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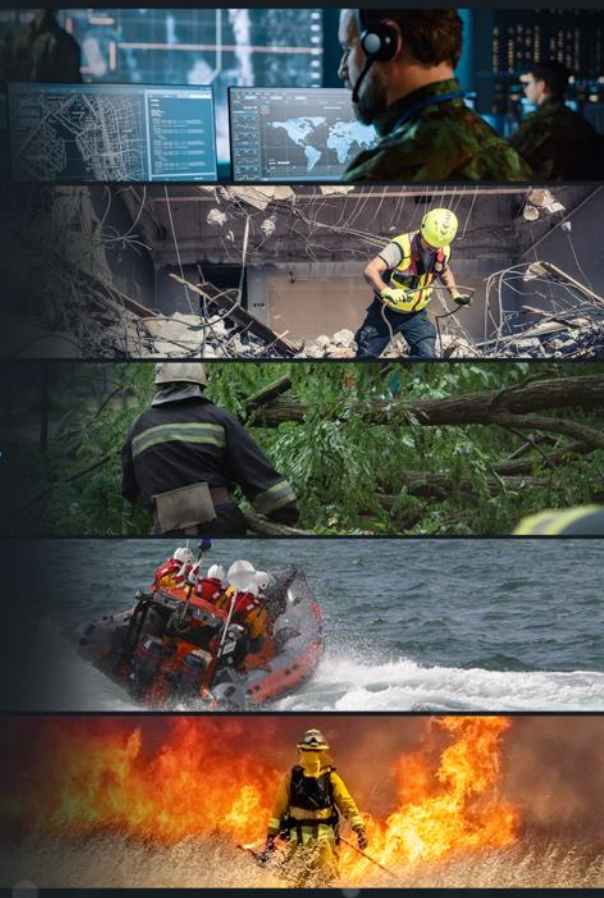
2ND ESA SECURITY CONFERENCE

16–17 MAY 2023 | PALAIS D'EGMONT | BRUSSELS



PROCEEDINGS

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About the 2nd ESA Security Conference

The 2nd ESA Security Conference: Developing the Toolsets to Decisively Act Upon Crises took place on 16-17 May 2023 at the Palais d'Egmont, in Brussels. The event was co-organised by the European Space Agency (ESA) and the European Space Policy Institute (ESPI) with the kind support of the Belgian Science Policy Office (BELSPO). It was conceived as a follow-up to the 1st ESA Security Conference, which was organised in Frascati, Italy, in November 2021, and highlighted the eagerness of security actors to make greater use of space as well as the relevance of developing federated solutions to interconnect space-based systems, ground systems and services.

The event took stock of the current evolution of the security landscape, at policy and operational level. Participants investigated the measures that should be taken to better support security actors and Europe's welfare through the provision of space solutions and the elaboration of future space programmes, policies and partnerships. Similarly, recent developments in the space sector, in particular in the ESA and EU frameworks, were an important starting point for the conference. In this context, the needs of field actors, the development and management of collaborative systems, the contribution of the private sector as well as the importance of international cooperation beyond Europe were all addressed in dedicated panels. This allowed a variety of speakers from different backgrounds to exchange their views and reflect together on the way forward for Europe in the domain of "space for security".

The Conference gathered more than 300 people coming from institutions and organisations from 29 countries, alongside representatives of various national and EU agencies and institutions as well as international organisations, industry, think tanks and user communities.

Proceedings

This document contains the official Proceedings of the event. They outline the key messages raised during the two days of the conference, which was structured in five panel discussions as well as several keynotes and thematic speeches. Following the Chatham House Rule, the Proceedings do not specify the source of the provided information.

These Proceedings are structured around seven defining messages that emerged through the discussions and debates, namely:

1. Space actors need to take urgent actions to make security in and from space a top priority in order to better respond to the sudden change of geostrategic paradigm and today's security challenges
2. European cooperation should be reinforced and geared towards strategic and technological autonomy, ensuring the availability of European infrastructure and continued industrial competitiveness
3. Europe should leverage on the various dimensions of its autonomy to actively position itself as a strong and reliable partner on the international stage
4. Users, in coordination with decision-makers, field actors and service providers, should be actively involved at all stages of space programme development and exploitation
5. Tailored and easily accessible data, actionable information and services are key drivers for greater user uptake
6. Further support to commercialisation is a valuable approach for the future of the "space for security" market, in which public-private partnerships and co-funding orientation play a decisive role
7. ESA is a recognised key security contributor and was strongly encouraged to further its commitment to peace and security, through its own programmes and initiatives, to meet the EU and national political objectives, in collaboration with other public actors and European industry

ESA and ESPI would like to sincerely thank all participants in the Conference as well as the keynote speakers, thematic speakers and panellists, who actively contributed to the event by sharing their insightful perspectives and their experience with the audience.

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1. Space actors need to take urgent actions to make security in and from space a top priority in order to better respond to the sudden change of geostrategic paradigm and today's security challenges

The discussions outlined that security is a broad topic that encompasses a wide variety of areas, including mitigation against the consequences of climate change as well as protection against intentional threats. Some speakers explained that their countries are increasingly adopting a comprehensive approach to security, through which they link all dimensions and all domestic and international actors to serve and attain common goals.

In parallel, it was recalled several times that space, like cyber, is a transversal asset that directly benefits security activities on Earth. Moreover, space is a readily available tool to meet major global challenges and disruptions, a situation that calls for the development of evolutive space tools to address heightened uncertainty.

These characteristics as well as recent developments, in particular the war in Ukraine, have increased the urgency of addressing the nexus between space and security & defence. Indeed, this high-intensity conflict may be the first to highlight the necessity and fragility of space systems, in particular the civilian-owned ones. The conflict clearly demonstrates the added value but also the vulnerabilities of space systems, as well as the influence of public-funded R&D and commercial solutions when it comes to fulfilling security & defence missions. Therefore, anticipating the future is becoming crucial, and the development of methods such as strategic foresight in view of developing creative ideas supports this objective. Speakers outlined that the need for anticipation and preparedness is even more relevant at a time when a change of paradigm is taking place: on the one hand, space assets, including their ground segment, are developing very significantly in terms of capability and relevance to security applications but are also now increasingly becoming potential targets; on the other hand, the number of actors having to deal with security issues, even involuntarily, is expanding.

As part of this new paradigm, the dual-use dimension of space systems is ever more visible, illustrating the growing convergence between civil and military space. Therefore, several speakers affirmed that the better integration of military requirements into future European programmes, or the update of existing programmes to reflect these requirements, will become inevitable. Such a development was also described as a potential asset to facilitate and further the use of space systems for civil security purposes. In addition, this rapprochement could also lead to the creation of partnerships between civil and military actors, which will be beneficial to both sides. Participants nevertheless held that this evolution will also create new challenges, as it could for instance increase threats against space systems because of the difficulty to make a clear distinction between civil and military assets.

Finally, the broadness of the security concept translates into a multitude of use cases in which space solutions support security actors. Accordingly, the first day illustrated many applications through which space helps tackling security challenges, from law enforcement activities (e.g. maritime and border security, gravesite identification) to emergency management missions (e.g. damage assessment, fight against forest fires, environmental protection). In these cases, space is used before, during and in the aftermath of a disaster, thus supporting security activities through the full lifecycle of the event.

2. European cooperation should be reinforced and geared towards strategic and technological autonomy, ensuring the availability of European infrastructure and continued industrial competitiveness

The Conference revealed that European sovereignty and strategic autonomy remain a major objective for many stakeholders. This need for independence relates to the fact that Europe is part of a globally competitive landscape and must maintain its leadership based on undeniable strengths. In this context, there were calls for closer talks and joint work between the European Union and the United Kingdom on space issues.

First, strategic autonomy will be reached by Europe's capacity to manufacture, produce and own its infrastructure and sensitive technology, data or cloud. In this context, the willingness of European authorities to develop their own architectures in orbit through flagship programmes was commended. European-made and -owned infrastructure and data would help to build trust in the space systems and services, facilitate the sharing of data and encourage the use of space solutions by security actors.

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Second, maintaining a competitive European industry and its capacity to innovate were seen as a key factor to reach European autonomy and ensure the security of the continent, and calls for policy actions supporting this objective were repeatedly made. Indeed, one participant observed that sovereignty cannot be purchased, but requires a long-term process of construction of a number of capacities and elements. Moreover, several speakers recalled the necessity of reducing dependencies of the European space sector (e.g. regarding supply chain, electronic components, etc.) while also improving the resilience of the supply chain and of the systems themselves. A positive side effect of these efforts will be to enhance the usability of space systems for security & defence.

Third, this quest for sovereignty and strategic autonomy will be supported by the existing European ecosystem, community and talent as well as by the collaboration between its different communities (researchers, innovators, industry, emerging companies, etc.). Indeed, all speakers agreed that working together is necessary for the future of "space for security" activities: this includes collaboration between states but also between different types of actors (e.g. industry/companies, users and technology community). Panellists agreed that a federated approach accommodating different providers and users with different needs is seen as a sustainable way forward to serve security needs and assert the position of Europe in this field. Federating efforts has already been implemented in existing activities, such as the EU SST, which can serve as a well-functioning example according to several speakers. These efforts could also be implemented through innovative business models that create incentives for companies to contribute to multi-owner satellite constellations with their own assets. Ultimately, collaboration in Europe between industry, academia, R&D and users was also singled out as an important avenue to foster innovation and develop cutting-edge technologies and new and improved applications.

3. Europe should leverage on the various dimensions of its autonomy to actively position itself as a strong and reliable partner on the international stage

Several speakers asserted that the European ambition for autonomy should be complemented by cooperation with some key partners (e.g. the United States); in this context, space diplomacy was described as a major tool that has to be better leveraged and better aligned with programme development and industrial policy.

In particular, it was highlighted that European space stakeholders should reach beyond Europe to create partnerships. Partnerships were even described as mandatory by some; indeed, space challenges cannot be addressed alone and joint efforts enable to exploit the in-situ knowledge and expertise of each partner.

Cooperation with traditional partners, in particular the United States, should be increased, but in a reasonable manner that helps to achieve mutually beneficial results. In addition, Europe should also work with emerging actors, and concretely demonstrate the benefits of such collaboration to these prospective partners. Finally, panellists asserted that multilateral bodies should not be left aside because they are a pillar for the creation of mutual understanding. This understanding is important to make sure that the security concerns of each partner are well considered, which is a key foundation for the establishment of any partnership. In a similar vein, speakers explained that possibilities of cooperation between international/supranational organisations, such as the EU, UN, NATO, the OSCE or ESA should be further explored given the common values and interests that drive the actions of these organisations.

Finally, several priorities for cooperation were identified. First, speakers agreed that building trust and mutual understanding was the cornerstone of any partnership. Such trust could also foster a sense of ownership and responsibility of the partnership for all the involved actors, thus making them more willing to actively contribute to the common efforts. It was also acknowledged that transparency and a design of the partnership taking into account a comprehensive approach to security would support buy-in by participating states. Finally, the need to ensure that all partners have the same level of knowledge on the benefits to be enjoyed from the partnership was recalled, as a powerful tool to create trust and a sense of ownership.

4. Users, in coordination with decision-makers, field actors and service providers, should be actively involved at all stages of space programme development and exploitation

Several speakers highlighted that, to better serve users, the space sector needs to adapt its approach and adopt a more user-centric focus, for instance by giving more attention to terminals and platforms, as it is with these devices that security actors are connected to space. Participants also recalled that a one-size-fits-all approach is not the right solution to serve the many needs of security users, even more so because the user

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landscape is changing quickly in terms of diversity and scope. Overall, listening to and serving user needs were identified as essential drivers for "space for security" activities. Indeed, such actions would contribute to create a catalyst for the whole industry, thus leading to cost reductions and the development of technologies that may spin out and serve other use cases.

However, panellists affirmed that it is also crucial to not only consult users, be they civil or military, but give them a more active role in the development and evolution of solutions. Gathering user needs and requirements certainly helps to develop appropriate solutions that provide the right information at the right time, at the best possible cost. But users also have to become active participants in order to, first, make sure the solutions developed evolve with their needs and, second, encourage them to deepen their use of space solutions. Therefore, the objective is that users interactively build, jointly with developers, the tailor-made products that they need. A concrete example to better involve users would be to conduct innovation through continuous experimentation and validation: once a system is being developed, users are regularly put in the loop, in order to refine their requirements and iteratively adapt the system in development.

Finally, users should not have to be experts or to know the origin of space data to be able to benefit from the derived information and insights. However, several speakers expressed their interest in enhancing the education of users on space solutions, as many of them still consider this domain as science-fiction. In particular, the industry needs to discuss with "educated users", i.e. users capable of understanding what the industry is producing and of anticipating how they could benefit from products in development before they come to the market. According to industry representatives, such users (and organised user communities) are lacking in the security & defence market, while this audience would be valuable, for instance by helping industry to anticipate demand.

5. Tailored and easily accessible data, actionable information and services are key drivers for greater user uptake

In the various discussions addressing users' perspectives, numerous speakers recalled that, for security stakeholders, the valuable dimension of space lies in the data and, even more, their transformation into actionable information. Several assertions were made by panellists regarding data:

- First, the timeliness with which space data can be used has improved in the past years, to a large extent due to industry's efforts.
- Second, some speakers expressed the wish to be able to use the same set of data for different applications and use cases. That would also help maximise the value of such data. To this end, speakers recalled that the space sector should stop working in silo and share data more widely, both across programmes, but also among users. This would also foster the development of integrated applications.
- Third, users would like to have the possibility to restrict certain data and the sensitive information they contain in order to protect them from cyberthreats.
- Fourth, Artificial Intelligence is expected to become even more crucial in analysing data, as it enables new capabilities and enhances efficiency.

The concept of a tailored Dataspace for space (a "Space Dataspace") was also mentioned during the conference: this system would facilitate the access to, and sharing of, space data by security users in a trustworthy environment. In addition, it would allow stakeholders to make use of space data, even if they are not interested in their source or the features of the space system that collected them. Therefore, Dataspaces may be one way to increase the uptake of space solutions by security actors by improving accessibility to data, a crucial element to support this uptake.

6. Further support to commercialisation is a valuable approach for the future of the "space for security" market, in which public-private partnerships and co-funding orientation play a decisive role

The exchanges that took place during the Conference asserted the crucial role of private actors in the provision of space systems and services to security stakeholders. They also emphasised the willingness of public organisations to better involve them in the development of solutions for this domain and to design adapted financing schemes to support established and upcoming companies. In this context, speakers from the

business sphere called for faster and better deployment of financial resources and capital, including from institutions.

Industry stakeholders claimed that industry is able to deliver the capabilities and technologies that are necessary to support security actors. However, they also stated that, to build and maintain innovation, they need public institutions to support commercialisation and create and sustain a market for space for security & defence. One example that was raised as a way to support commercial actors was anchor tenancy, yet it is not a one-size-fits-all solution and innovative procurement needs to find new ways of incentivising competition and innovation.

In addition, sufficient public demand was considered as a decisive tool to underpin the competitiveness of the space industrial base for security markets. Nevertheless, industry representatives also noted that the security features requested by institutions should not lead to outright exclusion of some companies (in particular smaller ones and start-ups) from the market, or hamper fast innovation. Market promotion was therefore a common theme tackled by many speakers but, while some of them emphasised the importance of fuelling competition in Europe, in particular in some specific segments (e.g. launchers), others recalled that supporting competition should not lead to the scattering of public funding as real rivals are outside Europe. Moreover, European preference could be envisaged for some domains.

Another important element for industry was to recall existing infrastructure in orbit and solutions on the market, which should be used. This would also foster commercialisation and ease access to space solutions for security users. For instance, existing infrastructure could host payloads to support additional missions or directly integrate new services (e.g. IRIS^2). A key message expressed was that, if an existing commercial solution can fully serve users' needs, then there is no necessity to create a new solution. In this context, stakeholders in the security & defence field need to be more open to consider and examine solutions provided by commercial actors, and ready to lower entry barriers for the uptake of commercial solutions.

Finally, although most speakers agreed on the importance to involve private actors more significantly, some of them recalled that these actors have to be regulated within a framework decided by the government. For instance, they should not be allowed to fully control critical infrastructure that may have large-scale effects (e.g. on the conduct of a conflict, with the use of Starlink in Ukraine cited as an example) without institutional oversight. Similarly, concentrating power in a few companies, as happened in the cybersecurity realm, should be avoided. A balance between innovation and security has thus to be struck in the way forward.

7. ESA is a recognised key security contributor and was strongly encouraged to further its commitment to peace and security, through its own programmes and initiatives, to meet the EU and national political objectives, in collaboration with other public actors and European industry

Over the years, ESA has been a permanent and reliable contributor to the development of space and security solutions to serve security actors, as demonstrated by a number of presentations and speakers at the Conference. However, the security environment is evolving fast, and users will need ever evolving and adapted technologies to cope with these new circumstances. In this context, and as in the past, the activities of ESA will continue to contribute to the delivery of user-approved solutions. It was further clarified several times that ESA provides tools to users but does not operate security services itself.

Through its strategic foresight capacity, its secure cyber environment, its recognised regulatory framework and its strong risk management culture, the Agency was heralded as an appropriate actor to develop and implement strategies and programmes related to "space for security". The fact that R&D, which lies at the core of ESA activities, was identified as a key component of the future of "space for security", backs this vision.

Moreover, to adapt to new security challenges and to the transversal nature of security use cases across space applications, a new cross-Directorate programme was created in November 2022: Civil Security from Space (CSS). Through CSS, together with the "Rapid and Resilient Crisis Response" (R3) Accelerator, ESA will support the development of federated systems, which will require standardisation, interoperability, end-to-end trust and security. The Agency will therefore act as a catalyst in stimulating innovation towards the interconnection of existing systems. But, in the longer term, ESA will also pursue R&D activities for the development of new systems, which will be interoperable by design and will put into focus the challenges of end-to-end system security and resilience.

Finally, ESA representatives acknowledged the long-standing expertise of other organisations in dealing with security issues. Therefore, they clarified that the Agency plans to work hand-in-hand with these organisations to deliver tangible outcomes to security actors.

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Conclusion

The 2nd ESA Security Conference illustrated the continuous commitment of the space sector to support the missions of security actors on Earth. By bringing together institutional, industry and user representatives, the Conference showed that, although progress has been made in recent years, much remains to be done, in particular in face of a quickly evolving security context. Giving a more active and prominent role to users as well as involving industry in a deeper manner are steps towards the greater European collaboration that many speakers called for.

This will also allow Europe to position itself on the international stage and continue to be a respected and productive partner. In this context, closer collaboration between the EU, ESA and their respective Member States will be an essential factor of Europe's success, fostering synergies and avoiding duplications. ESA will also seek useful and reliable cooperation missions with other regional and international organisations to deliver the most appropriate systems and technologies to security actors in the field. The initiatives of the Agency will be spearheaded by the Civil Security from Space programme as well as the R3 Accelerator, but existing activities will also be continued as the emergence of new ideas and initiatives will be encouraged.

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Conference Programme – Tuesday 16 May 2023

8:30 – 9:30	**Registration**
9:30 – 9:45	**Introductory remarks** **Josef Aschbacher**, Director General, European Space Agency
9:45 – 10:00	**Keynote speech** **Thomas Dermine**, Belgian State Secretary for Economic Recovery and Strategic Investments, in charge of Science Policy
10:00 – 10:15	**Keynote speech** **Timo Pesonen**, Director General, DG DEFIS, European Commission
10:15 – 10:30	**Conclusions of the 1st ESA Security Conference and current evolutions in the "Space for Security" landscape** **Matija Rencelj**, Research Manager, European Space Policy Institute **Mathieu Bataille**, Lead on Security & Defence, European Space Policy Institute
10:30 – 11:00	**Coffee break**
11:00 – 12:30	**PANEL 1: STRATEGIC FORESIGHT AT A DEFINING CROSSROADS FOR EUROPE** **Thematic Speech** **Klaus Korhonen**, Permanent Representative, Permanent Representation of Finland to NATO **Panellists** • **Orsolya Ferencz**, Ministerial Commissioner for Space, Ministry of Foreign Affairs and Trade of Hungary • **Taylor Grossman**, Senior Researcher Cyberdefense, Risk and Resilience Team, ETH Zurich • **Renato Krpoun**, Head, Swiss Space Office • **Alessandro Marrone**, Head of Defence Programme, Istituto Affari Internazionali • **Emmanuel Cerou**, Administrator, Strategic Foresight Office, European Space Agency **Moderator** **Jamie Shea,** Senior Fellow for Peace, Security and Defense, Friends of Europe
12:30 – 14:00	**Lunch Break**
14:00 – 15:30	**PANEL 2: SPACE AS A TOOL FOR THE PROTECTION OF CITIZENS AND SOCIETY** **Thematic Speech** **Thao Ton-That Whelan**, GIS and Remote Sensing Analyst, International Committee of the Red Cross

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	Panellists • **Philipp Agathonos**, Diplomat, Security Policy Directorate, Austrian Ministry of Foreign Affairs • **Katja Banovec Jurož**, Development Engineer, National Focal Point for Copernicus EMS and the Sendai Framework for Disaster Risk Reduction, Slovenian Administration for Civil Protection and Disaster Relief • **José Bondía**, Head, EUROSUR National Coordination Centre, Coordination Centre for Maritime Surveillance of Coasts and Frontiers, Guardia Civil • **Andrea Taramelli**, Associate Professor, IUSS University • **Graham Turnock,** Head of the Integrated Accelerator Team, European Space Agency **Moderator** **Hermann Ludwig Moeller**, Director, European Space Policy Institute
15:30 – 16:00	**Coffee Break**
16:00 – 16:20	**Keynote** **Sorin Ducaru**, Director, EU Satellite Centre
16:20 – 16:30	**Keynote** **Massimo Mercati**, Head of the ESA Security Office, ESA
16:30 – 18:00	**PANEL 3: IMPROVING THE CONTRIBUTION OF SPACE CAPABILITIES FOR MORE EFFECTIVE SECURITY** **Thematic Speech** **Miguel Belló Mora**, Director, Spanish Space Agency **Panellists** • **Jurry de la Mar**, Director for Research & Space Programmes, Deutsche Telekom • **Maria Kalama**, Business Development Director, Open Cosmos • **Eric Pol**, Chairman, aNewGovernance • **Jean-Francois Ripoche**, Director R&T and Innovation, European Defence Agency • **Christopher Topping**, Civil Security from Space Programme Manager, ESA **Moderator** **Clémence Poirier**, Research Fellow, European Space Policy Institute
18:00 – 20:00	**Evening Reception**

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Conference Programme – Wednesday 17 May 2023

9:30 – 9:40	**Recap of Day 1: Pascal Legai, Senior Security Adviser to ESA Director General, ESA**
9:40 – 10:00	**Keynote** **Maciej Popowski**, Director-General, DG ECHO, European Commission
10:00 – 11:30	**PANEL 4: THE COMMERCIAL CONTRIBUTION TO SPACE AND SECURITY** **Thematic Speech** **Serge Cholley**, Director Defence and Security, Eutelsat **Panellists** • **Juan Tomás Hernani**, President, YEESS • **Charlotte Lang**, Head of Public Affairs, Arianespace • **Olivier Lemaitre**, Secretary General, Eurospace • **Emmanuel Pajot**, Secretary General, EARSC • **Gordon Campbell**, EOP Head of Enterprise, ESA **Moderator** **Steve Bochinger**, Chief Operating Officer, Euroconsult
11:30 – 12:00	**Coffee Break**
12:00 – 13:30	**PANEL 5: THE BENEFITS OF PARTNERSHIPS IN A MULTIDIMENSIONAL INSTITUTIONAL LANDSCAPE** **Thematic Speech** **Cecile Aptel**, Deputy Director, UNIDIR **Panellists** • **Thomas Cantens**, Head of Research and Policy, World Customs Organization • **Carine Claeys**, Special Envoy for Space – Head of the Space Division, European External Action Service • **Tidiane Ouattara**, Space Science Expert and GMES & Africa Support Program Coordinator, African Union Commission • **Xavier Pasco**, Director, Foundation for Strategic Research • **Tuula Yrjölä**, Director of the Conflict Prevention Centre & Deputy Head of the OSCE Secretariat, Organisation for Security and Cooperation in Europe **Moderator** **Isabelle Duvaux-Béchon**, Senior Advisor – Integrated Accelerator Team, ESA
13:30 – 13:45	**Final Keynote** **Grzegorz Wrochna**, President, POLSA
13:45 – 14:00	**Closing Address** **Josef Aschbacher**, Director General, ESA

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