



**ADVANCING THE TRILATERAL EUROPE-U.S.-JAPAN
SPACE SECURITY PARTNERSHIP**

International Conference | June 5–7, 2016 Prague, Czech Republic

Conference Report

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I. BACKGROUND AND RATIONALE

To bolster the transatlantic dialogue on space security and expand allied collaboration in this vital field (particularly vis-a-vis Japan), the Prague Security Studies Institute (PSSI) launched a high-level conference series in 2010. The principal goal of these events has been to help identify and dissect the most pressing man-made threats to a safe and secure space environment and offer achievable solutions and/or threat-mitigation measures. It likewise seeks to bolster collaboration in space security policy, including by strengthening the transatlantic links among the relevant entities responsible for the development of space security partnerships, as well as bilateral and multilateral interactions among allies – notably Japan. The trilateral character of the series has been one of its principal differentiators.

On June 5–7, 2016, PSSI, together with its partner, the Secure World Foundation (SWF), convened – under the auspices of the Czech Ministries of Foreign Affairs, Transport and Defence – its third gathering in this conference series. The event, held in the Czernin Palace, Headquarters of the Czech Foreign Ministry, was also sponsored by the European Space Agency (ESA), Analytical Graphics, Inc. (AGI), PSSI Washington and ITOCHU Europe. The conference was attended by over one hundred experts from 24 countries and two international organizations. Participants included representatives from the European External Action Service (EEAS), the European Commission (EC), the U.S. Department of State, the U.S. Air Force Space Command, Japan's and France's Ministries of Defence, as well as prominent

non-governmental and commercial entities, such as George Washington University's Space Policy Institute (SPI), the Center for Strategic and International Studies (CSIS), the Lockheed Martin Corporation, and others.

The previous two conferences were co-organized with ESA and the Office of National Space Policy of the Japanese Prime Minister's Cabinet Office, respectively. The first gathering, held in Prague in June 2011, sought to establish space security as a policy priority directly relevant to the broader defense and strategic dialogue among Europe, the U.S. and Japan. The second conference, convened in Tokyo in October 2013, examined more concrete elements of collaboration that would advance each partner's national and space security interests. It also sought to assess how best to combine their capabilities to prevent and/or preempt various space security threat scenarios from materializing, including the deliberate actions of one space-faring nation against another.

This third conference focused on the growing intersection of space security and terrestrial/maritime geopolitical conflicts and reviewed steps that have been taken by European countries, the EU, the U.S. and Japan to address, nationally and internationally, increasingly complex and fast-moving space security developments, including efforts to align national space security priorities with various multilateral initiatives.

II. DISCUSSION OVERVIEW

Space has always been an arena of competition, but unlike the Cold War period, when adversaries and threats were more clearly delineated, threats to space operations in the 21st century arrive in a variety of forms. These include a growing arsenal of deliberate actions and capabilities (e.g., cyberattacks, jamming, blinding, etc.) on the part of both state and non-state actors. The impact of geopolitical flashpoints on Earth on space stability also represents a far more active concern than in the past. This is particularly the case due to worsening regional conflicts and/or tensions in Eastern Ukraine and Crimea, the Black Sea and the South and East China Seas. There is growing concern that such terrestrial and maritime conflicts can more easily spill into outer space as a result of miscalculations or deliberate actions, the consequences of which are difficult to predict – but are sure to be costly.

Against this backdrop, the continued development and testing of counterspace capabilities by state actors, most notably China and Russia, has also raised concerns about the growing threat to the space environment and sophisticated assets that reside there. As a result, it is imperative for policy-makers in Europe, the U.S., Japan and elsewhere, to develop both policies and capabilities to mitigate these

rapidly maturing risks and configure innovative responses and strategies to effectively deal with them.

The conference focused on the following topics:

- Trilateral Cooperation to Strengthen Space Resilience
- Implications of Hostile Acts on Sustainability of Outer Space Activities
- Threats of Radiofrequency Spectrum Interference and Other Reversible Counterspace Actions
- International Norms of Behavior to Promote Space Protection
- Authorizing and Supervising In-Space Operations

Among other points, it sought to foster discussions concerning the deployment of dual-use space technologies for national security applications, the latest developments in Space Situational Awareness (including the technical infrastructure, sensitive data sharing arrangements between allied partners, etc.), and the evolving role of commercial actors in this domain.

III. KEY FINDINGS AND RECOMMENDATIONS

There was unanimous consensus among the conference participants that we are now critically dependent on space assets, which provide a vast range of benefits to our societies (especially in science, technology, and innovation), the economy and national security. It was generally accepted that the dependence on space would only continue to grow.

With expanding dependency comes expanding vulnerability. Most speakers agreed that threats to space systems, both from hazards (e.g., space debris) and intentional actions, are progressing rapidly. Regarding the latter category, many speakers noted that these have diversified in recent years. While much of the concerns in the first decade of this century focused on kinetic threats, the past few years have also seen a greater sensitivity to electronic and cyber attacks. Certain speakers pointed out the specific challenges associated with radiofrequency interference. They include the lack of visibility of an attack, difficulty in identifying its source and intent, as well as its reversibility, often making them ambiguous occurrences with no easy response.

As a result, some speakers suggested that space is now a contested, degraded and operationally-limited environment in which one has to operate. This requires innovative strategies and approaches to space missions. Some of the main themes discussed are described in more detail below.

SPACE SITUATIONAL AWARENESS

Space Situational Awareness (SSA) is the ability to detect, track, identify and catalogue space objects on a global level and with a high degree of reliability. Accurate, comprehensive and up-to-date space object catalogues are key to delivering SSA services, in particular for space debris and on orbit traffic management. Conference participants described SSA as a fundamental necessity and a basic prerequisite underlying almost every action taken by space operators and commanders. Going far beyond merely monitoring the space environment and tracking space objects, SSA helps to characterize objects, identify their owners, infer their capabilities, calculate their future trajectories and decipher their intent, thus providing crucial information on which to base deliberations and actions.

SSA can also contribute to greater transparency by reducing the likelihood of misunderstandings which could ignite tensions between space-faring nations. If, for example, a satellite stops functioning, both ground- and space-based SSA assets can help determine the cause of that malfunction (which could be an unintended breakdown, a collision with a piece of space debris or a hostile act). Other examples where SSA can help determine intentions include satellite maneuvers and rendezvous and proximity operations. In addition, it can help link nefarious actions to their perpetrator, thereby raising the political and diplomatic costs of committing irresponsible acts in space.

There are continuous efforts to seek ways how to expand and upgrade SSA. The U.S. has implemented programmatic changes to redefine the role of its SSA organizations, including a new experimental Joint Interagency Combined Space Operations Center (JICSpOC), designed to test how the Department of Defense (DoD) and intelligence community would perform during an actual conflict in space, and the Joint Space Doctrine and Tactics Forum (JSDTF), chaired by the Commander of USSTRATCOM and Director of the National Reconnaissance Office (NRO).

While the value of, and necessity for, improved SSA capabilities was acknowledged by nearly everyone, speakers pointed out the capability gap between the U.S. and Europe and Japan, challenging the latter two to work harder to catch up. In that regard, representatives from Japan asserted that the Japanese Ministry of Defense (MoD) would start operations of a national SSA system by the early 2020s and was currently considering the architecture of such a system. Construction was expected to begin around mid-2017. The Japanese MoD is also considering the establishment of a new SSA system in cooperation with the U.S.

Representatives from Europe pointed to their ongoing efforts to establish a Space Surveillance and Tracking (SST) system which draws upon capabilities from the member states and is expected to grow in importance. Admittedly, the EU SST program represents an ambitious effort on the part of European countries to reduce their dependency on the U.S. Space Surveillance Network. The amount of funds dedicated so far to this program (some € 70 million) is inadequate to

establish a European equivalent to the U.S. capability, but should help maintain and upgrade select nations' existing assets.

The role of industry in SSA was likewise raised. There are numerous examples of emerging commercial capacities, such as the Space Data Association (SDA) or AGI's Commercial Space Operations Center, that were praised by several speakers. It was also pointed out, however, that some activities might have to stay within the purview of governments. Accordingly, further discussion on the right balance between governmental and private sector responsibilities and division of labor will be required.

RESILIENCY MEASURES

During most of the space age, resiliency measures were largely traded off for improved mission performance and cost savings, as threats to space assets were assumed to be a distant reality. In today's tension-filled global security environment, however, it has properly been deemed essential to consider resiliency as an integral part of deterrence. It helps both to prevent attacks by lowering adversaries' incentives, and the ability to continue to operate, should deterrence fail.

While the broader discussion about resiliency has focused on technological challenges, it was also emphasized that policy and strategy are equally important. A specific example of policy-related resilience measures was offered in the field of positioning, navigation and timing (PNT) services, where

the U.S. already carries out a range of activities to ensure the protection of its critical infrastructure. These include raising awareness, and providing tools and training to both foreign partners and the private sector operators to deal with threats to PNT systems. It was mentioned that the U.S. also conducts exercises among relevant national agencies and other stakeholders to learn how best to mitigate the harmful effects of disruptions.

Resiliency measures come in different forms, and several of them were discussed at the conference. It was noted that these have been best characterized and defined in a 2015 Pentagon report¹ entitled "Space Domain Mission Assurance: A Resilience Taxonomy", with an emphasis on deception, disaggregation, distribution, diversification, proliferation and protection.

Another example of a resiliency measure is Japan's use of data relay satellites to provide alternative communications links between its satellites and their ground stations in case the direct link is interrupted. It also employs an "oversupply" of imaging satellites to have redundant capacities should some of them come under attack. It was also suggested that terrestrial assets, such as unmanned aerial vehicles (UAVs), could be used to reconstitute some services in the event of an attack on space assets. In the specific case of

PNT services, it was stressed that the U.S. and Europe are ensuring, through a number of agreements, that GPS and Galileo are compatible and interoperable, allowing a fall back on either service if the other is malfunctioning or becomes a victim of an attack.

It was further noted that resiliency measures must be considered for all elements of space systems. Protection measures must include the ground segment and the communication links between the ground and the satellite. Regarding the ground segments, representatives from Japan mentioned that the country was exposed to a variety of frequently occurring natural disasters and, as a result, Japan has strengthened its infrastructure to be able to withstand most of these catastrophes. In addition, it has distributed its ground stations throughout the country to be able to switch operations to facilities in regions that were not affected. Several speakers discussed possible measures to strengthen the protection of communication links, such as encryption or frequency-hopping spread spectrum capabilities.

Finally, it was pointed out that resilience requires partnerships among allied nations, which would increase the number of redundant elements in the event of an attack. A question was even raised concerning to what degree, if any, should

¹ Office of the Assistant Secretary of Defense for Homeland Defense & Global Security (2015): Space Domain Mission Assurance: A Resilience Taxonomy. September 2015.

links be created with potential adversaries to disincentivize them from such disruptions in space operations.

NORMS OF RESPONSIBLE BEHAVIOR

The participants reaffirmed that norms of behavior (i.e., guidelines, standards or rules of the road) are a desirable policy tool in strengthening space security as they can: 1) make the space environment more stable and predictable for all actors; 2) help shape a shared understanding of what constitutes responsible behavior and therefore enable "bad" behavior to be cited and criticized; 3) form the basis for domestic law; and 4) serve as a near-term bridge in the move towards stronger international treaties.

Specific examples were cited to demonstrate the urgency to develop such norms of behavior. They include non-traditional activities, such as space debris remediation, on-orbit servicing or the launching of mega-constellations, for which rules or standards are yet to be established. Private sector representatives in particular expressed a strong desire to engage in these activities and argued that the current lack of rules creates a lot of uncertainty, challenging regulatory authorities to address this unsatisfactory situation.

Although general consensus on these broad considerations was established, views concerning specific content and implementation modalities varied. A number of interesting

questions were raised, including to what degree norms should be precise. Some argued that precise rules would bring clarity. Others suggested that there are benefits in some degree of ambiguity so that the norms do not become overly intrusive and prohibitive, especially in light of emerging developments in non-traditional space activities.

A closely related concept was that of "red lines". A question was asked whether the allies should define and clearly communicate red lines. For example, the early missile warning and strategic communications satellites should clearly be off the table for any potential attacker. While such a red line sends a strong message of determination to potential adversaries – hopefully changing their calculus – it could also backfire by limiting the response options in reaction to various technological and geopolitical developments.

Finally, the issue of verification was raised. Some argued that norms are based on a shared understanding of the most appropriate action in a certain area, thus making them self-enforcing in most cases. It was also noted, however, that it would be perilous to rely on good faith when it comes to adhering to norms.

With regard to specific initiatives, the European Union's International Code of Conduct for Outer Space Activities was referenced. Despite the July 2015 setback to the Code at a multilateral session in New York, the EU expressed its determination to continue to show leadership in pursuing

space-related transparency and confidence-building measures. It was likewise noted that the EU believes that a non-legally binding agreement which would cover both military and civilian activities was desirable and that such an agreement should be negotiated within the United Nations "if and when the conditions are right".² The five universally accepted principles to be promoted include: increasing international cooperation in space, establishing standards of responsible behavior, committing to non-interference in the peaceful exploration of outer space, facilitating equitable access to outer space, and increasing the transparency of space activities.

The role of the private sector in developing best practices and norms was likewise reviewed. Private sector representatives thought that norms will most likely develop from the civil or commercial, rather than the national security sector, and that governments should not overly influence and dictate the process. That said, they saw an important role for governments, acknowledging that industry can help initiate such a process. As mentioned earlier, private operators deemed it important that such norms would be established soon in order to remove legal and regulatory uncertainty, and called upon legislators to address this issue expeditiously.

Multilateral-level collaboration should be mainly pursued, in the opinion of some, by a critical mass of like-minded states that agree on shared principles. This approach would overcome the existing political deadlock, often unrelated directly to outer space activities. The International Code of Conduct against Ballistic Missile Proliferation (commonly referred to as Hague Code of Conduct) was mentioned as an example of a policy tool that enables later accession by interested States without having to reach universal consensus at the outset. Finally, nationally-developed norms are often a foundation for a "bottom-up" process to reach international consensus.

Despite the overarching optimism regarding norms, it was pointed out that they are but one instrument in a larger toolbox, and it was also necessary to have the even less pleasant conversation concerning how to react when norms are violated and deterrence fails.

DETERRENCE

Deterrence in general means the act of making someone decide not to do something because it would either not yield the desired outcome or would have intolerable consequences for the attacker. It was agreed that deterrence is an integral

2 See also the remarks delivered by Bruno Hanses, EEAS, at the 2016 UNIDIR Space Security Conference "Sustaining the Momentum: the Current Status of Space Security". <http://www.unidir.ch/files/conferences/pdfs/international-code-of-conduct-for-outer-space-activities-en-1-1135.pdf>

element of space security. As a logical consequence, two elements of deterrence emerge: deterrence by threatening retaliation and deterrence by denial of benefits. Both require capabilities and determination in order to be credible. From the outset of the discussions, it was emphasized that there is no isolated "space deterrence" as conflicts and wars occur along the full spectrum of domains which are interconnected. Therefore, while it would be possible to deter a war in general, it would be less plausible to solely deter a war in space.

It was also pointed out that although it may be tempting to draw comparisons to the nuclear realm, nuclear deterrence works on a different premise – a devastating second-strike capability. An attack on a nuclear deterrent by one of the superpowers was generally considered to result in a retaliation in-kind, potentially leading to unimaginable levels of destruction, whereas an attack in space would probably not lead to a comparable reaction (making such an attack possibly more tempting). The U.S. emphasizes in its space policy that an attack on space assets would lead to retaliation – but not necessarily in kind (i.e., there will be no "mirroring" of an attack) due to the fragility of, and dependence on, space.

Instead, measures of retaliation would likely occur in other domains (land, sea, air, or cyber) or by non-military means (economic, informational, political or diplomatic). But regardless of where and how retaliation would occur, it was stated that this mode of deterrence was complicated if applied to space. Lack of certainty over whether an attack

had happened, where it originated from and what the attacker tried to achieve all make a proportional response more difficult. Accordingly, it was stressed that greater emphasis should be placed on deterrence via denial of benefits. This explains the major focus of the U.S. on resiliency measures, which allow space systems to continue operating despite coming under attack.

ALLIED COOPERATION

Conference participants agreed that strengthening allied space cooperation continues to be an important objective. Pooling space assets, for example, or jointly developing them, saves money and strengthens resilience by raising the costs for hostile actors (i.e., having to target a greater number of space assets and an alliance of nations). Another, more "philosophical", argument was that the Western countries have successfully cooperated in every other domain, which has proved to be a fundamental asset and distinctive advantage, and that the extension of this form of cooperation to outer space was a logical and natural conclusion.

Examples of successful cooperation include increased access for allies to U.S. command centers, such as the Joint Space Operations Center (JSpOC). JSpOC permanently hosts officials from the UK, Australia and Canada. The U.S. Air Force Space Command also conducts joint exercises, such as the annual Schriever Wargames, which in 2016 counted seven allied nations (including new participants Germany and France). In addition, USSTRATCOM, as of February

2017, has SSA sharing agreements with twelve countries (the latest being Belgium)³ and two intergovernmental organizations (ESA and EUMETSAT) and the U.S. DOD has initiated a Combined Space Operations initiative, consisting of memoranda of understanding concerning joint space cooperation with several allied nations.

That said, speakers acknowledged that despite these positive developments, cooperation on a number of modalities, including certain definitions, concepts and actions to be taken in response to a hostile act, need to be clarified. Common understanding concerning what constitutes a hostile act, where to draw "red lines" or what constitutes a proportionate response, are still to be determined. On an operational level, it was also considered necessary to discuss details of information-sharing and classification boundaries.

Recommendations concerning the way ahead included: a call for more war games, tabletop exercises and simulations with coalition partners to practice operational aspects of responding to attacks in space; educating and training each other's personnel in their respective operations centers and streamlining space education and training in allied nations; and the review of classification standards to facilitate allies' access to essential information.

3 <http://www.stratcom.mil/Media/News/News-Article-View/Article/1075220/us-strategic-command-belgium-sign-agreement-to-share-space-services-data/>

IV. NEXT STEPS

The conference provided an opportunity to identify and strengthen jointly the understanding concerning what must be done to address the most pressing space security challenges. Although the participating governmental and nongovernmental representatives acknowledged that they do not always share the same objectives, they do share a mutual interest in space remaining a stable, predictable and peaceful environment through and within which everyone can operate freely and without interference.

Enhanced SSA capabilities, resilience, deterrence, norms of responsible behavior and allied collaboration are key elements in establishing a strengthened allied posture in the competitive space environment of the 21st century. The right mix of soft power/diplomatic means and superior military space capabilities in the hands of democracies (supported by rigorous enforcement measures) is the right path forward.

Suggestions were made to include "breakout sessions" during future conferences to enable in-depth discussions and brainstorming opportunities before returning to the plenary and presenting proposals. PSSI will carefully consider this suggestion, along with other adjustments to the discussion format. On March 21-22, 2017, in Washington, DC, PSSI, in partnership with the prestigious Center for Strategic and International Studies (CSIS), will convene its fourth conference in this series, entitled "Space Security: Issues for the New U.S. Administration". This upcoming event will seek to put on the map and discuss those priority

space security issues facing the new Trump Administration, hear from some of the key players managing these issues and offer helpful insights concerning the way forward for the allied nations attending.

As in the past, the overarching goal of this next conference is to strengthen further allied situational awareness and "early warning" with respect to decision-making in the space security domain. It will explore the implications of the growing arsenal of threats to a safe and secure space environment (e.g., cyberattacks, etc.) – designed to compromise allied space-related benefits – as well as seek to craft effective responses to the spread of hybrid warfare into space (i.e., provocations and disruptions just under the traditional threshold of traditional Western retaliation). The conference will also explore opportunities for future allied cooperative endeavors covering both the civilian and military/defense space portfolios. The public forum on March 22, 2017, will treat the following topics: Space Crisis Dynamics; Cooperation in Space and Missile Defense; The Future of Space Launch; and Space Situational Awareness and Space Traffic Management.

LIST OF ACRONYMS

AGI	Analytical Graphics, Inc.
EC	European Commission
EEAS	European External Action Service
ESA	European Space Agency
EU	European Union
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
GPS	Global Positioning System
ICBM	Intercontinental Ballistic Missile
JICSpOC	Joint Interagency Combined Space Operations Center
JSDTF	Joint Space Doctrine and Tactics Forum
JSpOC	Joint Space Operations Center
NRO	National Reconnaissance Office
PNT	Positioning, Navigation and Timing
SSA	Space Situational Awareness
SST	Space Surveillance and Tracking
UAV	Unmanned Aerial Vehicle
USSTRATCOM	U.S. Strategic Command



The panelists of the opening session and the first panel on "Trilateral Cooperation to Strengthen Space Resilience", **Roger W. Robinson, Jr., Ivo Šrámek, Francois Rivasseau, Col. Jerome Bernier, Scott Pace, Pierre Delsaux, Douglas L. Loverro** and **Mikio Shiokawa** (from left).



General C. Robert "Bob" Kehler, former Commander of the U.S. Strategic Command, delivering the keynote speech at the conference gala dinner. Sitting next to him is **Michael Simpson**, Executive Director, Secure World Foundation.



Lt. Gen. David J. Buck, Commander, 14th Air Force (Air Forces Strategic), Air Force Space Command; and Commander, Joint Functional Component Command for Space, U.S. Strategic Command, with **Jana Robinson**, Director of the Space Security Program at PSSI



Thomas Karako, Senior Fellow and Director, Missile Defense Project at the Center for Strategic and International Studies, presenting during Panel 2 on "Implications of Hostile Acts on Sustainability of Outer Space Activities"



Toshiro Iijima, Ambassador (Policy Planning, International Security Policy), Foreign Policy Bureau, Ministry of Foreign Affairs, Japan, delivers his remarks during Panel 4 on "International Norms of Behavior to Promote Space Protection". Next to him is **David Turner**, Deputy Director, Space & Advanced Technology, U.S. Department of State



Scott Pace, Director, Space Policy Institute at George Washington University, moderating the first panel on "Trilateral Cooperation to Strengthen Space Resilience"



Peter L. Hays, Associate Director, Eisenhower Center for Space and Defense Studies, delivering his remarks at Panel 2 on "Implications of Hostile Acts on Sustainability of Outer Space Activities"



Conference participants during the conference opening reception at Villa Grébovka in Prague.

ANNEX

CONFERENCE PROGRAM

SUNDAY, 5 JUNE 2016

Venue: Villa Grébovka, Havlíckovy sady 58, Prague

18:00–20:00 **OPENING RECEPTION** (by special invitation only)

Welcome Remarks:

Roger W. Robinson Jr., PSSI Chairman and Co-Founder

Michael K. Simpson, Executive Director, Secure World Foundation (SWF)

MONDAY, 6 JUNE 2016

Venue: Ministry of Foreign Affairs of the Czech Republic, Czernin Palace, Loretánské nám. 5., Prague

8:30–9:00 **COFFEE AND REGISTRATION**

9:00–9:30 **OPENING SESSION**

Welcome Remarks: **Roger W. Robinson Jr.**, PSSI Chairman and Co-Founder

Opening Remarks:

Ivo Šrámek, Deputy Minister of Foreign Affairs for Security and Multilateral Issues, Czech Republic

Francois Rivasseau, Special Envoy for Space, Head of Security Policy and Space Policy Division, European External Action Service (EEAS)

9:30–10:45 **PANEL 1: TRILATERAL COOPERATION TO STRENGTHEN SPACE RESILIENCE**

Moderator: **Scott Pace**, Director, Space Policy Institute, George Washington University

Panelists:

Col. Jerome Bernier, Chief of Staff, Joint Space Command, Ministry of Defence, France

Pierre Delsaux, Deputy Director General, Internal Market, Industry, Entrepreneurship and SMEs (DG GROWTH), European Commission

Douglas L. Loverro, Deputy Assistant Secretary of Defense for Space Policy

Mikio Shiokawa, Principal Deputy Director-General, Cabinet Satellite Intelligence Center (CSICE), Japan

10:45–11:00 **COFFEE BREAK**

11:00–12:30 **PANEL 2: IMPLICATIONS OF HOSTILE ACTS ON SUSTAINABILITY OF OUTER SPACE ACTIVITIES**

Moderator: **Frank Asbeck**, Principal Advisor, European External Action Service

Panelists:

Peter L. Hays, Associate Director, Eisenhower Center for Space and Defense Studies

Peter Huessy, Senior Defense Consultant to the Mitchell Institute of the Air Force Association & President, GeoStrategic Analysis

Thomas Karako, Senior Fellow, Center for Strategic and International Studies (CSIS)

Xavier Pasco, Senior Research Fellow, Fondation pour la Recherche Stratégique (FRS)

12:30–12:45 **SPECIAL ADDRESS:**

Jakub Landovský, Deputy Minister of Defense of the Czech Republic – Head of the Defense Policy and Strategy Division

Introduced by: Andrew K. Davenport, Deputy Executive Director, PSSI Washington

12:45–14:00 **BUFFET LUNCHEON**

Keynote Speech: Lt. Gen. David J. Buck, Commander, 14th Air Force (Air Forces Strategic), Air Force Space Command; and Commander, Joint Functional Component Command for Space, U.S. Strategic Command

Introduced by: Jakub Landovský, Deputy Minister of Defense of the Czech Republic – Head of the Defense Policy and Strategy Division

14:00–15:30 **PANEL 3: THREATS OF RADIOFREQUENCY SPECTRUM INTERFERENCE AND OTHER REVERSIBLE COUNTERSPACE ACTIONS**

Moderator: Kazuto Suzuki, Associate Professor of International Political Economy, Public Policy School, Hokkaido University, Japan

Panelists:

Robert Crane, Senior Homeland Security Advisor, National Coordination Office for Space-Based Positioning, Navigation and Timing, U.S. Department of Homeland Security

Atsuo Suzuki, Deputy Director General, Bureau of Defense Policy, Ministry of Defense, Japan

Todd Harrison, Director, Defense Budget Analysis, Center for Strategic and International Studies (CSIS)

15:30–15:45 **COFFEE BREAK**

15:45–17:30 **PANEL 4: INTERNATIONAL NORMS OF BEHAVIOR TO PROMOTE SPACE PROTECTION**

Moderator: Michael Simpson, Executive Director, Secure World Foundation (SWF)

Panelists:

Frank Asbeck, Principal Advisor, European External Action Service
Toshiro Iijima, Ambassador (Policy Planning, International Security Policy), Foreign Policy Bureau, Ministry of Foreign Affairs, Japan

Mallory Stewart, Deputy Assistant Secretary of State for Arms Control, Verification, and Compliance, U.S. Department of State

19:30 **GALA DINNER (BY SPECIAL INVITATION ONLY)**

Venue: Mlýnec Restaurant, Novotného lávka 9, Prague

Keynote Speech: General C. Robert “Bob” Kehler, former Commander of the U.S. Strategic Command

Introduced by: Roger W. Robinson Jr., Chairman and Co-Founder of PSSI

TUESDAY, 7 JUNE 2016

*Venue: The Ministry of Foreign Affairs of the Czech Republic,
Czernin Palace, Loretánské nám. 5., Prague*

7:45–8:15 **COFFEE AND REGISTRATION**

8:15–9:00 **OPENING SESSION**

Opening Remarks:

Stefano Iannitti, Head of Security Department, European Global Navigation Satellite Systems Agency (GSA)

Hironichi Moriyama, Director, National Space Policy Secretariat (NSPS), Cabinet Office, Government of Japan

9:00–10:15 **PANEL 5: AUTHORIZING AND SUPERVISING IN-SPACE OPERATIONS**

Moderator: Peter Marquez, Vice President for Global Engagement, Planetary Resources, U.S.

Panelists:

Eric Stallmer, President, Commercial Spaceflight Federation

Jennifer Warren, Vice-President, Technology Policy & Regulatory Affairs, Lockheed Martin

Travis Langster, Vice President, Space Situational Awareness Business, Analytical Graphics, Inc. (AGI)

Amnon Ginati, Head of Integrated Applications Department, European Space Agency, inv.

10:15–11:15 **PANEL 6: CONCLUDING PANEL AND OUTLOOK WITH SESSION MODERATORS**

Moderator: Jana Robinson, Space Security Program Director, PSSI

Panelists:

Frank Asbeck, Principal Advisor, European External Action Service

Peter Marquez, Vice President for Global Engagement, Planetary Resources, U.S.

Scott Pace, Director, Space Policy Institute, George Washington University

Michael K. Simpson, Executive Director, Secure World Foundation (SWF)

Kazuto Suzuki, Associate Professor of International Political Economy, Public Policy School, Hokkaido University, Japan

11:15–12:30 **CLOSING LUNCHEON**

Keynote Speech: Dan Tok, Minister of Transport of the Czech Republic

Introduced by: Jana Robinson, PSSI Space Security Program Director

HOST, SPONSORS AND PARTNERS

HOST



The Prague Security Studies Institute

The Prague Security Studies Institute (PSSI) is a non-profit, non-governmental organization established in early 2002 to advance the building of just, secure, democratic, free market societies in the Czech Republic and other post-communist states. PSSI's mission is to build an ever-growing number of informed and security-minded policy practitioners dedicated to the development of democratic values and institutions, as well as protecting them, from various traditional and asymmetric threats. PSSI offers programs that help meet the critical requirements associated with equipping new generations of young leaders to manage the complex, security-related challenges of the 21st century. To fulfill its mission, PSSI conducts a broad range of activities under its Security Scholars Program, Space Security Program, Economic & Financial Threat Program and Energy Security Program. PSSI aims to identify and analyze geopolitical flashpoints and emerging threats regionally and globally and to propose sound and achievable policy options to deter and defeat hybrid warfare strategies and other forms of external aggression as well as security-relevant internal governance abuses.

pssi.cz

PRINCIPAL CO-SPONSOR



The Secure World Foundation

The Secure World Foundation is a private operating foundation dedicated to the secure and sustainable use of space for the benefit of Earth and all its peoples. We work with stakeholders domestically and abroad to discuss policies, laws, and actions that can help ensure that the benefits from space are available over the long-term. SWF promotes cooperative solutions for space sustainability.

swfound.org

THE CONFERENCE WAS HELD UNDER THE AUSPICES OF

Lubomír Zaorálek,

Minister of Foreign Affairs of the Czech Republic, mzv.cz

Dan Ťok,

Minister of Transport of the Czech Republic, mdcr.cz

Martin Stropnický,

Minister of Defense of the Czech Republic, army.cz

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ABOUT THE AUTHORS

Jana Robinson

Dr. Jana Robinson is currently Space Security Program Director at the Prague Security Studies Institute (PSSI). She previously served as a Space Policy Officer at the European External Action Service (EEAS) in Brussels, as well as a Space Security Advisor to the Foreign Ministry of the Czech Republic. From 2009 to 2013, Ms. Robinson worked as Resident Fellow at the European Space Policy Institute (ESPI), seconded from the European Space Agency (ESA), leading the Institute's Space Security Research Programme.

Prior to joining ESPI, Dr. Robinson served as Development Director at PSSI from 2005 to 2009, and administered its affiliate organization in Washington DC, PSSI Washington. Dr. Robinson is an elected member of the International Institute of Space Law (IISL) and the International Academy of Astronautics (IAA). She is also a member of the Advisory Board of the George C. Marshall Missile Defense Project of the Center for Strategic and International Studies (CSIS) in Washington, D.C. Ms. Robinson holds a Ph.D. from the

Charles University's Faculty of Social Sciences, Institute of Political Studies, in the field of space security. She also holds two Master's Degrees, from George Washington University's Elliott School of International Affairs and Palacky University in Olomouc, respectively. She received scholarships to attend the International Space University's (ISU) 2009 Space Studies Program (SSP09), the 2008 Summer Training Course at the National Taiwan Normal University in Taipei, and a one-year course of study at Shanghai University 1999–2000.

Maximilian Betmann

Maximilian Betmann is a Project Assistant at PSSI, assigned to the Institute's Space Security Program. He attended the University of Würzburg in Germany where he recently completed his Bachelor's degree in Political and Social Studies. His professional interests are focused on space law and policy, and he has been selected for internships at the German Aerospace Center (DLR), the German Parliament and the Austrian Space Forum.

