petschke, a very good market uptake since the beginning, and it is already planned by smartphone producers to include Galileo receivers (for more details he suggested to go on: www.usegalileo.eu).

The second major market for Galileo services is, in his opinion, the in-car satellite navigation and the trucks tachographs systems. Europe is considering to tackle this segment ensuring market uptake via regulations, and, in fact, all European cars will have a Galileo-enabled device installed, starting from April 2018, in addition to the GNSS existing ones.

In addition to that, added Mr. Petschke, Galileo can also support the railway sector in times of great competition, while other future areas of applications are related to the emerging drone market, especially for operations at low altitude, and to the maritime transport sector, which can benefit of Search & Rescue service to locate people in distress, as also indicated by the International Maritime Organization. In 2018, Galileo will provide an innovative return link function, informing the receivers that help is underway. This capacity will be provided to all aircrafts by 2020 so that situations similar to the one of Malaysia Airlines will be avoided.

The EU is currently discussing with its Member States, concluded Mr Petschke, the opportunity to deliver a free high-accuracy service for all transports. The next step is the delivery of dedicated services to the sector of autonomous cars, connected driving solutions, becoming now a substantial policy objective for Europe.

Paul Verhoef, Director of NAV at ESA, in turn, explained his full satisfaction for the performance of Galileo and acknowledged the key role of the European industry for this success. The focus will now be, as Mr Verhoef said, on reaching the availability of the service along all the chain, from space to ground infrastructures, in this perspective, ESA intends to work closely on this issue together with the GSA.

The future challenge according to Mr Verhoef will be on the significant difference between the IT development cycles, gaining in speed, and the space systems development cycles. The fusion of technologies, as he explained, is becoming more and more relevant and therefore it becomes mandatory to align the two sectors, particularly in the area of the connected transport. Indeed, also terrestrial service providers will be part of this ensemble in the framework of the Internet of Things revolution, which will provide positioning information using very low power devices.

In this very context, he concluded, Galileo is an innovative and highly performing European flagship programme - available worldwide and Europe has therefore the responsibility to ensure its continuity, availability and robustness towards the global community.

Philippe Brunet, Director of Space Policy, Copernicus and Defence, DG GROW, European Commission, presented, on his part, the Copernicus programme and its applications for the benefit of the transport sector, in synergy with the Galileo services provision. For him, mobility requires a coordinated action of various sectors (such as energy, security, environment, etc.). Indeed, as he stressed, urban mobility and transport infrastructure planning can greatly benefit from Copernicus data and services. The key role of satellites, is indeed that they can provide images of Earth with an unprecedented resolution and revisit time, allowing costs reduction and predictive maintenance of infrastructures. The Director concluded pointing that the GOVSATCOM programme will further enhance European transport capabilities, together with new data acquisition systems, such as drones.

Philippe Citroen, Director General at UNIFE, underlined the importance of the European research programmes and the key role played by EGNOS and Galileo. New transport initiatives, such as the ship to rail, can greatly benefit of satellite-based services and this needs to be taken into account when planning the next MFF. The final objective of a fully interoperable railway sector needs to be addressed by Europe at large in order to avoid, for example, multiple signalling for trains according to different national standards, or even worst, the need to stop trains between national borders of European Member States.

Johannes von Thadden, Senior Vice-President at Airbus Defence&Space, completed this tour de table evoking and completing, by presenting a more industrial approach, numerous points brought forward by the previous speakers, underlining, in particular, the benefits of the Copernicus programme and its evolutions for the transport sector, starting from the CO2 emissions monitoring. His other key message focused on the need for the aviation sector to use the space tools to ensure automatic tracking of planes, especially in the perspective of an update of the traffic management and aviation safety.

Special Address - Maroš Šefčovič

Maroš Šefčovič, Vice-President for the Energy Union, European Commission, expressed his appreciation for the European space sector which account for more than 30% of satellites produced worldwide. He argued that Copernicus EMS and numerous European satellite technologies are essential instruments for the citizens, as well as for the public entities, that have to manage the challenges associated with climate change, atmospheric pollution and land degradation. Of course, as the responsible for the Energy Union, he pointed that the energy sector can greatly benefit of satellite data, in particular the ones provided by sentinel 5P mission and future ones able to detect methane and CO2 emissions. He also noted that Galileo is equally providing essential information for the synchronization of the power grids. Therefore, Europe needs to invest in space and that, consequently, , a significant increase in financial allocation within the next MFF would be welcome, allowing to maintain the position of the European space programmes among the best ones worldwide also in the coming decade.

Third Session - Space accessible and safe to operate: independent access, traffic management, space debris and weather conditions

Speakers of the third session:

- **Pierre Delsaux**, Deputy Director-General, DG GROW, European Commission
- **Marian-Jean Marinescu**, MEP, Member of TRAN Committee, European Parliament
- **Daniel Neuenschwander**, Director of Space Transportation, European Space Agency
- **Alain Ratier**, Director-General, Eumetsat
- **Stéphane Israel**, CEO, Arianespace
- **Luca Rossettini**, CEO, D-Orbit
- **Luc Tytgat**, Director, Strategy and Safety Management Directorate, EASA

Mr Jean-Jacques Tortora, Director of ESPI, introduced the session by emphasizing the growing importance of the space security, the result of an increasing dependence of the economy and the society on the space infrastructures, but also of a rising of new threats and challenges towards its security. Afterwards, he then gave the floor to the panellists to discuss openly the impact of this situation on their activities, next possible steps in this field and, even more importantly, the position that Europe could take.

First, **Mr Pierre Delsaux, Deputy Director-General at DG GROW** confirmed that the following major steps in the deployment of the European space infrastructure, namely securing the space assets, have become essential for the EU. Indeed, space security encompasses different elements from cybersecurity, space debris to space weather. Deputy Director-General outlined for instance that for the Space Surveillance and Tracking (STT), activities already exist to support European capability building and cooperation. Notwithstanding, Europe, in this field, stressed Mr Delsaux, remains dependent on non-European countries, which is not acceptable in long term. Space weather, on the other hand, seems to him another important component of the space security, lead by the EU together with ESA, and which potential development could be really encouraging, even if the progress in this field is lesser.

Mr Marian-Jean Marinescu, Member of the European Parliament, also confirmed that the European Parliament is fully aware of the rising stakes and needs of the space security. He compared it to the aviation sector which, along the development of airline activities and airplane technologies, found itself in need of the traffic management rules. This will certainly also be the case of the space sector at some point. Mr Marinescu confirmed the words of Mr Delsaux on the ongoing preparatory activities in EU but insisted that further effort will still be required. From this standpoint, the MEP insisted that the European Parliament would gladly welcome the allocation of appropriate resources for the space security initiatives in the frame of the next MFF, given the critical importance of space assets for the European economy and society.

The two following panellists deepened the topic of the importance of a safe and autonomous access to space for Europe. **Mr Daniel Neuenschwander, Director of Space Transportation at ESA** recalled that Europe needs autonomous but also competitive launch services. In this framework, he considered important to share a common understanding of what “competitiveness” means: reliability, price, flexibility and timeliness. From the technological side, this requires, in his opinion, new developments such as new engines, new processes or the reusability aspect of the launchers. Yet, another element crucial for the European competitiveness seems to him the demand thus reaching an appropriate launch rate required to be competitive. From this perspective, the public institutions have an essential role to play. Other conditions of competitiveness include also an appropriate industrial structure. In this field, Mr Neuenschwander confirmed that the first steps engaged already with industry should be continued, especially for risk sharing. In his mind, each public and private stakeholder has to take its share of responsibility. See from this angle, on the public side, the institutions will have the responsibility to secure a minimum level of demand, while, on the side of the private sector, industry will have a proper control of the recurring costs and take full responsibility on the commercial market.

Stephane Israel, CEO of Arianespace, recalled, on his part, the three main reasons having led to the decision to develop the Ariane 6 technology:

- Firstly, due to an increasingly competitive environment, cheaper launching services are necessary in the EU. Indeed, Ariane 6 shall be 40% cheaper than Ariane 5;
- Secondly, Europe needs to secure an access to a complete spectrum of launchers if it wants to be autonomous;
- Finally, in order to remain competitive in the future, Europe needs flexible launchers that could adapt to the market.

These reasons, have been confirmed at various occasions, according to Mr Israël, by recent evolutions of the market, demonstrating that the decision taken was the right one. In the near future, industry will have to prove its capacity to deliver on time and on budget, while, already now, a number of promising milestones, such as the successful test of the Vulcain 2.1 engine, are being achieved. Nevertheless, the speaker insisted that the public actors, on their side, will have to commit to a number of launches, preferably 4 for Ariane 6 and 2-3 for Vega C annually. In his opinion, this is easily achievable, given the space activity planned in Europe.

Finally, Mr Israël concluded, regarding the space security and, in particular the issue of the space debris, the new generation of launchers will also have the capacity to de-orbit upper stages, positioning Europe as a leader in the clean space and, as for the setting in orbit of mega constellations, regulations already exist and will have to be implemented.

Mr Alain Ratier, Director-General of Eumetsat noted that, among all the space infrastructure, the meteorology satellites hold a specific place with regards to tangible benefits brought to Earth. He recalled that, without those services, the storms like IRMA could never be anticipated. To secure its assets, Eumetsat relies on a mix of data coming from European Member States and from the United States through the Joint Space Operations Center (JSpOC). In the future, a complete, integrated and autonomous capacity for space situational awareness in Europe will be required. This capacity should include space weather forecasting services for which various Member States have expressed a strong interest. He stated that developing such services could be even more efficient when done in cooperation with the United States.

Mr Luc Tytgat, Director of Strategy and Safety Management at EASA shared his experience in the Traffic Management within the Aviation sector (ATM). EASA has already started looking at the space activity for launches, suborbital commercial flights and re-entry. EASA has been following closely the space sector developments, including the space traffic management, because it can have a direct impact on ATM and safety threats to civil. Mr Tytgat made a parallel with the aviation sector, explaining that, when aviation was developing, there was a growing need to share information and data between countries to support the development of the sector. A comparable need for a regulatory framework, clarifying how the operations can be conducted, is currently rising in the space sector. The United States are already proactive in preparing space traffic management solutions, with the FAA acting as a leader, but all options remain open, including a possible creation of an international agency. As Mr Tytgat suggested, the EU could still be taking a leadership in this field.

Mr Luca Rossettini, CEO of D-Orbit, recalled that space is actually not crowded and that the industry does not need all of it as, he added ~~that~~, in fact, it uses only the crowded “highways”. The main issue today is that deorbiting is not a standard feature of a satellite, it is an addition. Requirements to manage the end of life of a satellite exist but are not easily applicable. As a matter of fact, he insisted, there is an economic advantage of removing a satellite. Indeed, assuming that satellites will eventually have to be decommissioned in order to avoid threats, the capacity to do so, effectively and efficiently, will give a certain competitive edge. Mr Rossettini took the example of the automotive sector, with the obligatory biannual technical checks which could be applied to space. A way of saying that methodologies and best practices already exist elsewhere and thus could be used to design an approach towards the space security management.

The dialogue with the audience started by answering a question from an attendee on whether a regulation in this field is needed, Mr Delsaux estimated that, although we may still be at an early phase, EU needs to prepare and anticipate what will happen in the future. We will not be able, as claimed by Mr Delsaux, to escape this issue forever and actions will have to be taken at international level, which takes time. Mr Marinescu complemented his answer, taking the example of ICAO that could be an interesting example of what may be needed for space in the future.

Also, another attendee asked Mr Delsaux about a potential financial envelop of the public investment foreseen in a European space security programme. Mr Delsaux answered that evaluating a level of investment requires first preliminary analyses, but a concrete figure shall be given in the coming months, for the preparation of the next MFF.

Fourth Session: Space for a strong EU on a global scene – examples: climate, science and exploration

Speakers of the fourth session:

- **Johann-Dietrich Wörner**, Director-General, European Space Agency
- **Clare Moody**, MEP, Vice-Chair, SEDE Subcommittee, European Parliament
- **Philippe Brunet**, Director Space Policy, Copernicus and Defence, DG GROW, European Commission
- **Pascale Ehrenfreund**, Chair of the Executive board, DLR
- **Graham Turnock**, CEO, UK Space Agency
- **Simonetta di Pippo**, Director, U.N. Office for Outer Space Affairs (UNOOSA)
- **Tim Peake**, Astronaut, European Space Agency
- **François Rivasseau**, Special Envoy for Space Task Force, EEAS
- **Jurry de la Mar**, Director, T-Systems International

During the introduction to the session, the moderator, Mr Jean-Jacques Tortora, Director of ESPI, introduced the topic highlighting that space is an area of excellence for Europe, both in terms of technology and with regard to its businesses.

Mr Johann-Dietrich Wörner, Director-General, European Space Agency, opened the session by describing a series of global challenges, ultimately concluding that curiosity is one of the strongest driver for humankind. For this reason, he urged to take advantage of this innate driver – for which space is a perfect territory for exploration.

He then outlined three overarching goals for Europe:

- full integration of the space technologies into economy and society,
- fostering of a globally competitive European space sector,
- autonomy in accessing and using space.

In this last respect, the Director-General stressed the importance of a clear policy to support European launchers to be strong and competitive – as this constitutes the basis for further international cooperation. He further outlined the “chain of motivation”, describing how it encompasses fascination, inspiration and ultimately fosters motivation. Space exploration seems to him perfectly fitting this idea, whether human or robotic. Mr Wörner noted that space can do even more than what it has done so far. He recalled the Crimean conflict of 2014 and observed that even during such time difficult of crisis, astronauts and cosmonauts were sent together to space from Baikonur -space adventure can thus bridge crises on Earth.

Regarding the link between space exploration and climate change, he explained that the greenhouse effect was discovered not on Earth, but during the first observations of Venus. Other issues related to climate change, such as the rising sea level, are also best analysed, observed and understood from space. Copernicus satellites have indeed already been giving, as he noted, a huge contribution in studying climate change, and the recent successful launch of Sentinel 5P further increased our ability to monitor from space the concentration of gases in the atmosphere. However, he stressed that a global cooperation mechanism and scheme would be needed to ensure efficient and fruitful exchange of data.

Furthermore, when evoking the topic of hazards from space Mr Wörner recalled the passage of a Near-Earth Object in 2017, one of the many that routinely come close to Earth, without impacting the surface, as happened many times in the past for large objects and more recently for smaller ones. So far nothing happened, but situations like this prove that the topic of space safety, including space debris, must be addressed in terms of space weather, space surveillance and tracking and space traffic management.

Then, he concluded by stressing how space can concretely deliver to people and society, for example through the International Charter for Space and Major Disasters, to which Europe is strongly committed. As his final statement, he noted that global challenges need global cooperation – and ESA in its character of an intergovernmental agency, broker, mediator and enabler can effectively achieve such a purpose.

Ms Clare Moody, MEP, Vice-Chair of SEDE Subcommittee, European Parliament started her intervention recalling that, at this moment of the policy cycle, the MEPs are strongly focused on discussions on the MFF. This said, she confirmed her commitment to the topic of space exploration. In this regard, she noted that it is certainly important to conduct it for its own sake, recalling Mr Wörner’s words on “inspiration”, and also noted that there are important further developments and spin-offs coming from space exploration activities and programmes. She then recognized that a lot has been achieved in the sector of Earth observation and underlined the importance to maintain it and build on it for the future. This brings a great added value not only at European, but also at global level. In this sense, she considered that the cooperation between EU and ESA can help to develop programmes as part of global space activities.

The second speaker of the session, **Mr Philippe Brunet, Director at DG GROW, European Commission**, asked to elaborate whether the European Commission would be ready to be more involved in international space matters, in order to serve its strategic objectives, and if so, what could be the steps to achieve this, highlighted the importance of the free and open policy of the former GMES, now Copernicus flagship programme, in creating information and applications that can tackle challenges, e.g. climate change, also in international programmes such as with African countries. In the future, he explained, a challenge for the Commission will be to encourage the creation of international regulations for monitoring and managing CO2 and other greenhouse gas emissions. In particular, he noted that the EU chairs the CEOS and works with other countries who have developed this kind of monitoring systems, to see how this data could be further shared. Also, Mr Brunet suggested that, in the future, a defined architecture at global level will be necessary in order to share data, helping to implement the COP21 Paris Agreement.

Additionally, remarking that the U.S. is looking for partnerships in the highly relevant sector of Space Surveillance and Traffic (SST), debris management and space weather, he suggested that international cooperation, with the U.S. but also China, might be the way forward for effective monitoring and observing the space weather.

Returning to the topic of space exploration and recalling how the IGA agreement for the ISS provides an efficient framework for cooperation in space exploration endeavours, the moderator asked to **Ms Pascale Ehrenfreund, Chair of the Executive Board, DLR**, what framework would be equally efficient for future space exploration and science. She agreed that the ISS and its founding IGA were at the same time one of the most politically complex project in space exploration, and, simultaneously, a great accomplishment. It represents thus a good model for the future, particularly because of its long-term perspective.

Furthermore, she noted that, in fields beyond the space exploration, even if space public and private actors around the world work in different ways their achievements, including those from Europe, complement each other in an international level. He seems to her the case particularly for the issue of the climate change. She suggested that the future evolution of Copernicus must address even more the implementation of the COP21 Paris Agreement. Furthermore, owing to the current situation in the U.S., she stressed that Europe has a responsibility to be in the driver's seat for climate research initiatives.

As for science, recalling her scientific background, she noted that scientists work across boundaries. In her opinion, they do so even more in the field of space, as international cooperation has had a very longstanding tradition – not only for large space powers such as Europe and the U.S., but also for emerging and developing countries. She made the example of the perfect ESA-NASA cooperation on the Cassini-Huygens missions, with several nations working together to deliver the very first images of the outer solar system, a feat never achieved before.

Concerning space science research in Europe, Ms Ehrenfreund believes that it is necessary to have, like as it is in the US, more a long-term perspective with their decade service, i.e. roadmap for 10-15 years. This would allow Europe to become a stronger partner in international cooperation, building on a stronger base for such future cooperation also with emerging countries.

In the realm of space exploration, as many endeavours can happen only through international cooperation, she suggested that Europe develops key technologies (e.g. atmospheric re-entry), so to be an important player and partner.

She concluded her speech on the topic of governance, highlighting the fact that as of today there are a number of different fora, all doing excellent work with their activities. However, it is important to maintain a global task-force which has also decision-making authority, in order to merge expertise in technology and science, as well as adequate resources.

The fourth speaker, **Mr Graham Turnock, CEO, UK Space Agency**, weighted in on the issue of the upcoming exit of the United Kingdom from the European Union, in particular regarding its existing participation of the UK in European space programmes. He confirmed that the UK will continue to participate to Copernicus, noting the importance of its data for institutional and commercial bodies. Such data should continue to be easily accessible for the user, in order to deliver innovative applications, and the UK will continue to support ESA and Eumetast in this sense. Referring to the ISS, he noted how the UK greatly increased its contributions in this programme and is a great supporter, looking forward to the future of exploration activities such as commercialisation of the ISS, lunar sample return missions, the Deep Space Gateway and Mars, supporting ESA exploration programme.

The topic of “space diplomacy” was addressed by the fifth speaker, **Ms Simonetta di Pippo, Director, U.N. Office for Outer Space Affairs (UNOOSA)**. Noting how the space sector is evolving rapidly, becoming more complex and interdependent, she recalled the UNISPACE+50 activities and the upcoming “Global UN space summit of the 21st century” which will be held in Vienna on 20-21st June 2018. She explained that the main goal of her office is to bridge the space divide, i.e. the gap between the nations with strong space-related capabilities, and those who do not have access to such capabilities. Indeed, the mission of UNOOSA consists on opening up the space arena to numerous possible actors. In this perspective, she indicated, a creation of an UN General Assembly Resolution on the contribution of space activities to the achievement of the Sustainable Development Goals will be recommended.

ESA Astronaut **Mr Tim Peake** described his mission to the International Space Station (ISS), and remarked that from outer space, Earth does not show any border. Following on this, he recalled that during the astronaut training, all candidates are working together on the ISS, regardless to their country of origin. Thereby, in his opinion, such deep level of cooperation at personal and international level is key for the success of such an endeavour. He concluded noting how the ISS and human spaceflight activities are inspirational for millions of young students, who are inspired to pursue a career in STEM.

Mr François Rivasseau, Special Envoy for space at the Space Task Force, EEAS, underlined that the EU is already working on core security issues for space activities, such as cyber, SSA, SST and space weather. In regard to the space exploration, he added that such programmes should have a global dimension, to ensure their resilience and avoid premature termination. He insisted also that a responsible behaviour in space activities from all actors is needed and could be encouraged by specific regulations. At the financial level, regarding a greater involvement of the EU in the space exploration, he stressed that it is necessary to avoid a logic where 'more' for the EU means 'less' for ESA. A "logic of "addition, instead, could further enable new endeavours. He insisted also that Europe should speak with one single voice, as it is of utmost importance to strengthen our diplomacy, particularly with major space powers such as the U.S. and China active on a variety of sensitive issues. He concluded observing that autonomy is crucial, and, in this regard, the ambitions of European industries should be heard, allowing them to be at the edge of research. Indeed, that could be a key element to the reinforcement of the industrial base.

Representing the ICT private sector in this panel, **Mr Jurry de la Mar, Director, T-Systems International**, brought the view of a telecom operator. In particular, he praised the world-class infrastructures, such as Galileo and Copernicus, at the forefront of their respective performance for navigation and remote sensing data. However, he noted that there is still a lot to be done with these new systems. For instance, the upcoming DIAS, developed facilitate the Copernicus market uptake, will further give greater benefits to its users, bringing a new and easy entry-level access to data, fully automated and more efficient, and completely on-demand.

Fifth Session - Space European financial support perspectives

Speakers of the fifth session:

- **Carlo Calenda**, Minister of Economic Development, Italy (replaced by: Ivan Scalfarotto, Secretary of State, Ministry of Economic Development, Italy)
- **Jean Arthuis**, MEP, Chair of BUDG Committee, European Parliament
- **Monika Hohlmeier**, MEP, Chair of « Sky & Space » Intergroup, European Parliament
- **Jean-Eric Paquet**, Deputy Secretary-General, European Commission
- **Pierre Delsaux**, Deputy Director-General, DG GROW, European Commission
- **Giulio Ranzo**, CEO, Avio
- **Sebastian Straube**, CEO, Interstellar Ventures
- **Gard Ueland**, Chairman, Galileo Services

Introducing the session, the moderator, **Andrea Bonnani**, columnist for La Repubblica, stressed that to meet its ambitions, Europe will have to mobilize an appropriate level of financial resources, even though , with the departure of the UK, the EU will have to face a budgetary gap.

According to **Mr Ivan Scalfarotto, Secretary of State, Italian Ministry of Economic Development**, other observations can be made with regards to financial support perspectives: space brings increasing benefits to economy and society and can now rely on new markets, while the level of private investment has been increasing substantially and successful public-private partnerships were undertaken recently. The main challenge will be to create an appropriate ecosystem to maintain Europe's position in a rapidly evolving space sector. In his opinion, successful strategies will require effective coordination among European public and private space actors but also with actors outside the sector. To maximize the integration market oriented policies will be essential. Therefore, as he stressed, Italy has engaged 500M€, combining regional and general budgets, which mobilized an additional 500M€ from private actors. Mr Scalfarotto suggested that similar schemes could be implemented for Europe, building on the mix of financing tools and actors already existing in Europe that could support the mobilization of private funding. In addition, various cases exist already inside and outside Europe showing successful examples of partnerships between public and private organizations to achieve common objectives.

Mr Jean Arthuis, Member of the European Parliament and Chair of the BUDG Committee, provided some perspectives on the European budget, recalling that the budget of the EU represents approximately 1% of EU GDP and that 80% of it goes back directly to the Member States in various forms. The remaining 20% cover supranational activities, among which space. Preparing the next MFF, as he noted, is a complex exercise which will require a necessary level of flexibility. Therefore, he underlined that it will be important, firstly, to define European ambitions and the areas generating a concrete added-value for the EU. He stressed afterward that, if it is rather obvious for people involved in the sector that space is a supranational domain, well addressed at European level, ~~but~~ it would be essential to demonstrate it to politicians and decision-makers who are not always aware of the numerous benefits of the space sector. Regarding the UK, Mr Arthuis

precised that, once the general conditions have been negotiated for Brexit, a new round of discussions will start and space could be one of the areas of future collaboration to foresee.

Ms Monika Hohlmeier, Member of the European Parliament and Chair of the « Sky & Space » Intergroup, confirmed that, although MEPs present at the conference are impressed by the dynamism of the space sector and well aware of the many challenges ahead of it, most other members of the European Parliament are not aware of the stakes related to space. From this standpoint, demonstrating benefits of space will be crucial for future support and thus for the negotiations of the next MFF.

Mr Delsaux, Deputy Director-General at DG GROW, European Commission, agreed that communicating about the value of space outside the space community is becoming increasingly important as the stakes are high. Space will become a key driver of the future world power. This is why, in order to remain a space power, Europe needs appropriate resources, allowing to continue with the existing programmes, to invest in new ones and to support a continuous innovation.

Mr Jean-Eric Paquet, Deputy Secretary-General at the European Commission, explained that challenges to face when preparing the next MFF should not be underestimated, especially taking into account the budgetary consequences of the Brexit and a number of new important areas for the EU in addition to space. However, in his opinion, strong arguments exist for space to be financed, but the 'battle' is far from being won, since financial resources will be required to continue existing programs. Mr Paquet explained that the work is being currently intensified, with an Impact Assessment of the EU investment in the ongoing space programmes. Indeed, for this exercise, a public consultation was open and the audience is invited to participate under a corporate umbrella or as individuals, allowing to define how the EU has so far contributed, and should to so in the future, to development of the European space sector.

Mr Giulio Ranzo, CEO of Avio, shared his experience in managing Avio and in particular in the risky, but eventually successful, entry of the company on the stock market. Mr Ranzo argued that more companies will come to space looking for markets supported by public capitals. He is convinced that in space, on the one hand, the public money and support are crucial, but insisted also that, on the other hand, private investors have to accept it and focus on market opportunities and competitive solutions. Europe can certainly be proud, according to him, of its achievements and of the status of its capabilities that are, at least for some of them, unique in the world. He reminded also that the investors need speed, which is not always, as he mentioned, the main European quality. Also incentives, such as facilitating tax policies, will be important in his opinion. Mr Ranzo concluded with a positive assessment of the state of the European space sector.

Mr Sebastian Straube, CEO of Interstellar Ventures, shared with the audience his experience in terms of entrepreneurship and private investment. In his opinion, Europe has good qualities, but still lacks sometimes in ambitions. Luxembourg is a good example of how momentum can be created around cutting-edge concepts and technologies with other partners in China, Japan and others showing strong interests. Venture capitalists are ready and willing to invest but need a bolder Europe approach.

Mr Gard Ueland, Chairman of Galileo Services, focused his intervention mainly on the downstream sector, explaining that the possible return on investment for the space-based service industry can reach a factor of 1 to 100. This is the main driver explaining the growing interest of private investors for the space programmes and technologies. He emphasised that it is an opportunity for Europe. With the progress of European space programme, Europe should now reap benefits and support downstream applications. Yet, currently, the investment of Europe, warned Mr Ueland, is a lot lower than US or Chinese counterparts, even though the downstream sector is crucial to take full advantage of the full value of the European programmes.

The audience raised questions on European activities in the field of launch solutions for small satellites. Giulio Ranzo explained that various activities are already ongoing, in particular at Avio. In this field, he added, an important aspect is related to public support to financing for operators interested in launching small satellites. Mr Delsaux concluded the session by recalling that various European financing instruments exist already and therefore should be used.

Closing Address of the first day– Günther Oettinger

Mr Günther Oettinger, Commissioner for Budget and Human Resources, European Commission, concluded the first day of the Conference on the European Space Policy.

He started by noting that European sovereignty overlaps all three elements: autonomy, security and defence. In particular, he observed that no single European country or company could afford the investments in terms of finance and human resources that other major space powers can mobilize. However, the European Union is definitely competitive in the aerospace sector.

He recalled that the MFF is the instrument defining the founding of the European programmes in at least seven years to come and leaving the possibility to make longer-term plans. A key feature will be to effectively support the competitiveness of the European industry on the global markets.

He stressed the importance of achieving greater synergies across the aerospace, security and defence sectors, in order to demonstrate their added-value and efficiency for the EU policies and effectively support their implementation.

While he opposed the idea of cutting this kind of funding, he reminded that the EU will have to take into consideration that budget will lack in around EUR 12/13 billion per year due to Brexit and that new priorities may still emerge. Such a budgetary gap shall be financed at 80% by “fresh” money and at 20% through cuts. However, Mr Oettinger stated that Erasmus, as well as the next Framework Programme for Research & Innovation shall not be subject of such cuts.

Making reference to the proposal made by previous Commission’s speakers, and namely the one of the Vice-President **Maroš Šefčovič**, to double space budget, Mr Oettinger warned that the EU cannot legally go into debt. He underlined the new priorities of the Commission and concluded that the EU added-value of all the projects will need to be proved. . In this respect, he advised the space community to adequately lobby ministers of finance at the national levels to be in favour of finding more funding for the space policy.

Special Address

Mariya Gabriel, Commissioner for Digital economy and society

The Commissioner pointed out that Europe is facing new challenges related to security and internal market, which can benefit of a strategic use of space, by intensifying the link with the digital economy.

It is therefore essential to bridge the digital divide and to ensure investments of around 500 billion euro by 2025. Furthermore, according to Commissioner, it is crucial to properly manage the spectrum, so that 5G ecosystem can grow within the certainty of long term licenses granting.

Ms Gabriel acknowledged that connectivity provided by satellites is the only mean to ensure rural areas coverage. She insisted also on the fact that innovative hybrid networks need to be built.

She also noted that the new mega-constellations in LEO will provide mobile smart services to Internet-of-Things and Machine-to-Machine connectivity for the transport and energy sectors.

For Ms Gabriel, the success of these initiatives lays in the combination of large investments, proper definition of rules & regulations and innovative technology developments. As she underlined, EU already demonstrated its visionary capacity back in 2012 by investing 700 million euros in R&D, the most important R&D investment worldwide.

Yet, in her opinion, 5G is clearly nowadays a strategic infrastructure, required for the needs of the digital single market, offering also new opportunities for growth to telecommunications operators.

However, the Commissioner pointed out that the Joint Statement signed by ESA and the representatives of the European industry at Le Bourget paves the way for the future. Therefore, it would be necessary to secure a sufficient financial allocation, through the next MFF, allowing to fully develop and deploy the system.

Other significant steps include, in her opinion, investments in supercomputers that can process Earth Observation data to better understand climate change and that can support traffic management, promoting the full exploitation of the digital economy, well beyond 2025.

Mrs Gabriel concluded that, it is high time to benefit from this new digital ecosystem, allowing economic opportunities to flourish particularly in areas such as health, energy and transport.

Sixth Session – Space for a prosperous and social Europe: an asset for a more connected society and economy

Speakers of the sixth session:

- Carlo des Dorides, Executive Director, European GNSS Agency
- Christian Ehler, MEP, Member ITRE Committee, European Parliament
- Pearse O'Donohue, Director at DG CNECT, European Commission
- Josef Aschbacher, Director of Earth Observation, European Space Agency
- Rodolphe Belmer, CEO, Eutelsat
- Evert Dudok, President, ESOA
- Karim Michel Sabbagh, President & CEO, SES

Carlo Des Dorides, Executive Director at the European GNSS Agency, started his intervention by describing a broad panorama of the growing interweaving between space and telecommunications at the service of citizens, economy and society. The Galileo downstream sector can benefit from the widespread diffusion of smartphones (more than 5 billion at the global scale). Those devices offer nowadays, among others, geo-positioning and communication services. Therefore, the future societies will be characterized by omnipresent positioning and connectivity requirements, especially with the development of the innovative Internet of Things (IoT), sensing the environment around us at a highly increasing pace (more than 30 trillion targeted in the next decade). He added that the aviation sector will also adopt broadband connectivity in the next five years, doubling the market demand by 2020, with a yearly growth of more than 10% in the near future.

In this context, as Carlo Des Dorides pursued, space is the enabler of new services, exploiting its essential role in the ~~system~~ of systems environment, thanks to the widespread capacity to furnish data, ~~integrating~~ including for Earth Observation and navigation, and to distribute them through telecommunications (also combining terrestrial services with space-based ones, as in the hybrid 5G networks).

In addition to that, Mr des Dorides underlined that it is of the utmost importance to ensure that space systems are more resilient and less vulnerable to cyber-attacks, especially that the latter can also affect the IoT and cloud computing systems, nowadays integrated in a seamless chain.

He reminded that the position of the European Union on this issue can be summarized by the following:

- Investments of around 12 billion euro, a hopefully increasing in the future;
- *Space Strategy for Europe*, of late 2016, identifying the necessity of a new approach based on partnerships with industry as crucial;
- Knowledge-based society, as an instrument allowing to build the future of Europe and to create new jobs and business opportunities.
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Christian Ehler, MEP from the ITRE Committee, European Parliament, recognized that Europe is currently facing a period of transition and, in such a context, it needs the necessary political support coming both from the European institutions as well as from Member States, also in the space sector. Today, new technologies are questioning the traditional opposition/ competition? Between the GEO satellite solutions versus LEO constellations proposed by the private sector. Therefore, the traditional European space industry, publicly funded, is now considerably challenged.

The Big Data revolution, in his eyes, is upcoming, adding new threats and opportunities to the global market, and requiring investments in R&D to be covered by the next MFF. Thus, the question soon will concern a possibility to share investments between sectors, for example quantum supercomputing and space. In addressing this point, it is important, according to Mr Ehler, to underline the importance of ensuring the availability of European funding mechanisms for highly competitive infrastructures, without, nevertheless, jeopardizing national funding to R&D programs.

Pearse O' Donohue, Director DG CNECT, European Commission, recognized the strengths of the European satellite industry and welcomed the future integration of 5G space solutions into a hybrid communication network.

In his opinion, it is now essential to plan the deployment of innovative services, with the clear understanding that 5G represent much more than telecommunications itself, as also recognized by the 5G Infrastructure Association (5GIA), , Indeed, the latter identified some key vertical fields of interest (agri-food, energy, transport, health). In all these domains, space is the element which can ensure ubiquitous coverage even in remote areas, allowing of the accessibility of these innovative 5G-enabled services everywhere.

Josef Aschbacher, Director Earth Observation, ESA underlined the importance for Earth Observation to contribute to a project of a prosperous and social European society and economy. Europe engaged itself in the construction of more than 28 satellites already ten years ago, building, he stressed, the most efficient EO program worldwide. Copernicus is delivering more than 15 TB of data daily, which is more than the pictures uploaded on Facebook.

But Space is also challenged by innovation and disruptive technologies appearing in other parts of the world, starting from the Silicon Valley, and affecting the ICT and the new private space ventures. Innovation can therefore become a game changer in this new context and ESA wishes to incorporate it also in the European industrial landscape. Mr Aschbacher insisted furthermore on the need to ensure the European competitiveness over the following 10 years, for instance at the forefront in public and private activities related to Earth Observation and hopefully thanks to the financial support allocated in the next MFF and at the next ESA Ministerial Council (C-MIN) in 2019.

Evert Dudok, President of ESOA, underlined the importance of satellites as key infrastructure for the delivery of services that address user needs. In his opinion, Copernicus is an excellent example of collaboration among various actors, both institutional and private ones. Also the secure connectivity is a domain where satellites are indispensable. Therefore, according to Mr Dudok, new technologies need to be developed to assist public officers in the security domain, including hybrid networks and laser communication technology in space. The speaker hoped equally that Europe will position itself in the 5G context with the most innovative architecture worldwide. Yet, as he suggested, for to do so, the European Commission would need to support the spectrum discussion in 2019, identifying an Action Plan together with telecoms and satcom operators, but also supporting the definition of standards worldwide and investing in end-user equipment.

Karim Sabbagh, President of SES, described the challenges and opportunities available on the market, foreseeing nevertheless, already at this stage, a growth in data traffic driven by video content. It would therefore be important, in his opinion, for the investment in the 5G architecture to be based on a sustainable economic model in the long term. Furthermore, the emerging markets, such as airplane connectivity, need

to be addressed timely. Therefore, SES is planning to launch new satellites in GEO in 2018 and considering to scale up its infrastructure in the future by integrating its assets with terrestrial infrastructure. The objective, with the horizon of 2021, is reaching the largest constellation with a global coverage worldwide.

Rodolphe Belmer, CEO at Eutelsat, expressed his position on the transitional phase, passing from the traditional business of satellite-based applications, like TV and governmental funded services, towards a new industry, addressing the needs of rural areas and thus allowing to bridge the digital gap. He hoped that this will hopefully define a new trajectory for the sector, producing new growth starting from 2021. Despite the current flat growth curve, it is important, in his opinion, to invest in the sector already today, to ensure that new capabilities and technologies are available whenever a greater demand appears in the future. New developments are foreseen to provide large capacity (VHTS) and the Internet of Things, that can serve new user needs in agriculture and automotive and may require dedicated constellations. According to Mr Belmer, Europe could support the industry in the transition period in three ways, by:

- Protecting frequencies, in particular Ka band at WRC2019;
- Investing in ground equipments, especially the user terminals needed for the new hybrid networks;
- Defining a 10 years roadmap to sync the time horizon of telcoms with the one of satellite operators.

Seventh Session: Space for security and defence in Europe: beyond the dual-use

Speakers of the seventh session:

- **Françoise Grossetête**, MEP, Rapporteur on "European Defence Industrial Development Programme", European Parliament
- **Tomasz Husak**, Head of Cabinet of Commissioner Bieńkowska, European Commission
- **Jorge Domecq**, Chief Executive, European Defence Agency
- **Pascal Legai**, Director, EU Satellite Centre (SatCen)
- **Magali Vaissiere**, Director of TIA, European Space Agency
- **Roberto Battiston**, President, Agenzia Spaziale Italiana
- **Antoine Noguier**, Senior Vice-President, Head of Strategy, Airbus Defence&Space
- **Miguel Angel Panduro**, CEO, Hisdesat

The moderator of the seventh session of the conference, Mr Andrea Bonnani, introduced the overarching themes of the panel, noting that the European defence was nothing more but a dream only one decade ago, while today it seems to become a reality. According to the moderator, the space sector, through the data delivered as well as its assets is becoming an indispensable tool for the security and defence activities. It is also an element of the national sovereignty and, maybe tomorrow, of the EU sovereignty. Now it needs to be decided if the acquisition of the space data should continue to rely on national decisions and financing or whether, on the contrary, Europe should move beyond the dual-use of space infrastructures and start thinking of European military space assets.

Ms Françoise Grossetête, Member of the European Parliament and Rapporteur on "European Defence Industrial Development Programme" (EDIDP) noted the extent to which the Member States' sovereignty goes through the European one. She then addressed the topic of the next MFF. In particular, she explained how funding for EDIDP should not be taken from existing budget lines, e.g. Horizon 2020, but from the unallocated financial margins. Reducing research budgets would be a mistake, she added. This fund should in particular help to develop areas that can link space and defence, such as cybersecurity, thereby being ultimately beneficial also for space programmes.

Mr Tomasz Husak, Head of Cabinet of Commissioner Bieńkowska, European Commission, mentioned that with this initiative, the European Commission aims at achieving a greater harmonisation of capabilities among the Member States, allowing to obtain an increased efficiency and economies of scale. He noted that many programmes of the Commission are by nature dual-use (Copernicus, Galileo, SST, GovSatCom), and he expressed his favourable opinion for aggregating demand for the European launches.

The Chief Executive of the European Defence Agency, Mr Jorge Domecq, discussed the future role of EDA within the framework of the European defence, in light of the recent major milestone represented by the approval of PESCO. He remarked how this development will allow Member States to better invest and operate together. The EU defence fund represents the financial stimulus needed to fulfil the European ambitions in security and defence, namely as a security provider at global level but also of course to protect EU citizens. According to Mr Domecq, these initiatives do not represent a transfer of sovereignty, but rather a sharing process that, not only responds to the industrial perspective, but also to the end-user needs. He noted that no space projects have been selected yet in the first round of PESCO projects, but highlighted that EDA is actively seeking for synergies between space and defence, for example with ESA, on cyber, maritime surveillance systems and GovSatCom.

Mr Pascal Legai, Director of the EU Satellite Centre, presented the key missions of the Agency, incorporated as such into the European Union on 1 January 2002, together with its activities in the field of Common Foreign and Security Policy (CFSP), including crisis management operations. The latter is fulfilled by providing products and services resulting from the exploitation of the relevant space assets and collateral data. Then, he outlined how the EUSC is going to interact with other actors active in European defence landscape. He suggested that the evolution of EUSC requires it to better identify the and better satisfy final users' needs, through a continuous dialogue and cooperation with stakeholders and decision makers (e.g. ESA, agencies, EEAS, Frontex, etc.). He ultimately called for more investments in technology and innovation.

Ms Magali Vaissiere, Director of TIA, European Space Agency, updated the audience on ESA's studies and activities with regard to GovSatCom. She explained that the programme follows a phased approach, starting by looking at the existing national assets and capabilities and their uses. She underlined the importance of pooling capacities among public and private infrastructures, in order to make a larger, aggregated system.

Mr Roberto Battiston, President of Agenzia Spaziale Italiana, remarked that Italy supports the utilisation of space for the sake of a stronger Europe, able to project its political status outside its borders. He then recalled how Italy has, since long time, adopted the dual-use policy for its space assets, for example in the very successful Cosmo Sky-Med programme on-going for ten years, as well as in Athena-Fidus in the field of telecommunication. He tackled the recent reorganisation of the Italian space governance, demonstrating, in his opinion, the high level of attention of the Italian government for space. It provides a boost for its space ambitions by shortening the decision-making chain. Notably, while the administration responsibilities for ASI continue to remain within the Italian Ministry for Higher Education and Research, the political and strategic direction is now enacted at Prime Minister's cabinet level, through a horizontal panel in which 10 other ministries are represented. Mr Battiston noted how this organisational structure will permit greater synergies, a tendency that could also be useful at the European scale. He concluded mentioning that in order to obtain more robust space activities, it is imperative to build up the workforce and for that an appropriate educational system is crucial.

Mr Antoine Noguier, Senior Vice-President and Head of Strategy at Airbus Defence & Space, pointed out that militarisation of space is already happening. As such, the ability to operate autonomously in space is not anymore guaranteed, therefore there is a strategic and imperative need for resiliency, redundancy, availability and security of space data as well as for an assured access to space, and to the frequencies

spectrum. He mentioned that it is necessary to quickly maximise synergies and envision dedicated space assets for defence, from SST to SSA and to develop the full spectrum of in-orbit activities.

Mr Santiago Bolívar, President, Hisdesat, reminded that taking into consideration the scarcity of resources across the EU, partnering public and private sector can confer agility to develop space projects. Furthermore, he insisted that building on the momentum conferred by public institutions, can facilitate large scale projects development in the EU.

Closing Address of the Conference – Jerzy Buzek and Emil Karanikolov

Mr Jerzy Buzek, Member of the European Parliament, Chair of ITRE Committee, gave one of the two closing address speeches of the 10th Conference on European Space Policy. He stressed the importance that must be given to space and, like almost all his previous high-level, he mentioned the upcoming discussions on the next MFF, crucial in his eyes for the future of the European policies and, in particular, the space policy.

In this perspective, Mr Buzek made several recommendations on the way forward:

- Building on the success of the existing flagship programmes, he recognized the need to go further and to target emerging user needs as well as other key priorities, such as cybersecurity;
- He supported the future GovSatCom initiative, which would strengthen the EU autonomy and support those Member States that do not have their own satcom systems;
- He called for intensified efforts on the SST programme, namely by financing it properly and cooperating with international partners.
- He would like also the EU to make more efforts on space R&D in the new MFF, with the BUDG committee proposing to increase the budget of the future “Framework Programme 9” up to 120 billion€.
- He brought also forward the need to ensure proper staffing for the EU GNSS Agency.

Mr Buzek stated that, the EU is now at a time of a very difficult discussion, namely with the Brexit negotiations. On this, he recalled how European stakeholders had very different positions on energy policy just ten years ago and how, after severe energy crises, today a common energy policy is being built. He hoped that, in ten years from now, the European space policy will have united Europe in the same way.

Taking the floor, Mr **Emil Karanikolov, Minister of Economy of Bulgaria**, reaffirmed that the Bulgarian Presidency will support continuity and development of EU space flagship programmes, with the objective to reach the EU strategic independence, but also without forgetting the elements such as job creation, boosting economic growth and competitiveness of the European industry as well as fostering cross-border cooperation.