



# 12th European Space Policy Conference

*New Decade, Global Ambitions: Growth,  
Climate, Security & Defence*

21-22 January 2020, Egmont Palace, Brussels

Prepared for:



# 12<sup>th</sup> European Space Conference

New Decade, Global Ambitions: Growth, Climate, Security & Defence



Brussels - 21 & 22 January 2020 - Egmont Palace

## *Official Proceedings*

Prepared by ESPI  
January 2020

# TABLE OF CONTENT

- DAY 1: TUESDAY 21 JANUARY 2020..... 1
  - Welcome Address - New Green, Industrial and Geopolitical Ambitions for Europe in Space.....1
  - Plenary Session I - The Future of the European Space Ecosystem: From Access to Space to the new EU Industrial Strategy .....4
  - Special Address .....7
  - Plenary Session II - Space and Defence: New Challenges in a changing International Context .....8
  - Plenary Session III - Building Bridges: Giving new meaning to International Space Cooperation in the new decade..... 11
  - Plenary Session IV - Space to serve the European Green Deal: A look at the Future ..... 15
  - Focus Session I - Converging European Defence Initiatives ..... 18
  - Focus Session II - Towards a Space Partnership between Europe and Africa..... 21
  - Focus Session III - Human and Robotic Exploration and Exploitation: Commercial and Economic Opportunities for Europe..... 24
  
- DAY 2: WEDNESDAY 22 JANUARY 2020 ..... 27
  - Opening Address ..... 27
  - Plenary Session V - New Space, R&D and Innovation: Towards a Paradigm Shift..... 29
  - Plenary Session VI - Security in Space: a European or International approach to Space Traffic Management, SST/SSA and Cybersecurity? ..... 32
  - Plenary Session VII - The Keys to the Future: European Strategic Autonomy in AI, Quantum Technology, Data, the Cloud, 5G and Cybersecurity ..... 34
  - Special Address ..... 37
  - Closing Address..... 38
  
- ABOUT ESPI ..... 39

## DAY 1: TUESDAY 21 JANUARY 2020

### Welcome Address - New Green, Industrial and Geopolitical Ambitions for Europe in Space

Introduction by:	<ul style="list-style-type: none"> <li>• <b>Joëlle Vanderauwera</b>, Managing Partner and Co-founder, Business Bridge Europe</li> </ul>
Speeches by:	<ul style="list-style-type: none"> <li>• <b>David Clarinval</b>, Deputy Prime Minister, Kingdom of Belgium</li> <li>• <b>Josep Borrell</b>, High Representative and Vice-President, European Commission</li> <li>• <b>Blaženka Divjak</b>, Minister of Science and Education, EU Council Presidency, Croatia</li> <li>• <b>Johann-Dietrich Wörner</b>, Director-General, European Space Agency</li> <li>• <b>Jean-Loïc Galle</b>, President, Eurospace</li> </ul>

**David Clarinval**, Deputy Prime Minister, Kingdom of Belgium opened the European Space Conference by highlighting that 2020 will be a key year for Europe, being at the crossroads of an ambitious ESA roadmap, a new European Parliament and a new European Commission. His key messages include:

- The new decade is marked with fierce competition in space, capacities previously reserved to government agencies are increasingly accessible to commercial actors.
- This development cannot be disassociated from European infrastructure as the autonomous access to space has never been more crucial in a time of unprecedented diffusion of space applications to new fields and new challenges.
- Through the creation of DEFIS as well as the commitments made at the ESA Ministerial Council Space19+ reflect European dedication to advancements in space.
- The right measures need to be taken for security in order to protect European infrastructure from physical and cyber threats. Cyber threats are a priority for Belgium, which aims to become a centre for cyber security-related activities thanks to the ESA centre in Redu.
- Sharing knowledge between organizations should lead a common vision for Europe, the future of which will rely on ambition and creativity.

**Josep Borrell**, High Representative and Vice-President, European Commission (speech available [here](#)) reflected on his beginnings as an aeronautical engineer and the first Spanish satellite launched from French Guiana. He observes that:

- From a geopolitical point of view, space is the new frontier of global politics, making the use of the word 'strategic' in regards to space as a domain entirely justified.
- Satellites and space-based assets are important for the functioning of the global economy and also increasingly a key part of the security equation.
- The increasingly geostrategic nature of space is reflected in recent developments, such as the Indian ASAT test in March 2019, development of Russian counter-space capabilities, as well as institutional and policy reform in China, the United States and within NATO
- Like life on Earth, space is changing its nature towards becoming more congested, contested and competitive.
- Europe has a massive stake in the future of space, future prosperity and defence in space and thus the EU should treat space as a strategic issue and act accordingly.

**Blaženka Divjak**, Minister of Science and Education, EU Council Presidency, Croatia recalled that space has been a source of inspiration, also to those voices less visible in the space sector. She added that:

- Space is of strategic importance for the EU and while Europe has historically been at the forefront of space exploration, space also raises questions also for social sciences and humanities.
- The space sector is undergoing transformation – new space – and the main question is how to leverage EU technological leadership and boost investments for space inventions.
- Public funding for the European space sector has been strong, but the EU needs to further support the whole value chain and foster cooperation.
- During Croatia's EU Council Presidency, the aim is to increase the investment in EU space programmes, in order for Europe to remain strong and meet its societal and economic challenges, e.g. the Green Deal.

**Johann-Dietrich Wörner**, Director-General, European Space Agency reflected on climate change issues in the past, the creation of the DG DEFIS and how space can tackle most challenges currently faced and included key messages:

- On the matter of climate change, there should be no hesitancy to look into the future and work against it with dedication, which requires: discovery/identification, monitoring, raising awareness, protection/mitigation – thus highlighting the crucial role of Earth Observation as a precursor to action.
- Space debris is one of the challenges of the future and Europe, ESA, EU and industry should join forces to go forward to mitigate challenges of the future.
- The Member States contributions at the ESA Ministerial Council Space19+ send a clear signal of cooperation and willingness to work together in ESA and with the EU.
- Linking to the Multi-annual Financial Framework, he reflects on the €16B originally allocated and encourages to further join forces for Europe to succeed globally and thus advocates to confirm at least the €16B.

**Jean-Loïc Galle**, President, Eurospace (speech available [here](#)) spoke about what space can do for Europe and what Europe is doing in space today. He reflected that the three main priorities of Europe are:

- The Green Deal, for which space is a requirement in order to assess climate variables autonomously. He calls for the consolidation of and expansion on Copernicus infrastructure.
- Making Europe fit for the digital age, building on Europe's world class satellite communication industry, with the priority of continuously upgrading Galileo.
- Security, defence and humanitarian aid, for which space is recognized as *the* strategic asset by every world power. He thus called for more ambition on SST and Govsat programs.
- Europe is the 4th space manufacturer worldwide, providing about 15% of worldwide spacecraft production. However, unlike its competitors, most of the activity in Europe is associated to the volatile commercial export markets.
- With only 4% of the worldwide space industry workforce the European space sector is an undisputed leader for its efficiency and its competitiveness. However, key improvements for the future of European space strategy are needed and include:
  - Focusing on innovation and technology to improve competitiveness and non-dependence,
  - Devising a European-wide industrial space policy to ensure that the EU is fit for the Digital Age
  - Making the full use of space to deal with environmental challenges and Europe a precursor of a cleaner space by developing in-orbit services for debris removal

- Including a “space dimension” into EU Defence Industry programmes (i.e. secure communications)
- Ensuring the sovereignty of Europe – referring to the independent access to space and the freedom to operate in space.

## Plenary Session I - The Future of the European Space Ecosystem: From Access to Space to the new EU Industrial Strategy

Moderator	<ul style="list-style-type: none"> <li>• <b>Jean-Jacques Tortora</b>, Director, European Space Policy Institute</li> </ul>
Debate with:	<ul style="list-style-type: none"> <li>• <b>Jerzy Buzek</b>, Member, European Parliament</li> <li>• <b>Thomas Jarzombek</b>, Coordinator of German Aerospace Policy, Germany</li> <li>• <b>Timo Pesonen</b>, Director-General, DG DEFIS, European Commission</li> <li>• <b>Eric Morel de Westgaver</b>, Director of Industry, Procurement and Legal Services, European Space Agency</li> <li>• <b>Lutz Bertling</b>, Chief Strategy &amp; Development &amp; Chief Digital Officer OHB Group, &amp; Management Board Member, OHB</li> <li>• <b>Jean-Marc Nasr</b>, Executive Vice-President, Space Systems, Airbus Defence and Space</li> <li>• <b>Luigi Pasquali</b>, CEO, Telespazio</li> <li>• <b>André-Hubert Roussel</b>, CEO, ArianeGroup</li> </ul>

**Jerzy Buzek**, Member of the European Parliament reflected on Europe's preparedness for the globally changing environment and his key messages included:

- The Space Strategy for Europe is an important step towards ensuring the EU is properly equipped to face the global changing environment.
- The close cooperation between EU institutions, member states, national space agencies, ESA, as well as the European flagship programmes Galileo, Copernicus and also Govsatcom are crucial.
- Recalled the importance of lobbying towards successfully securing the proposed amount of money for the Multi-annual Financial Framework – a prerequisite for the future of European space and also space's contribution to the Green Deal.
- Reiterated the crucial role space plays in various industries – stating there is no progress or innovation without cooperation of satellites.

**Thomas Jarzombek**, Coordinator of German Aerospace Policy, Germany shared the agenda of the German presidency as well as priorities for space and included that:

- The results of the ESA Ministerial Council Space19+, state that Europe has signalled the importance it ascribes to space, in particular to have the right framework and investments in technology.
- The flagship programmes of the EU are a pillar of Europe's strategy and it is important to continue the successful programmes, to extend and renew them.
- The first aim of the German Presidency is to finish the regulation of new space programmes while the second is to discuss four primary concerns with member states:
  - Rules for the space economy and finding a common position
  - Space traffic management
  - Financing space activities
  - IP and cyber-security
- Europe can only be competitive if it is in a competition, important to foster several players and the new space sector to bring new impulses to the market.

- He advocated for the impetus for change and strategy to come from decisions to be made within companies without too much political influence every couple of years.

**Timo Pesonen**, Director-General, DG DEFIS, European Commission advocated for trust in European excellence and included key messages:

- The three priorities for this Commission for the space economic sector are consolidation, competition and communication.
- To consolidate space regulation and secure funds of €16B or more for the MFF, he will focus on recruitment and consolidating his own team, while increasing synergies between space and defence industries.
- Crucial to increase domestic competitiveness and competitiveness with global partners and competitors, activities also needed on the African continent according to President von der Leyen's priorities.
- Communication with citizens needs to improve to make them aware of what space can offer to them, how applications can benefit them and how taxpayer money is spent.
- In order to further strengthen Europe's space industry, a trust in the 'European way' is required that entails learning from competitors but not copying.
- A crucial priority must be to help European businesses scale up and grow with European investments.

**Eric Morel de Westgaver**, Director of Industry, Procurement and Legal Services, European Space Agency spoke about the way forward after the ESA Ministerial Council Space19+ and the forthcoming evolution of industry. He added that:

- More important than the dichotomy of traditional and new space are the concepts of capacity of innovation and new acquisition policies.
- Examples of novel approaches are the Mars Sample Return mission, Copernicus CO<sub>2</sub> Mission as well as the space debris removal mission decided at the Space19+.
- ESA has the capacity to assess and oversee new developments which creates confidence in member states to invest in risky and innovative projects.
- ESA must further modernize to respond to challenges of today and tomorrow .
- The ESA Ministerial Council Space19+ was an expression of confidence by member states which ESA must deliver on to ensure that the European space programmes work in a coordinated way and that the maximum amount of money is used for industry, for projects, for data and not just for infrastructure.

**Lutz Bertling**, Chief Strategy & Development & Chief Digital Officer OHB Group, Management Board Member, OHB talked about the successes of industry and the potential to evolve. His key messages included:

- The benefit of space applications needs to be more effectively communicated to the public and industry has to play its own role in this communication process.
- The reliability of Galileo needs to be ensured for the future, particularly making sure any scenario of replenishment does not create operational risks.
- Competitiveness drives innovation and performance and should thus be a priority for Europe in the future.
- The democratization of access to space with more actors entering has led to developments of microlaunchers, a revolution that Europe should not miss as it brings more competition and more affordable access to space at a low risk for competition with the Vega and Ariane launch vehicles.

- He praised the financial commitments made at the ESA Ministerial Council Space19+ and expresses trust in the industry's growth and crisis resilience.

**Jean-Marc Nasr**, Executive Vice-President, Space Systems, Airbus Defence and Space advocated for continued financial commitment to European space efforts and added that:

- The commitment made at the ESA Ministerial Council Space19+ signals a clear decision to move forward.
- Europe should not be shy about its accomplishments in space, names Europe's integral role in the Artemis mission as an example.
- The alliance between industry and political actors is an asset which should not be hampered by bureaucracy.
- Called for a clear effort from Europe to be the partner of choice for other continents, and stressed the motto that "vision without execution is hallucination", therefore delivery is paramount.

**Luigi Pasquali**, CEO, Telespazio reflected on the relationship of competitiveness and innovation and added key messages:

- The usefulness of space and the allocation of taxpayer money needs to be more effectively communicated to the citizens of Europe.
- Rather than implementing changes and looking for transformation, the existing elements need to be accelerated.
- The relationship of the European Commission with the industry has transformed – the latter not simply being a supplier anymore but a partner in the development of the European space ecosystem.
- This dialogue needs to be consolidated, accelerated to help industry expand on its role.

**André-Hubert Roussel**, CEO, ArianeGroup reflected on the current European industrial policy set-up and further improvements. He included key messages:

- Remarks on the particular circumstances of European launch service procurement and need to move forward with a European preference clause for launch services – a "Buy European Act".
- Praised the success of the ESA Ministerial Council Space19+ and in particular the contributions made for the development of the Ariane 6 and Vega launchers.
- Recalled the importance of progressing faster and innovating quicker.
- It is important that the level of ambition is reflected in the funding allocated, i.e. through the MFF, the European Defence Fund, through Horizon Europe.
- Increased importance should be paid to space security and safety and how to tackle environmental challenges from Earth and from space.

## Special Address

Speech by:

- **Margrethe Vestager**, Executive Vice-President, A Europe fit for the Digital Age, the European Commission

**Margrethe Vestager**, Executive Vice-President, A Europe fit for the Digital Age, in the European Commission delivered a speech, which contained following messages:

- Space is an endlessly fascinating domain, which enables various beneficial applications on Earth, and is resource-demanding.
- Europe can be proud of its achievements in space, which can even serve as a model for other industries.
- No other industry holds so much potential and brings comparable societal impact.
- Supporting European strategic autonomy will greatly rely on space.
- Space is an enabler of new technologies and concepts, such as AI or ubiquitous connectivity technologies in space will also enable to better exploit technologies utilised “on ground”.
- Space services will also assist in addressing climate change and the green transition will happen at the same time as the digital transformation.
- There is a need for space regulations adapted to support small businesses.
- Europe should champion a level playing field which will support best ideas to come through, irrespective of their place of origin and from any kind of actor.
- Supporting innovative ideas and maintaining existing capabilities adapted for future will require adequate funding and it is of enormous importance that the new MFF will make this money available.
- Linking space and defence industries should provide a great optimisation tool for the investment put in these two sectors.
- Space technologies have gradually more civilian and military applications together, which requires different communities to work together.

## Plenary Session II - Space and Defence: New Challenges in a changing International Context

Moderator	<ul style="list-style-type: none"> <li>● <b>Marc Paoloni</b>, Senior Partner and Co-founder, Business Bridge Europe</li> </ul>
Guest Speakers:	<ul style="list-style-type: none"> <li>● <b>Philippe Goffin</b>, Minister of Foreign Affairs and Defence, Kingdom of Belgium</li> <li>● <b>Angelo Tofalo</b>, Undersecretary of State for Defence, Italy</li> <li>● <b>Michel Friedling</b>, General, Space Commander, Ministry of Armed Forces, France</li> </ul>
Debate with:	<ul style="list-style-type: none"> <li>● <b>Nathalie Loiseau</b>, Member, Chair of SEDE subcommittee, European Parliament</li> <li>● <b>Pierre Delsaux</b>, Deputy Director-General, DG DEFIS, European Commission</li> <li>● <b>Jean-Loïc Galle</b>, CEO, Thales Alenia Space</li> <li>● <b>Miguel Ángel Garcia Primo</b>, CEO, Hisdesat</li> <li>● <b>Philippe Glaesener</b>, Senior Vice-President, Corporate Development, SES</li> <li>● <b>Jean-Pierre Serra</b>, Vice-President Defence and Security, Airbus Defence and Space</li> </ul>

**Angelo Tofalo**, Italian Undersecretary of State for Defence, explained the evolution of the space environment and the consequences it has on military aspect of space, which has itself become a domain of military operations. His main messages were:

- Technological innovations, including those in space, have a positive impact on economic growth.
- Therefore, it is necessary to protect them, hence the need to identify who will be responsible for this mission at European and international levels.
- Italy is considering creating a space operations command tackling the threats to space systems.

**Philippe Goffin**, Belgian Minister of Foreign Affairs and Defence, provided following remarks on ever-present links between space and security & defence:

- The term “security & defence” was included in the title of the Conference for the first time in its history.
- Space is a vector of modern army efficiency and has unneglectable strategic dimension.
- Belgium is not in favour of the militarisation of space but EU and its member states must be aware of growing threats to its space systems, including cyber threats.
- Further reflection on dual-use technologies will be needed.

**Michel Friedling**, General, Space Commander at French Ministry of Armed Forces, presented recent developments related to space defence in France:

- Space is currently characterized by growing importance for planning and conduct of operations, by democratisation and multiplication of actors and by vulnerability of space systems.
- Despite being a transparent environment, legal uncertainties entice actions, which are not friendly but remain under the threshold of hostile activity.
- In addition, several countries are engaged in development and testing of counterspace capabilities.
- As a consequence, France developed a Defence Space Strategy with 3 core measures:
  - Reinforcing French capacities regarding space support to operations
  - Developing autonomy in the field of SSA across all orbits

- Developing active defence in space
- France is not committed to a “warmongering” approach, but having space defence capabilities is key to keeping freedom of action in space.
- National strategy does not mean that cooperation is excluded, France will support European collaboration in space.

**Nathalie Loiseau**, Member of European Parliament and Chair of SEDE subcommittee, discussed the ways to ensure the strategic autonomy of the EU:

- Strategic autonomy (to work with allies whenever possible, ability to work alone whenever necessary) has industrial and technological implications and space is an integral part of it.
- Redundancy is necessary to ensure security.
- The European ambition of being a soft / smart power is not sufficient to protect sovereignty.
- It is indispensable to prepare a White Paper on European defence, which would include a space dimension.

**Pierre Delsaux**, Deputy Director-General of DG DEFIS in the European Commission delivered following messages:

- The civil nature of EU programmes will remain, but the Commission does not want to ignore the increasingly common links between space and defence:
  - Importance of space systems for the daily life of European citizens drives the need for their continuous protection.
  - Technologies for defence and space share commonalities (e.g. in terms of cybersecurity).
  - In Europe, the need for cooperation exists in space (no country can pursue ambitious space programme alone) as well as in defence (e.g. with the EDF).
- Existing and upcoming EU programmes contain a defence dimension, e.g.:
  - Increasing exploitation of Galileo PRS signal will call for adequate security measures to ensure reliability of the service.
  - Potential defence uses of Copernicus will question the open data policy of the programme.
  - Crucial role of SST requires Europe to have autonomous capability.

**Jean-Loïc Galle**, CEO of Thales Alenia Space addressed primarily the topic of resilience of space systems and in this regard stated that:

- There is a negative side-effect of increasing digitalisation of satellites as software is more vulnerable than hardware, driving the need for better cybersecurity.
- Europe should have a secure, independent and complete SSA capability.
- Relevant technology solutions to ensure resilience already exist in the market and commercial actors will more and more have the ability to respond to military demand.
- Regarding miniaturisation and digitalisation of satellites, a “New Space” mindset already exists in Europe.

**Miguel Ángel Garcia Primo**, CEO of Hisdesat:

- Highlighted the growing usefulness of public-private partnerships (PPP) to develop the dual dimension of space.
- Provided some examples of successful Hisdesat involvement in PPP schemes (e.g. the Spainsat-NG programme in a joint PPP with ESA).

**Philippe Glaesener**, Senior Vice-President, Corporate Development at SES addressed the utilisation of commercial solutions by military actors:

- There will always be a hardened MILSATCOM handled independently but commercial solutions increasingly deliver services which militaries need.
- Commercial actors are now regularly approached by the military which is looking for support to its missions through dual-use solutions.
- Commercial actors need to address security issues from the onset of system design.
- Govsatcom programme should be further supported to ensure European autonomy.
- Having defence community and commercial actors work together on common concepts will facilitate the capability of European actors to better utilize opportunities in dual use.

**Jean-Pierre Serra**, Vice-President Defence and Security at Airbus Defence and Space reaffirmed the strategic value of space and provided following ideas:

- It is of great importance for armed forces to reassess their needs that depend on data from space.
- The ability to control shared areas is strategically important for Europe.
- Space budgets and defence budgets are increasing in the current geopolitical context and as a response to the emergence of new threats.
- Besides the spatial resolution aspect of space-based remote sensing, the time factor, namely the ability for faster revisit times, is becoming much more important.
- Dual-use technologies will bring significant improvements to the time factor.
- The European Defence Fund is the right tool to develop more dual-use systems.

## Plenary Session III - Building Bridges: Giving new meaning to International Space Cooperation in the new decade

Moderator	<ul style="list-style-type: none"> <li>• <b>Jean-Jacques Tortora</b>, Director, European Space Policy Institute</li> </ul>
Guest Speaker:	<ul style="list-style-type: none"> <li>• <b>Johann-Dietrich Wörner</b>, Director-General, European Space Agency</li> </ul>
Debate with:	<ul style="list-style-type: none"> <li>• <b>Massimiliano Salini</b>, Member, European Parliament</li> <li>• <b>Carine Claeys</b>, Special Envoy, Space Task Force, European External Action Service</li> <li>• <b>Donato Amoroso</b>, Deputy CEO, Thales Alenia Space</li> <li>• <b>Stephane Israël</b>, CEO, Arianespace</li> <li>• <b>Ikuko Kuriyama</b>, Advisor to the Director, International Relations and Research Department, JAXA</li> <li>• <b>Giorgio Saccoccia</b>, President, ASI</li> <li>• <b>Johannes von Thadden</b>, Senior Vice-President, Airbus Defence and Space</li> </ul>

The first keynote speech was provided by **Johann-Dietrich Wörner**, Director General of ESA. With a nod to the session's title, Mr. Wörner highlighted space can be an important bridge over the trouble waters of conflicts, power games, nationalism and sanctions. Space diplomacy and cooperation can bridge earthly crises, as best exemplified by the case of the ISS, where different countries have been able to cooperate notwithstanding geopolitical tensions (e.g. Crimea). His intervention then focused on the following points:

- Cooperation and competition are simultaneously embedded within space activities. However, whereas competition is a driver, cooperation is an enabler. The role of ESA in this configuration is to make cooperation possible without excluding competition.
- Because of its very nature, cooperation is at the very centre of ESA's functioning and an indispensable element to put in practice the objective of "United Space in Europe".
- Besides the "internal", European dimension of cooperation, ESA has a global cooperation strategy that is informed by a variety of factors and that materialises in different forms, including institutional collaborations, participation in a partner's project, or joint projects
- ESA cooperates with many international partners for most of its programmes, Examples include: Sentinel 6 (a cooperation between ESA, the European Commission, EUMETSAT, NASA, NOAA) in the field of Earth Observation; the Solar Orbiter, the Asteroid deflection or the SMILE mission in the field of hazards in space; BepiColombo, Exomars, the Mars Sample Return Mission or the ISS in the field of space exploration.
- Future ambitious undertaking, such as future lunar exploration, will be hard to achieve without international cooperation. National approaches, as exemplified by U.S. maxim "Back to the Moon", are not the most appropriate. We shall rather push for "Going forward to the Moon", which implies going there together with many nations worldwide; it implies a multi-partner open concept.

The first panelist, **Massimiliano Salini**, Member of European Parliament, was invited to elaborate on the overall level of ambition of Europe in space, particularly in regard to its discussions with international partners. In addressing, Mr. Salini highlighted the following points:

- To be ambitious, Europe need to address two important challenges: develop a common position among the different stockholders and secure an appropriate level of resources.

- The EU budget for the next seven is smaller than the one secured by the U.S. counterpart in a single year. The lack of a specific budget line for space in Horizon Europe is a concern. However, the increase of ESA budget approved at the 2019 Ministerial Council represents an important contribution to support the ambitions of the European space programme
- Several recent developments can positively contribute to the development of a common “European position”, including:
  - The revitalisation of the Joint space Council between EU COMPET and ESA Council
  - The decision of the new Commission to create a dedicated directorate for space and defence
  - The decision to have a European Defence Fund, which represents another precious tool to address European challenges
- To boost Europe’s position and international prestige, Europe needs a pragmatic approach focused on improving downstream activities, communication and outreach, and best practices.

**Stephane Israël**, CEO of Arianespace, was asked to elaborate on the achievements of Arianespace with respect to international cooperation and of the contributions envisaged for Ariane 6. In addressing the moderator question, Mr. Israël highlighted the following points:

- International cooperation is key for Arianespace. As the European launch service provider, Arianespace has been instrumental in the implementation of many collaborative projects of ESA and European countries, launching such flagship missions as the ATVs, BepiColombo, etc.
- Looking at the immediate future, a key milestone will be represented by the launch of the James Webb telescope – a 10 billion worth collaboration mission between NASA and ESA; This launch, which was secured as part of ESA’s contribution to the mission, will constitute Arianespace’s most important mission for 2021.
- Arianespace is keen on supporting the implementation of future science and exploration missions, such as Juice and Euclide.
- Equally important for Arianespace is the future Moon exploration. Ariane 6 is fully adapted to launch lunar exploration missions, having the capability to deliver 8.5 tones in Lunar Transfer Orbit. Arianespace hence wants to be the launch service provider for European robotic missions to the Moon.

**Carine Claeys**, Special Envoy for the Space Task Force at EEAS, was asked to elaborate on the objectives of the 3SOS initiative launched by the EEAS in September 2019 and on the steps that should be taken to allow Europe to speak with a stronger voice in the international context. Mrs. Claeys highlighted that:

- The objective of the 3SOS initiative is to build a common understanding throughout the world on the need to act swiftly to maintain space a safe, secure and sustainable environment.
- Because of the role of space in our everyday life, it is in Europe’s interest to have a safe and sustainable space environment and efforts need to go in this direction.
- More challenges are arising, because of the multiplication of actors, new technologies, mega-constellations, as well as rising geo-political tensions exported in outer space
- The 3SOS public diplomacy initiative is hence oriented towards policymakers, industry, academia, the scientific community in order to raise awareness and promote multilateral solutions
- Multilateralism is in Europe’s DNA; at international level multilateral solutions are more challenging, to reach, but the adoption of the LTS guidelines shows that multilateral space diplomacy can work
- The future challenge will be the effective implementation of the agreed guidelines. The EEAS invite all stakeholders to commit to the implementation of the LTS guidelines.

- To make Europe's voice be heard in the international context, Europeans need to work closer together and have coordinated messages and actions. Unity in diversity will make Europe a strong and credible actor internationally.

**Ikuko Kuriyama**, Advisor to the Director, International Relations and Research Department at JAXA elaborated on the international strategy of JAXA towards Europe.

- JAXA's strategy towards Europe aims to promote R&D for mutual benefit, implement joint projects efficiently and effectively and foster strategic dialogue with European major space agencies.
- Europe-Japan cooperation date back to the early 1970s and currently covers a wide range of activities in the fields of Space science, Earth observation, human spaceflight, exploration, satellite navigation
- JAXA aims to foster further engagement in the fields of:
  - Space applications, where the successful cooperation experience in the area of climate change could be applied to address new challenges and opportunity (e.g. SDGs, smart cities)
  - Exploration, where JAXA aims to create sustainable exploration model by fostering partnership with diverse players (e.g. the scientific community, international partners, industry and the non-space community)
- In these fields, JAXA sees the changes in the business environment as an opportunity to expand its activities through collaboration with international and industrial partners
- Europe, which shares common goals and values, is an irreplaceable partner for Japan, which for the new decade hopes to advance cooperation at the next level.

**Giorgio Saccoccia**, President of ASI, provided some views on the role of a diplomacy and cooperation for the Italian Space Agency. Key messages by Mr. Saccoccia included:

- International cooperation has always been key for Italy's space activities, as demonstrated by the fact that Italy became the third country to launch a satellite into orbit thanks to its cooperation with the U.S.
- ASI has a long-standing history of bilateral cooperation with many non-countries. This cooperation has expanded not only through institutional initiatives but also industrial and commercial ones.
- Italy has a pragmatic approach to international cooperation, focused on creating synergies and reaping the full benefit of already existing programmes (e.g. through exchange of Earth Observation data)
- Within the European context, ASI seeks complementarity with the work of ESA and the EU

**Donato Amoroso**, Deputy CEO of Thales Alenia Space, was asked to provide some perspectives on the role of and benefits for industry in the implementation of international cooperative programmes. In his remarks, Mr. Amoroso highlighted the following points:

- Industry plays a key role in translating international agreements into concrete projects
- Thales Alenia has a long-standing experience in implementing international cooperation projects, which in many instances have been then leveraged by the company for developing products that are sizeable for the export market (e.g. Earth Observation satellite systems).
- The implementation of international programmes in the field of exploration, for instance, has also enabled TAS to build long-lasting relations and synergies with foreign companies, synergies that place the company in a good position to participate in future programmes (e.g. the Gateway)
- These activities are necessary to maintain a high level of business, which is a main requirement to ensure that European industry is equipped to remain competitive on the global stage

**Johannes von Thadden**, Senior Vice-President at Airbus Defence & Space elaborated on the notion of economic diplomacy and how economic diplomacy at the European level could help industry to achieve

more on global markets. Mr. von Thadden hence identified major expectations that Airbus and the European industry at large have from the European Union. Specifically, he recommended the EU to:

- Support a level playing field on a worldwide scale by addressing market access, export control, etc.
- Promote global rules and regulations: space cannot become the new wild west and Europe needs to be the forerunner in pushing for the adoption of common rules to guide industrial activities
- Support European industry's interests on the international markets
- Initiate new programmes that represent strategic elements for Europe's sovereignty including, for instance, secure communications.
- Use space as a tool to defend European values, democracy, way of life.
- Invest more into developing capacity so as to position itself as an attractive partner.

## Plenary Session IV - Space to serve the European Green Deal: A look at the Future

<b>Guest Speaker:</b>	<ul style="list-style-type: none"> <li>● <b>Riccardo Fraccaro</b>, Undersecretary of the Presidency of the Council of Ministers, Italy</li> </ul>
<b>Debate with:</b>	<ul style="list-style-type: none"> <li>● <b>Christophe Grudler</b>, Member, European Parliament</li> <li>● <b>Ambroise Fayolle</b>, Vice-President, European Investment Bank</li> <li>● <b>Daniel Calleja Crespo</b>, Director-General, DG ENVI, European Commission</li> <li>● <b>Josef Aschbacher</b>, Director of Earth Observation Programmes, European Space Agency</li> <li>● <b>Pierre Bahurel</b>, Director-General, Mercator Ocean International</li> <li>● <b>Chiara Manfretti</b>, President, Portugal Space</li> <li>● <b>Florence Rabier</b>, Director-General, ECMWF</li> <li>● <b>Alain Ratier</b>, Director-General, EUMETSAT</li> </ul>

**Riccardo Fraccaro**, Undersecretary of the Presidency of the Council of Ministers, Italy, opened the session with a keynote:

- He recalled the devastating effects of climate change and the future impact on biodiversity, political stability and the economy.
- Massive investments in sustainable developments are needed in the fight against climate change to ensure the future of next generations.
- Space plays a crucial role in the transition, as the data informs science and political decision-making, e.g. the Paris Climate Agreement.
- European contributions through the Copernicus programme have been crucial in providing unprecedented amounts of data.
- Future collaboration between institutions is paramount, but also with citizens – space has to be smarter, more fluid and more democratic.

**Christophe Grudler**, Member of the European Parliament defended vigorously the use of European space systems to tackle the challenge of climate change:

- He praised Europe's commitment to become the first carbon neutral continent by 2050.
- He recalled the usefulness of space to reach environmental objectives, particularly through better monitoring and optimization of responses.
- The success of the Galileo and Copernicus programmes' contributions to climate monitoring and agriculture and transportation can only be continued and built upon through complementary investments.
- Appropriate funding, e.g. through the MFF, are required to ensure European strategic autonomy in space.
- He is in favour of a "Buy European Act" for space asset technologies for the upstream and downstream sectors.

**Daniel Calleja Crespo**, Director-General, DG ENVI, European Commission, presented the contribution of space to the European Green Deal:

- He identified three global crises: climate change, biodiversity crisis, pollution crisis.
- The Green Deal will bring solutions to these crises and space can contribute in a threefold way:

- Space provides data to make science-based decisions. Europe is the leader in monitoring the planet.
- Mainstream the topic of biodiversity across all European policies.
- As global dimension responses are needed, Earth Observation will play a crucial role in monitoring and ensuring compliance .
- Despite challenges, space policy creates opportunities for growth, competitiveness and sustainable business models, and there is the possibility to use and integrate space data with other technologies, e.g. supercomputing and AI, to help develop them.

**Ambroise Fayolle**, Vice-President of the European Investment Bank, emphasized how his institution can support environmental objectives through the support of space activities:

- Announcement of an EIB 10-year loan of €100M toward the R&D of the Ariane 6 programme – an investment loan based on commercial success, a strong sign of trust in Ariane 6.
- Announcement of a €100M programme dedicated to supporting the innovation and growth of European SMEs in the space technology sector, will be implemented by the European Investment Fund to support equity in the space sector.
- The EIB also supports initiatives related to data, which in turn will enable satellite missions to more effectively contribute to the fight against climate change.

**Josef Aschbacher**, Director of Earth Observation Programmes, European Space Agency, presented the role of Copernicus in contributing to a greener future:

- Copernicus programme is the answer to the European Green Deal, important contribution to progress on studying the Earth system a whole, including the carbon cycle, land surface, atmosphere, vegetation.
- Recalled that the contributions pledged at the ESA Ministerial Council Space19+ are a strong signal to partners in and outside of Europe that Earth Observation and Copernicus are important, particularly as the contributions were higher than expected.
- Given the competition of other countries, e.g. China, Europe must reflect on how to maintain its leadership in the future and therefore must keep an appropriate level of funding.
- Current Copernicus data allows the creation of useful models, however simulations and predictions can be improved through the improvement of computer power and using the data in conjunction with AI.

**Alain Ratier**, Director-General, EUMETSAT, underlined the relations of his organisation with ESA:

- Recalled that EUMETSAT is part of a whole ecosystem going from data to information, and worked with ESA to implement Copernicus service.
- Weather is important for the energy efficiency part of the green deal, as renewable energies are driven by intermittent weather conditions, therefore forecasting is essential.
- Europe will launch the next several meteorological satellites based on EUMETSAT and ESA investments, improving Europe's forecasting capabilities.

**Florence Rabier**, Director-General of ECMWF, explained how the new use of specific technologies can expand the number of services able to provide information on environmental transformations:

- ECMWF has expertise on handling a large amount of data from various sources and can validate the data as well as its quality.
- Integrating the data into models allows to create comprehensive maps and forecasts on environmental variables and creates observations to add value.

- These tools and methods have been applied for other purposes beyond weather forecasting such as, monitoring anthropomorphic CO<sub>2</sub> emissions, wildfires and air quality.
- These services contribute to the Green Deal's vision.

**Pierre Bahurel**, Director-General, Mercator Ocean International, delivered the following key messages:

- He recalled the increasing attention paid to the ocean's role in international negotiations on climate matters, such as in Paris Climate Agreement as well as the European Green Deal.
- He praised the Green Deal for having both a vision and an action plan – this aligned vision on action is an opportunity for Europe.
- Raw data collected needs to be transformed into actionable information and communicated to end users – creating a compelling case to use space data

**Chiara Manfretti**, President, Portugal Space, presented the interest of Portugal in monitoring the evolution of the oceans. Moreover, she expressed broader statements:

- In the action against climate change, the concept of resilience should be of central importance.
- Space can contribute to define the needs for energy as well as give information on energy storage and the optimization of energy use.
- Towards creating resilience, the focus should not only lie on Earth Observation but also on communication and ubiquitous connectivity.
- The Green Deal is also a green deal for space and should pave the way for debris removal and in-orbit servicing missions – a necessity to remain 'commercially clever' and for Europe to advance and seize these markets.

## Focus Session I - Converging European Defence Initiatives

Moderator	<ul style="list-style-type: none"> <li>• <b>Jean-Jacques Tortora</b>, Director, European Space Policy Institute</li> </ul>
Guest Speaker:	<ul style="list-style-type: none"> <li>• <b>Carlo Massagli</b>, Vice-Admiral, Military Advisor to the President of the Council of Ministers, Italy</li> </ul>
Roundtable Discussion:	<ul style="list-style-type: none"> <li>• <b>Jorge Domecq</b>, Chief Executive, European Defence Agency</li> <li>• <b>Sorin Ducaru</b>, Director, EU SATCEN</li> <li>• <b>Alain Alexis</b>, Head of Unit Defence Fund – Capability Development, DG DEFIS, European Commission</li> <li>• <b>Philippe Bertrand</b>, Deputy Director, Multilateral Affairs, Defence Procurement Agency, France</li> <li>• <b>Benoit Deper</b>, CEO, Aerospacelab</li> <li>• <b>Christine Francillon</b>, Vice-President Programme Director Safety &amp; Solutions, ArianeGroup</li> <li>• <b>Juan Tomas Hernani</b>, CEO, Satlantis</li> </ul>

**Carlo Massagli**, Vice-Admiral, Military Advisor to the President of the Council of Ministers, Italy, discussed the plans of Italy in the space defence field. His main commentaries included:

- A presentation of the new framework in Italy: a National Space Council, in charge of managing, directing and coordinating all space activities; and the renewal of the space strategy which relies on three pillars (Governmental Guidelines, the National Space Security Strategy and the Strategic Document of the National Space Policy).
- Italy is now the third contributor to ESA, an achievement for the country, which plans to increasingly invest in space, both at ESA level and at national level (e.g. by integrating it in its bilateral relations).
- Protection of space systems is necessary to guarantee reliability and resilience, and so to ensure continuity of services. Therefore, Italy will develop an SST capability and ensure that its systems are safe and secure by design by integrating minimal security standards for their systems. Commercial providers and the EU were also invited to adopt such standards as soon as possible.
- The identification of four main actors in space: the EC, Member states, ESA, and the future EU Agency for the Space Programme. Italy thinks that the EC should continue to be responsible for the overall and inclusive management of European space programmes while ESA will remain a formidable technical agency and a desirable research centre.

**Jorge Domecq**, Chief Executive of the European Defence Agency, presented the various mechanisms fostering space defence projects at European level. In particular, he highlighted:

- Space is one of the 11 Capability Development Priorities identified by EDA, and is divided in four domains: SATCOM; Earth observation; PNT; SSA. Progress in the SATCOM field has been considerable while more work has to be done to identify end-users needs in PNT.
- Priorities are then reviewed with Member states in the CARD process in order to identify opportunities for cooperation. PESCO projects also are a tool to increase common work between countries.

- Over time, using CARD and PESCO will enable to deliver the required capabilities. To reach this objective, it is required to work with all the stakeholders.
- If the EU wants to reach strategic autonomy, it has to possess autonomous capabilities. Similarly, technological and industrial capacities are present, but their availability must be preserved.
- Need to look at the priorities, to mobilize EU regulations and funding. Possibility to act in several domains (e.g. the protection of chips' supply chain) but it requires a large amount of investment, political will, and technology availability.

**Sorin Ducaru**, Director of EU SatCen, dedicated its intervention to the presentation of SatCen activities:

- SatCen is a key example of strategic autonomy as it provides analysis to support decision-making of EU authorities, including in the management of military missions and operations.
- SatCen provides various services (crisis management, monitoring of cultural heritage...) and uses different technologies (3D, AI) in a spirit of innovation. Its main users are the EEAS, Member states, the European Commission, Frontex, OSCE, OPCW...
- SatCen services face a growing demand, due to the improvement of skills and the increasing efficiency of technologies.
- The relations of SatCen with other actors are characterized by teamwork. Arrangements exist with other organisations (e.g. ESA, OSCE) as well as synergies (e.g. with EDA).

**Alain Alexis**, Head of Unit Defence Fund – Capability Development, DG DEFIS, European Commission, was questioned on the ways he will set up his priorities and define his technical requirements. His reply emphasized that:

- His unit will have only one priority: the European defence.
- Funding needs to be inclusive (it should not focus on big companies) but has to select only a few domains where the EU added-value is the greatest. For the EDF, a strategy is needed to identify the large categories to be funded; then, more specific projects belonging to these categories will be presented each year.
- Cooperation with EDA will be necessary to identify the priorities, but Member States and the European Parliament will also have to support the initiative.
- In terms of non-financial means, his unit will benefit from technical expertise through the recruitment of experts and from the support of other DGs, which will synergies will have to be established.
- The EC can support SMEs by facilitating their cooperation with big companies, and it has to put more resources in the development of skills for the defence industry, in particular by involving universities.

**Philippe Bertrand**, Deputy Director, Multilateral Affairs, French Defence Procurement Agency, discussed the development of capabilities in France and Europe. He stressed the following points:

- The key aim of the Defence Space Strategy is to reach strategic autonomy through the development of means of operation (Earth Observation, satellite communications, PNT); the extension of SSA means across all orbits; and the development of active defence capacities.
- European initiatives such as PESCO and the EDF have enabled and will enable the establishment of new cooperation to develop capabilities.
- By combining all different EU initiatives, Europeans have all the tools to develop the new EU environment in space as well as strategic autonomy. Synergies between the various activities (Galileo, GOVSATCOM, SSA, EDF), and a spirit of cooperation, especially at governmental level, will allow to do a lot.

- As far as EU space assets are concerned, common specifications have to be developed to create capabilities. Regarding governance, something new has to be invented, which is doable if Member states have the willingness, and if all European industries are involved.

**Christine Francillon**, Vice-President Programme Director Safety & Solutions, ArianeGroup, discussed the usefulness of EDIDP and EDF for industry:

- These two initiatives are important because the more industry has a long-term vision, the better it can prepare and invest.
- The link between space and defence allow to be more efficient and to use competences developed in one sector to benefit the other.
- EDIDP is a relay which will enable the industry to be more ambitious; indeed, once it has developed a technology or want to spread it over Europe, the EDIDP will allow to prepare the next step.
- Europe must have a huge ambition, which does not hinder to use a pragmatic and incremental approach, and to go fast.
- In the management of the EDF, industry already has experience on which to draw, in terms of dealing with public programmes (e.g. Horizon 2020) and in terms of collaboration with start-ups and SMEs.

**Juan Tomas Hernani**, CEO of Satlantis, presented his company and the philosophy of open innovation that underpins it. He then discussed the relevance of EDF:

- Space is now a matter of sovereignty, which is not linked to the settlement of boundaries but is about technology and the capacity of states to develop and implement missions. Europe needs to be aware of that if it does not want to lose this capacity.
- Defence is the same as the implementation of euro, the common currency, which was created for sovereignty purposes: these two examples show that it is necessary for Europe to unite to be able to play a role on the international scene.
- As the objective is to create joint European sovereignty, industry has to be proactive in the implementation of the EDIDP; it must play a role to create European competitiveness through open innovation participations, or the establishment of alliances.

**Benoit Deper**, CEO, Aerospacelab, presented the applications that its company can offer for defence:

- Aerospacelab is a company which develops hardware (small satellites) but also, and primarily, software, linked to AI and machine learning. In a context of growing data flux and shrinking or stagnating financial and human resources, the company wants to use these technologies to improve data processing.
- The capacity that needs to be developed is a sovereign infrastructure for computer storage; currently, sensitive data is flowing through non-EU IT providers, a situation which endangers the full information security chain as well as cybersecurity.

Following the presentation, a lively debate took place around the question of a Buy European Act. While Alain Alexis stressed that the EDF has indeed some limits but is not an initiative closed to external partners, and that, to be competitive, European industries need competition, Christine Francillon expressed its wish for a strong European preference. Finally, Philippe Bertrand declared that Europeans first need to procure together at European level what they will have developed together. Then, the next step will be to be competitive on the international stage by exporting and selling together these products.

## Focus Session II - Towards a Space Partnership between Europe and Africa

Moderator	<ul style="list-style-type: none"> <li>• <b>Jorge Coelho de Jesus</b>, Consultant EU Foreign Affairs, Business Bridge Europe</li> </ul>
Guest Speakers:	<ul style="list-style-type: none"> <li>• <b>Manuel Heitor</b>, Minister of Science, Technology and Higher Education, Portugal</li> <li>• <b>Lora Borissova</b>, Senior Expert in the Cabinet of EU Commissioner Jutta Urpilainen, European Commission</li> </ul>
Roundtable Discussion:	<ul style="list-style-type: none"> <li>• <b>Driss el-Hadani</b>, Director, Royal Centre for Remote Sensing (CRTS), Morocco</li> <li>• <b>Christine Leurquin</b>, Vice-President, Institutional Relations, SES</li> <li>• <b>Aboubakar Mambimba</b>, Director-General, Gabonese Agency for Space Studies and Observations</li> <li>• <b>Tidiane Ouattara</b>, Coordinator, GMES &amp; Africa Support Programme, African Union</li> <li>• <b>Matthias Petschke</b>, Director Space, DG DEFIS, European Commission</li> <li>• <b>Giulio Ranzo</b>, CEO, Avio</li> <li>• <b>Kyle Whitehill</b>, Vice-Chair, ESOA – CEO Avanti Communications</li> </ul>

**Manuel Heitor**, Minister of Science, Technology and Higher Education, Portugal reflected on the demographic development on the African continent and the opportunity to create an economy that depends on and fosters skills development for young people. He remarked that:

- There is a world convergence on low-tech systems but increasing divergence on high-tech and advanced knowledge systems – including space.
- Africa can harness space for local endogenous growth, by building local capacity and in turn aid sectors such as food and agriculture, fisheries, energy, communication and mobility in urban contexts.
- European cooperation with Africa requires to look at the large variety of needs on the African continent in an endogenous, inclusive way – with a particular focus on social responsibility.

**Lora Borissova**, Senior Expert in the Cabinet of EU Commissioner Jutta Urpilainen, European Commission spoke on behalf of Jutta Urpilainen and included key messages from the European Commission:

- The first visit abroad of European Commission President Ursula von der Leyen to Ethiopia, signals the need for a partnership of equals.
- Partnership must aim to progress on resilience, sustainability and governance and rely on multilateralism – the European Commission will work with its Member states and in spirit of this partnership of equals closely with African partners.
- Space is part of this larger conversation of EU – Africa partnership. Existing programmes can be rolled out further to establish new links, as Galileo or EGNOS can bring improvements to natural resource management, transportation, digitalization, electricity use, sustainable agriculture, etc.

**Driss el-Hadani**, Director, Royal Centre for Remote Sensing (CRTS), Morocco reflected on past milestones of cooperation between Morocco and European institutions and countries in space and added that:

- Earth Observation in particular is integrated within a large number of strategic programmes for socio-economic benefit.
- Both bilateral and multilateral modes of cooperation should be employed to further develop the relationship between Africa and Europe.

- Three key aspects emerge: access to technology; capacity building in academia and in private sector; development of ecosystems in the region based on cooperation with business incubators in Europe.

**Christine Leurquin**, Vice-President, Institutional Relations, SES spoke about SES' presence on the African continent and added key messages:

- Stressed the importance space-based communication technology can play for improving connectivity on the African continent, particularly in rural regions and land-locked countries.
- Communication and connectivity crucial also for tele-education and tele-medicine.
- The private sector's role in this progress is extremely important, in particular on the side of the African countries – local partners are needed.
- The European Commission considers digitalization and connectivity as important part of partnership with African continent, inter alia through PPPs.
- Emphasized the need for long-term sustainable partnerships.

**Aboubakar Mambimba**, Director-General, Gabonese Agency for Space Studies and Observations reflected on the importance of cooperation for the activities of his organization and added key messages:

- The creation of the Gabon Space Agency 10 years ago happened as a response to real needs and key topics for the country's development.
- Space assets are particularly important for Gabon in three respects:
  - As forests cover a significant portion of Gabon's land surface and thus prevents effective monitoring in the field, e.g. for logging or climate monitoring.
  - Marine and coastal monitoring for economic conflict management purposes, the monitoring of pollution and ship movement particularly crucial.
  - Fast growing cities require urban planning and water resource management.
- Reflected on existing cooperation with European bodies and asks ESA to review the policy for mass distribution of Sentinel data.

**Tidiane Ouattara**, Coordinator, GMES & Africa Support Programme, African Union reminded that African countries are at very different stages of development in space – many adopting space policies with the goal of contributing to African socio-economic development, coordinating African space activities, and creating a framework where Africans are protected through a legal framework. He added that:

- Space is key to meet the objectives of the African Union – integrated Africa, prosperous Africa and peaceful Africa.
- Space provides opportunities for training, private sector development, the management of natural resources, management of agriculture, disaster risk reduction.
- Space also acts as a tool for integration, e.g. through the creation of consortia made of private sector, academia and institutions.
- Europe can contribute significantly, but the model of cooperation will make the difference – with Africa in the driver's seat, asking partners to accompany and help.

**Matthias Petschke**, Director Space, DG DEFIS, European Commission reflected on the significant progress African countries have made in regards to space cooperation and added that:

- The opportunity to discuss African-European cooperation is important as space programmes are a fantastic asset to provide benefits to societies and not only for Europeans but for Africans and on a global scale.

- EGNOS – a central contribution to Safety in Europe – should become a more central focus of cooperation with Africa, as less ground-based infrastructure is needed through reliance on satellite data.
- Cooperation is on track and particularly calls for a wider project of cooperation with the entire continent, deepening relationship with North African countries and regional funds.

**Giulio Ranzo**, CEO, Avio reminded of the large amount of very diverse countries that make up the African continent and the projected population growth in the next decades – a development which will happen in a digital age, and thus said that:

- Accessing digital services will be a driver for economic growth, knowledge and education.
- Launch capabilities will remain at the centre of conversation about space for non-spacefaring nations, the challenge is to make the process more accessible and cost-effective for everyone.
- Avio has made efforts in this regard, such as an agreement with UNOOSA to support and facilitate the access to space for those that do not have space capabilities yet – support includes the launch of cubesats and the covering of some of the initial costs.

**Kyle Whitehill**, Vice-Chair, ESOA – CEO Avanti Communications, reflected on his experience of working in the telecommunications business in Africa and contributed key messages:

- Satellites can provide ubiquitous coverage and presents an opportunity for European satellite industry to work together with African partners and bridge the gap between terrestrial networks and provide coverage especially in rural areas.
- Connectivity itself is however not as important as what connectivity can bring to the content, access to internet is a facilitator to building people's capability and their understanding of how life moves forward.
- The African Union could support some degree of consistency, enabling projects to scale up, as programmes can come to an end as soon as the initial funding is exhausted. A more sustainable model of cooperation must be found.

## Focus Session III - Human and Robotic Exploration and Exploitation: Commercial and Economic Opportunities for Europe

Moderator	<ul style="list-style-type: none"> <li>• <b>Jean-Jacques Dordain</b>, Former Director General of ESA (2003-2015)</li> </ul>
Roundtable Discussion:	<ul style="list-style-type: none"> <li>• <b>Marc Serres</b>, President, Luxembourg Space Agency</li> <li>• <b>David Parker</b>, Director of Human and Robotic Exploration, European Space Agency</li> <li>• <b>Walter Cugno</b>, VP Exploration and science, Thales Alenia Space</li> <li>• <b>David Henri</b>, CEO, Exotrail</li> <li>• <b>Helene Huby</b>, Vice-President, Orion ESM, Airbus Defence &amp; Space</li> <li>• <b>Agata Jozwicka</b>, Head of New Customers &amp; Services in Future Programmes, ArianeGroup</li> </ul>

The moderator of the panel, **Jean-Jacques Dordain**, opened the session by highlighting that 2020 will open a golden decade for space transportation, exploration and human spaceflight, with a long list of the most diverse missions from the United States, China, Russia, Japan, India and the UAE as well as Europe, which aims to play a key role in the future exploration context.

The first panelist, **David Parker**, Director of Human and Robotic Exploration at European Space Agency provided an overview of Europe's role in space exploration and of the decision taken at the Space 19+ Ministerial Council. The major points of his intervention are the following:

- ESA's space exploration programme is built on three major destination: LEO, Moon, Mars
- Space exploration enables key scientific discoveries but it entails more than just science: it is the ultimate proving ground for many technologies, it is an economically important source of innovation, it is a tool for international cooperation and industrial development, a source of inspiration, etc.
- Space 19+ has been the most important Ministerial Council for exploration since 1995, when the ISS programme started.
- Among the key decision, Europe will participate in the Gateway programme, providing critical technologies to ensure a sustainable exploration of the Moon and it will also participate in the most ambitious robotic exploration mission ever undertaken, i.e. the Mars Sample Return mission

The second panelist, **Marc Serres**, President of the Luxembourg Space Agency, offered a reflection on the country's motivations and expectations behind its support space exploration and exploitation. Key points of Mr. Serres intervention include the following points:

- All space-related initiatives taking place in Luxembourg are primarily driven by the need to support economic development of the country, having the space sector been identified as one of the pillars to diversify Luxembourg's national economy
- While it may seem paradoxical for a country that has developed its space sector on a private and commercial basis to invest in the areas of exploitation and exploration, we believe that in the longer term these areas will create an economic revolution in space activities
- For taking forward its SpaceResource initiative, the Luxembourg Space Agency (LSA) has identified four major challenges it has to address: these challenges are related to the technical dimension

of the initiative, its regulatory dimension, the financial aspect and involvement of private players as well as the development of the market

- The SpaceResource initiative is much broader than just mining; it is rather aimed at creating a completely new economic value chain in the exploration and utilisation of space resources.
- The success of the initiative will not be measured by the implementation of a specific mission but by the capacity of LSA to enable private companies to implement their own missions

**Helene Huby**, Vice-President for Orion ESM at Airbus Defence & Space provided the following messages:

- Science and exploration represent a €20 bl market, the main fuel of which is human transportation
- With regard to Airbus activities, science & exploration represent approximately the 20% of Airbus' €3 bl turnover in space activities
- Airbus activities in exploration are organised around two lines of activities: orbital business (which covers activities as the Orion ESM and participation in the Gateway) and science (which covers missions such as ExoMars, Cheops and Solar Orbiter)
- Airbus future plans focus on continuing orbital services and science activities, and further developing key technologies, the most important of which are 3D printing in space, space relay communications and propulsion

**Agata Jozwicka**, Head of New Customers & Services in Future Programmes of ArianeGroup, focused on the contributions of Ariane Group to space exploration. Key highlights include the following points:

- Through its launch vehicles, the ArianeGroup has been an important enabler of space exploration, having a long history of providing transport to many exploration missions including, for instance, the ATVs for the ISS
- The upcoming Ariane 6 launcher will be perfectly adapted to address the requirements of the most diverse types of future exploration missions and to offer end-to-end transport and operation services to customers
- With regard to lunar missions, Ariane 6 will be capable of placing 8.5 tons in lunar orbit as early as 2023 and with further improvement in the first stage of the launcher, it will be able to deliver heavier elements to the lunar surface
- Ariane 6 will also offer the possibility to launch future Mars sample return mission.
- With regard to human missions, Ariane 6 has not been designed as human-rated launcher, but this possibility has been contemplated since Ariane 5 and is within ArianeGroup's DNA.
- A European human spaceflight programme would not require the development of a new launcher, but only adaptation of Ariane 6. The company is keen to do that, provided public interest.

**Walter Cugno**, VP for Exploration and science at Thales Alenia Space (TAS), highlighted the following points:

- TAS has almost 50 years of investment in exploration activities and has provided key contributions to many European and international missions (e.g. it has built almost the 40% of the habitable modules of the ISS)
- By taking full advantage of this long-standing experience, TAS is nurturing the opportunity to expand its commercial business with foreign institutional partners and private companies (e.g. cargo services to the ISS with Space X)
- TAS is developing important contributions to promote the future commercial exploitation of the ISS and the broader LEO environment. A key element is represented by the Space Rider, which is scheduled for launch in 2022 and which will be primarily utilised as a micro-gravity platform, while

also paving the way for more challenging applications, including in-orbit services and debris removal

- Beyond LEO, TAS will also provide several contributions to the Gateway programme in cooperation with some U.S. primes, including surface infrastructure to support human activities. The capabilities TAS is developing will eventually pave the way to future Mars exploration

The last panelist, **David Henri**, CEO of Exotrail, provided an overview of the company's main business and its possible contribution to space exploration. Mr. Henri highlighted the following points:

- Exotrail is a start-up company dedicated to “deliver agility to the space industry” by providing advanced electric propulsion solutions and mission design software for small satellites
- The company's vision is to move beyond this current core business and provide solutions for different types of missions, including exploration missions
- The propulsion solutions and mission optimisation services offered by Exotrail can already play a role in the development of cost-effective solutions for space exploration missions
- NewSpace companies and larger companies should work together to develop solutions quicker and at a more affordable cost.
- Long-term plans foresee investment in multifunctional spacecraft which, among other things, will be able to approach other spacecraft to extend their lifespan and that could be used to support also future exploration programmes.

Following the individual presentations, the speakers engaged in a roundtable discussion with the moderator and the audience. Among the points of discussions, the speakers discussed whether there are commercial opportunities for exploration missions, what the possible customers for such missions would be beyond the public institution ones, and what the approach to decide for future missions should be used. There was general agreement that apart from tourism, the government remains the biggest customers for exploration missions, although participation of commercial companies is slowly gaining traction and may in the future lead to fully private exploration missions. To facilitate this uptake and facilitate the identification of future exploration priorities, it may become important to find link exploration with an economic application, such as, exploitation.

## DAY 2: WEDNESDAY 22 JANUARY 2020

### Opening Address

Speeches  
by:

- **Etienne Schneider**, Deputy Prime Minister, Luxembourg
- **Manuel Heitor**, Minister for Science, Technology and Higher Education, Portugal
- **Pedro Duque**, Minister for Science and Innovation, Spain

**Etienne Schneider**, Deputy Prime Minister of Luxembourg, emphasized measures taken by his country to attract space companies on its territory:

- Luxembourg took measures to develop a legal framework for the use and commercialization of space resources in order to provide security and confidence to companies.
- Beyond the legal framework, Luxembourg created a business-friendly environment: the creation of several funds as well as the Luxembourg space agency in order to help companies access ESA and venture capitalists.
- A crucial aspect for the future of the space industry in Luxembourg is indigenous talent creation, for instance through partnerships with likeminded countries and organizations and dedicated degrees at the University of Luxembourg.
- Decision making at ESA needs to be quicker and more competitive – a matter greatly dependent on political will.

**Manuel Heitor**, Minister for Science, Technology and Higher Education of Portugal, discussed evolutions that the space sector is prone to face in the near future:

- In the new decade, space will be ever more important to tackle global challenges and there is a need to increase engagement with new players, entrepreneurs, young people and society at large.
- Recalls that Galileo and Copernicus systems will have to be combined with new ways of processing data, e.g. quantum computing, AI.
- Predicts that the role of government will change from provider to promoter of new opportunities.
- The articulation of different sources of investments (public/private, European/international) will be crucial. Not just the volume but the quality of investment will determine competitiveness of Europe globally.

**Pedro Duque**, Minister for Science and Innovation of Spain, underlined the importance of each actor of the European space landscape:

- During the Spanish Presidency of ESA, there was effort to improve coordination and avoid unnecessary duplications, which led to the reestablishment of EU-ESA Space Council.
- Europe has to play a role in initiatives related to space exploitation, sustainability and security: space mining needs a legal framework; space traffic management; protecting Earth from major threats; space assets to measure environment on Earth.
- Clear message at EU level on the relevance of space to improve the life of citizens and there is a consensus for the EU to play an increasingly central role (e.g. new regulation, new DG).
- Strength of ESA has been renewed by the outcome of Space19+, where ESA got its largest contributions ever. It sent a clear message for the support of ESA as the European agent for technical and programmatic management of space programmes.

- If Europe wants to be successful, it has to adapt to the new technologies and developments of the space sector, sometimes in domains previously considered as speculative or research fields, but where markets are being created.
- Several challenges ahead for ESA: complete the development of the new European family of launchers; pay attention to other initiatives related to access to space (e.g. small launchers); adapting its rules; manage the differences between ESA stakeholders and those of the EU; efficiently manage programmes where EU Member states stir the activities and contribute with their own assets.

## Plenary Session V - New Space, R&D and Innovation: Towards a Paradigm Shift

Moderator	<ul style="list-style-type: none"> <li>• Michel Bosco, University Côte d'Azur</li> </ul>
Debate with:	<ul style="list-style-type: none"> <li>• Damian Boeselager, Member, European Parliament</li> <li>• Patrick Child, Deputy Director General, DG RDT, European Commission</li> <li>• Pascale Ehrenfreund, Chair, ESRE</li> <li>• Morena Bernardini, Director Strategy, ArianeGroup</li> <li>• Riadh Cammoun, Vice-President Public and Regulatory Affairs, Thales Alenia Space</li> <li>• Sabine Klauke, Executive Vice-President, Head of Engineering, Airbus Defence and Space</li> <li>• Chris Larmour, CEO, Orbex</li> <li>• Giulio Ranzo, CEO, Avio</li> </ul>

**Damian Boeselager**, Member of the European Parliament, made the following remarks:

- Space is one of the European public goods where it makes most sense to cooperate.
- There is a great interest from the European Commission and the European Parliament to make investments, however it is crucial to make this step together with national governments
- European space start-ups are greatly developing and downstream commercialization remains important. Measures should be taken in order to facilitate the use of space data by industry, recalling the various uses for space data, including in the humanitarian field

**Patrick Child**, Deputy Director General, DG RDT, European Commission, discussed the place of space research and innovation in the current context:

- The work done in the space sector has impact and relevance beyond this sector – as the challenges that are overcome in developing space assets and systems have a direct effect on other domains.
- Research and innovation are vital for many of the common causes we face globally, the 'inward stream' of space R&I to develop capacities and technologies fuels the 'outward stream' (which goes beyond the space sector).
- New DG DEFIS is an opportunity to give space research and innovation a greater profile.
- The priorities of the President of the European Commission, Ursula von der Leyen, such as the European Green Deal, making Europe fit for the digital age and geostrategic objectives, all make the case for space R&I.
- Cooperation with ESA is laudable and an agreement will be signed to consolidate the cooperation; moreover, robust contributions must be made to the MFF.

**Pascale Ehrenfreund**, Chair of ESRE, identified main issues impeding European space research to better perform:

- Europe has proven that it can "do new space", however for the crucial matter of competitiveness, the big crisis of risk aversion in Europe needs to be overcome.
- She called for research roadmap, reinforcing close cooperation between industry and public research – such a vision would allow quicker and less bureaucratic progress.

- The discussions on Horizon Europe should consider co-programme partnerships, the strengthening of industry's role and keep at the heart of the programme traditional collaborative research.
- It is crucial to fund breakthrough innovation directly via the Galileo and Copernicus programmes, and to enable faster progress and procurement of experimental test satellites and facilities.

**Sabine Klauke**, Executive Vice-President, Head of Engineering at Airbus Defence and Space, considered the ways to promote industrial advance:

- Europe has to stay at the forefront of technological change, industry can provide these capabilities inside and outside the space sector with linked issues such as AI, big data, quantum computing, etc.
- In order to maintain global competitiveness, Europe needs to invest in R&D while strengthening the ecosystem with public support mechanisms, introducing flexibility and catalysing private investments.
- A vision as well as an appropriate framework to attract private investment is required in addition to important public funding, such as through Horizon Europe.

**Riadh Cammoun**, Vice President Public and Regulatory Affairs of Thales Alenia Space, presented the means for Europe to stay in the race for innovation:

- Given the competition in the civil market and the development of new technologies and business models, the European industry can continue to provide innovative solutions through a reliance on its legacy, innovation and the acceptance of risk and willingness to fail fast.
- Europe can succeed in this paradigm shift by supporting disruptive R&D through institutions and co-programme partnerships; by fostering open innovation and ecosystems that allow to think outside the box; by reflecting on new cooperation schemes, public-private partnerships and anchor contracts.

**Morena Bernadini**, Director Strategy of ArianeGroup, illustrated the embrace of innovative technologies and processes by major companies:

- The quick development of Ariane 6 is a great achievement for all European industry, achieved *inter alia* through applications of new innovations, e.g. factory 4.0, digitalization, virtual reality.
- The innovative elements of Ariane 6, such as additive manufacturing, have allowed ArianeGroup to understand the evolution of the entire system.
- As a consequence, ArianeGroup is willing to take up the challenge of high launch cadence for mega-constellations.
- She lauded the European Commission for having developed tools that help the industry to enter the new context of space. While Europe can count on a well-performing space industry, strength comes through working together, e.g. through mutual support and public-private partnerships.

**Chris Larmour**, CEO of Orbex, addressed the topic of innovation and its funding through the point of view of an SME:

- The amount of capital needed to develop and deploy rockets as well as the amount of time invested are changing.
- The reliance on public institutions and public funding constrains flexibility, while taking risks and failure should be encouraged.
- New models to attract venture capital must be employed, which can be done at policy level without direct investment but through the change of incentives to invest in small companies.

- He elaborated on the dynamic between SMEs, who provide substantial employment in Europe, and large players in the space sector, who drive the agenda.

**Giulio Ranzo**, CEO of Avio, delivered the following key messages:

- He reflected on the evolution of Avio and the advantages of opening up to private capital on the stock market and the resulting relationship to stakeholders and its impact on innovation.
- New Space is not mostly interesting for the technologies developed but for the amount of investment taking place.
- Europe does not lack the ability to secure funding or develop disruptive technology, however the mindset needs to change towards an increase of speed and the acceptance of failure as an integral part of the process.
- Advocated for a good blend of private capital, capital from stock market and public funding to finance New Space companies.

## Plenary Session VI - Security in Space: a European or International approach to Space Traffic Management, SST/SSA and Cybersecurity?

Moderator	<ul style="list-style-type: none"> <li>• <b>Jean-Jacques Tortora</b>, Director, European Space Policy Institute</li> </ul>
Debate with:	<ul style="list-style-type: none"> <li>• <b>Marian-Jean Marinescu</b>, Member, European Parliament</li> <li>• <b>Pascal Claudel</b>, Chief Operating Officer, GSA</li> <li>• <b>Sorin Ducaru</b>, Director, EU SATCEN</li> <li>• <b>Rolf Densing</b>, Director of Operations, European Space Agency</li> <li>• <b>Pascal Faucher</b>, Chair of EUSST Consortium</li> <li>• <b>Ignacio Mataix</b>, Board Member &amp; COO Defence, Transports &amp; Air Traffic Management, Indra</li> </ul>

**Marian-Jean Marinescu**, Member of European Parliament, underscored the need of Europe to secure its space infrastructures, given that around 10% of European GDP is based on space technologies. In this context, he put the emphasis in his intervention on:

- The need to develop and exploit autonomous European systems to map the space environment and protect European satellites from a range of threats (cyber, space weather, debris...).
- Securing the contribution of all EU member states to this future system, including the provision of systems of different member states, which are already operational.
- The necessity of appropriate funding, including various EU budgetary instruments.
- The essential place of industry in this effort to develop autonomous European capabilities.
- Achieving coherent and unified European approach, transcending national prioritisation and allowing for more credible European positioning in broader international considerations.

**Pascal Faucher**, Chair of the EU Space Surveillance & Tracking Consortium (EU SST) welcomed the timeliness of security-related discussion at space forums and:

- Outlined the role and activities of the EU SST Consortium and explained its unique intergovernmental governance model (EU SST as a result of political decision by the European Parliament and Council of the EU, member states owning / operating sensors).
- Underscored the need of European autonomy in the field of SST / SSA.
- Offered several recommendations on the way ahead:
  - Continuation of European effort to strive for excellence in SST and to deliver top class added value to European users, which would be based on European expertise and assets (European catalogue of space objects is expected to be available in 2021).
  - Acceleration of SSA data sharing agreements in this context, taking into consideration the paramount importance of the access to data.
  - Increased involvement of commercial solutions in development of European SST capabilities and provision of operational services, while keeping in consideration the fundamental duality of the space situational awareness.

**Pascal Claudel**, Chief Operating Officer of the European GNSS Agency (GSA), explained that GSA has developed a robust safety culture, which could be applied to all other European space programmes. Specific best practices in this sense include following points:

- Integrated cybersecurity and safety standards aimed at avoiding new types of threats, which are getting more complex.
- 24/7 surveillance monitoring system.
- Dedicated Security Accreditation Board.
- Diverse service provision portfolio adjustable to daily needs of different users.
- Creation of a network of governmental users which has been put at the disposal of the GOVSATCOM programme.

**Sorin Ducaru**, Director of the EU Satellite Centre (SatCen), outlined various tasks SatCen is currently undertaking, including the tasks in the SST domain, where it acts as the front desk of the EU SST Consortium. He called for improved cooperation among European stakeholders as well as between European and international partners. The evolution and adaptation of the role of SatCen over recent years in space situational awareness function led to:

- Strong focus on user engagement and coordination.
- Ability to fast provision of real-time information.
- Development of dedicated approach towards cybersecurity.
- Preparedness to address the future threats and finetune the roles and responsibilities to future EU ambition in the domain of EU SST.

**Rolf Densing**, Director of Operations at ESA, presented long-standing ESA experience and legacy of more than 50 years of satellite operations including collision avoidance and introduced concerning figures on further crowding of near-Earth space operating environment, resulting in greater need of Europe to mitigate growing safety risks to its space infrastructure. In this context, he called for:

- A unified European vision.
- A homogenous European approach concerning both capabilities as well as regulations, arguing that both domains necessitate further progress.
- Significant improvement of currently mostly manual handling of conjunction warnings (e-mail or phone coordination).
- Greatly involving private industry.

**Ignacio Mataix**, Board Member & COO Defence, Transports & Air Traffic Management at Indra expressed a view that although Europe is progressing in development of capabilities and closing a lot of gaps, there are still improvements that should be done. He identified four key considerations in this regard:

- The need for Europe to become operationally autonomous, which translates into new dedicated sensors tracking smaller objects.
- Creation of a European Open Architecture Data Repository to foster provision of STM services, which can rely on more sources also from third parties.
- A room for improvement in currently utilised European models for predicting the orbital debris environment.
- Increasing cybersecurity requirements.

## Plenary Session VII - The Keys to the Future: European Strategic Autonomy in AI, Quantum Technology, Data, the Cloud, 5G and Cybersecurity

Moderator	<ul style="list-style-type: none"> <li>• <b>Jorge Coelho de Jesus</b>, Consultant EU Foreign Affairs, Business Bridge Europe</li> </ul>
Debate with:	<ul style="list-style-type: none"> <li>• <b>Roberto Viola</b>, Director-General, DG CONNECT, European Commission</li> <li>• <b>Kyle Whitehill</b>, Vice-Chair, ESOA – CEO Avanti Communications</li> <li>• <b>Rodolphe Belmer</b>, Chairman &amp; CEO, EUTELSAT</li> <li>• <b>Evert Dudok</b>, Executive Vice-President Connect Intelligence, Airbus Defence &amp; Space</li> <li>• <b>Jurry de la Mar</b>, Director, T-Systems</li> <li>• <b>Robert Mazzolin</b>, Chief Cyber Security Strategist, RHEA Group</li> <li>• <b>Magali Vaissiere</b>, Director of Telecommunications and Integrated Applications, European Space Agency</li> <li>• <b>Mathias Van Den Bossche</b>, Director Telecommunication and Navigation Systems R&amp;D, Quantum Technology Leader, Thales Alenia Space</li> </ul>

**Roberto Viola**, Director-General in DG CONNECT of the European Commission, argued that the possibility to be autonomous in technologies, which will be shaping the future, such as 5G, quantum, AI or Cloud will enhance Europe's ability to defend European values and European way of life. He offered several examples of DG CONNECT's engagement in these technologies in recent period, such as:

- The Quantum Technologies Flagship initiative, which also includes ESA funding.
- The European High-Performance Computing Joint Undertaking – EuroHPC.
- Enhanced focus on AI with more concrete announcement on this to be made by the European Commission in February 2020.

**Kyle Whitehill**, Vice-Chair of ESOA and CEO of Avanti Communications, discussed the anticipated rollout of 5G networks and the place of satellites in future connectivity. Key messages of his address were:

- Future of 5G depends on operators reaching yet unserved hardy accessible areas.
- Whereas the history of network evolution shows the consumer interest as the driving force, the case of 5G seems to be driven more by industrial applications.
- The role of satellites in 5G is much more important than it was in 3G or 4G.
- Satellite industry is already prepared to serve its part in global 5G deployment.

**Rodolphe Belmer**, Chairman & CEO of EUTELSAT argued that satellite systems will be essential assets to enable the fast deployment of 5G across the continent and the world. He further added that:

- Satellite technology will be an enabler of security benefits that quantum technology brings to telecommunications.
- The role of companies is to bring these innovations to marketplace.
- Europe should be more protective of the interests of its private sector, having in mind that other continents are not as open on commercial terms as Europe.
- It is in the DNA of space industry to be highly secured industry as services satellite operators deliver can be critical for its users.
- Spectrum continues to be an extremely important issue and there is a need to assure satellite industry has appropriate spectrum rights in the long-term.

**Magali Vaissiere**, Director of Telecommunications and Integrated Applications at ESA informed the audience about promising results of Space19+ to ESA engagement in the field of telecommunications, highlighting three strategic goals for the upcoming period (Space for 5G, Space for safety and security, Optical communication systems). She further stated that:

- The ARTES programme is ideally suited to support these strategic goals.
- 5G is the first multi-technology communications standard and satellite is an integral part of it.
- It is essential to adapt satellite systems to enable seamless integration with other networks.
- New SAGA project was approved at Space19+ to cover the space segment of the QCI.

**Evert Dudok**, Executive Vice-President Connect Intelligence at Airbus Defence & Space, argued that secured connectivity cannot be provided without space infrastructures and in achieving European strategic autonomy, quantum communication infrastructure (QCI) will be a significant tool. In his intervention, he also identified several crucial issues for future considerations:

- Without proper AI and sound evaluation tools, the data abundance cannot be adequately exploited.
- Cyber resilience is an essential prerequisite for provision of trusted intelligence.
- There is a need for European autonomy in Cloud solutions.
- QCI can become the next big European effort after Galileo and Copernicus, to provide secured connectivity for Europe and made by Europe.
- Optical communications will be disruptive as it does not encounter spectrum-related issues.

**Mathias Van Den Bossche**, Director of Telecommunication and Navigation Systems R&D and Quantum Technology Leader at Thales Alenia Space, recommended Europe to develop ambitious technology roadmaps and addressed various issues related to quantum technologies, 5G, AI and cybersecurity:

- Quantum communications is one of the most promising applications of quantum technology with potential to provide highly secured communication channels.
- Satellite in 5G will complement traditional terrestrial networks and ensure ubiquity and resilience.
- AI is becoming regular technology in current space systems and the work remains on optimising its use in difficult environments.
- Increasing digitalisation of satellites calls for cybersecurity, which shall be considered as a structural aspect of every system (considered from very early stages).

**Jurry de la Mar**, Director of T-Systems, offered several perspectives on AI, cloud and cybersecurity:

- Existing apps in utilising AI for radar data should be further addressed.
- Training of AI systems requires data of high quality.
- Europe should focus on increasing its competitiveness in AI.
- There is a growing Cloud competence in Europe, further reliance on cloud solutions will increase cybersecurity concerns.

**Robert Mazzolin**, Chief Cyber Security Strategist of RHEA Group discussed strategic considerations of emerging critical technologies and strategic digital autonomy:

- Space and cyber are strategic enablers for nations and thus have become key for national security considerations.
- There is an interdependency between internet and satellite / space systems.
- Frontier technologies of Quantum, AI, Cloud, data or 5G increase the threat aperture.
- Progressive response methodologies and holistic approaches are required to mitigate the impact of threats and to enable the integrity of future societal initiatives.

- Achieving cybersecurity in space will depend on international partnerships to develop flexible multilateral space and cybersecurity regimes.

## Special Address

Speech by:

- **Thierry Breton**, Commissioner for Internal Market, European Commission

In his special address, **Commissioner Thierry Breton** (speech available [here](#)) acknowledged the efforts and achievements reached by Europe on previous space programmes, including the extraordinary success of Copernicus and Galileo in terms of data provided and number of users. At the same time, he also recognised the space sector undergoing profound transformations and that a business-as-usual approach is no longer valid. He hence stressed that the European space sector needs to adapt to new industrial, geopolitical, technological realities. Towards this Mr. Breton identified a set of key objectives and actions the Commission will undertake, namely:

- Ensure the continuity of Copernicus and Galileo
  - For Copernicus, the objectives are to maintain the EU's autonomous capacity to observe the Earth and to position Copernicus at the edge of the technological frontier, for instance, by integrating within Copernicus all the capacity that quantum technologies could bring to develop new services.
  - For Galileo, the objectives are: a) to continue deploying Galileo in order to reach the Full Operational Capability as soon as possible; b) to continue improving the precision of Galileo with a target of 20cm precision; c) to prepare already now the second generation of Galileo, in order to stay ahead in the technological race (the transition batch procurement is ongoing); d) to ensure the smooth development of the encrypted signal (PRS), because Galileo is also a strategic asset, designed to be used for military and civil security purpose.
- Launch of new initiatives (funded with synergies with the European Defence Fund):
- A Space Situational Awareness (SSA) system to avoid collision and debris on key satellites. And let's be clear, we should see this project as the precursor of a European Space Traffic Management system.
- A Governmental Satellite Communication system to provide Member States with reliable and secure satellite communication to support police, border protection, diplomatic corps or civil protection during crises.
- Use the EU budget to support the European launcher industry: the EU is ready to aggregate its institutional demand, to support ground infrastructures and the deployment of new technologies.
- Fix European governance issues, as governance is central to any successful strategy and project, political or industrial. In Europe we tend to spend a lot of time discussing who does what – especially between all the public actors – rather than actually doing it. This is not possible anymore. If we are to be successful and invest efficiently our citizens' taxpayer money, we have to stop the infights and work as a team: Commission, National Space Agencies, ESA, GSA, industry.
- Develop a European approach to "New Space"; an approach that is not a replicate of the U.S., but rather an approach that sets Europe as a launch pad for space innovative breakthroughs in the area of quantum technologies, data exploitation, integration of space assets with AI, cloud solutions and High-Performance Computing. The public authorities' approach also has to change. We need to accept to take more risk, also in our public procurement strategy.
- Drastically reduce Europe's technological dependence. Towards this, we should collectively map the strategic technologies and critical components on which we are dependant and use this to design a clear industrial policy based on strategic value chains. This is a domain where the European Defence Fund could also help.

## Closing Address

Speech by:

- **Marian-Jean Marinescu**, Member, European Parliament

In his concluding remarks, **Marian-Jean Marinescu** first highlighted how participation to this annual event has become larger year after year and successful in gathering many policy and industry stakeholders to discuss substantive topics for the future of Europe's space activities. Mr Marinescu hence summarised some of the key themes and recommendations emerging from this year's conference. In particular, he highlighted the following points:

- European industry needs predictable environment to efficiently develop its activities
- A strategic roadmap for the space industry shall be developed in the near future to better inform the activities of European institutions
- The Sky & Space intergroup will be keen to support this process and work towards securing an appropriate level of resources for space
- The European Commission shall continue negotiations with some EU Member States to overcome their resistances in securing a larger budget for EU space activities
- Future elements of the EU programme, namely SSA and GOVSTACOM, need to be appropriately financed
- Further emphasis shall be placed on the development of the downstream segment.
- Member States alone will not be able to tackle the challenges ahead; and the EU alone will not. Only by acting together, Europe will become a space power.

## ABOUT ESPI



Policy &  
Strategy



Economy &  
Business



Security &  
Defence



International &  
Legal

ESPI is the European think-tank for space. The Institute is a not-for-profit organization based in Vienna, World capital of space diplomacy, providing decision-makers with an informed view on mid to long-term issues relevant to Europe's space activities since 2003.

ESPI is supervised by a General Assembly of member organizations and supported by an Advisory Council of independent high-level experts.

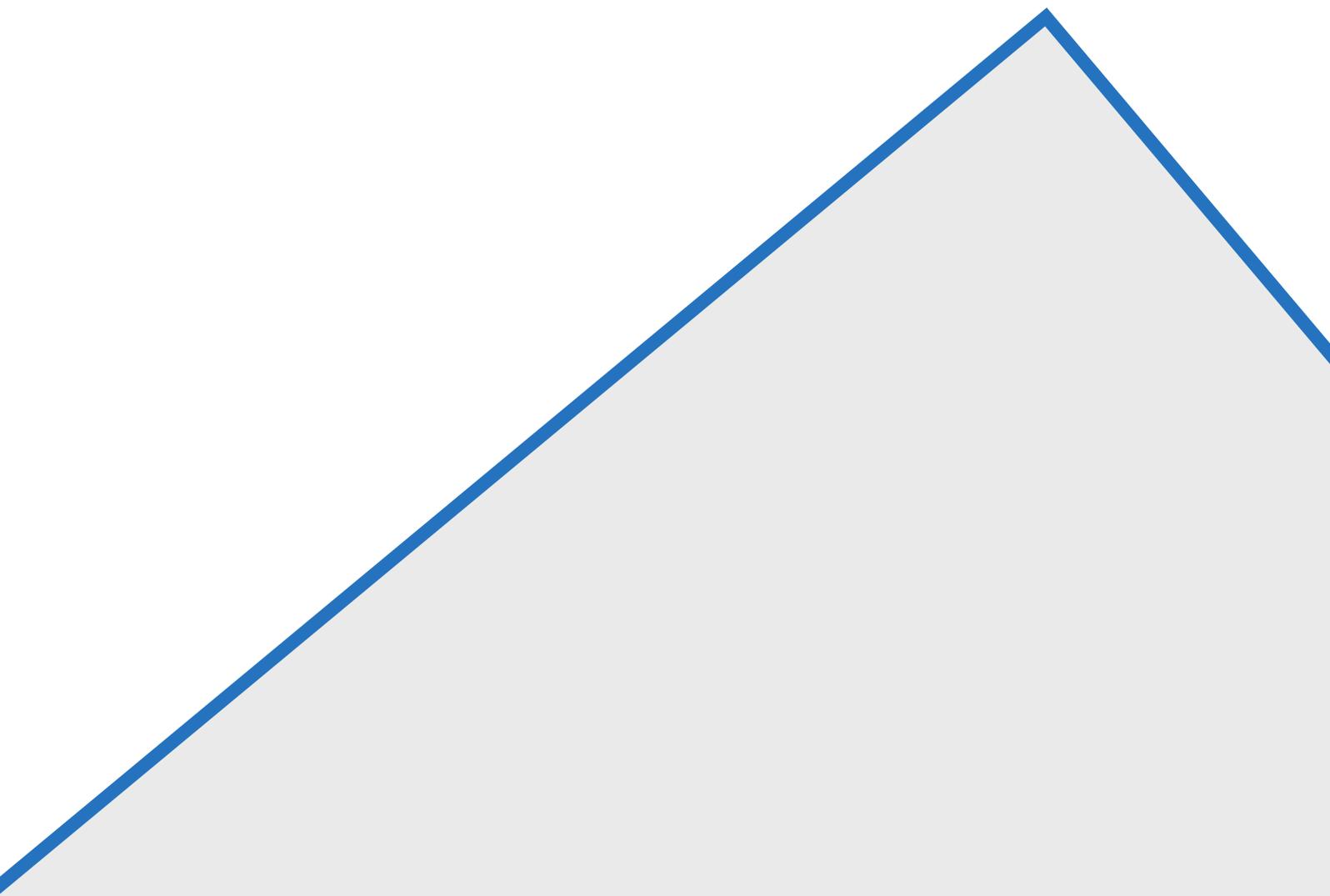
ESPI fulfils its objectives through various multi-disciplinary research activities leading to the publication of books, reports, papers, articles, executive briefs, proceedings and position papers, and to the organisation of conferences and events including the annual ESPI Autumn Conference.

Who we are		What we do	
Independent think-tank specialised in space policy			Research and analysis on major space policy issues
Multinational team with interdisciplinary expertise			Monitoring of global space trends and policy developments
Part of a network of European and international partners			Organization of thematic conferences and workshops

*Download our reports, check our events and subscribe to our newsletter online*

[www.espi.or.at](http://www.espi.or.at)





[www.espi.or.at](http://www.espi.or.at)