

Space Situational Awareness and Threat Perceptions: Managing Strategic Risk Amidst Uncertainty, Misperception, and Misunderstanding

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Our mission – our vision

Our contribution for a better world

Our Activities:

- Consulting, Policy and Strategy Support
- Publishing
- ThorWatch Open Source Intelligence Products
- Business Development and Project Management

Our Mission:

To provide the highest quality products and services to our clients so they can effectively achieve their objectives, safeguard their interests and assets, and better navigate a complex and uncertain world.

Our Vision:

To establish ThorGroup GmbH as a pioneer in 21st century technology, policy, information, and media management, and to champion technologies, concepts, and policies for a better future for all.

“Space Situational Awareness (SSA) is "the *perception* of the elements in the environment within a volume of time and space, the *comprehension* of their meaning, and the projection of their status in the near future"...as applied to the on-orbit near-Earth domain.”

Dr. Marcus J. Holzinger, Georgia Institute of Technology

SSA Challenges for Decision Makers

- Lack of SSA coverage;
- Lack of granularity:
- Technical Focus (vice intentions)
 - Ambiguous/conflicting data
- Commercial on-orbit rendezvous and close proximity operations:
- Non-kinetic threats (cyber, EW, etc.):
- Unexpected changes in orbital behaviour (e.g. plane change).

Misperception, Misunderstanding, and Threat Perceptions

- International politics and security imbued with misperception and misunderstanding among and between actors;
- Principal proximate cause of war in history is acute uncertainty on the part of one belligerent in relation to others (e.g. WWII Soviet Union, Saddam Hussein's Iraq);
- The greater uncertainty (i.e. lack of coverage and knowledge) greater the prospect for misperception and misunderstanding at strategic level, and the more inflated the threat perception;
- Technical intelligence helps bridge the gap in perception and understanding, but cannot glean intentions during times of crisis;
- A comprehensive and holistic approach to SSA is required – mixing technical data gathering and monitoring with non-technical intelligence gathering, diplomacy, strategic dialogue, and formal multilateral security processes.

Mitigating SSA Misperception & Misunderstanding: Intelligence

- High threat perceptions regarding space activity are largely born out of lack of useful intelligence on adversary intentions;
- Technical intelligence gathering (of which SSA is a critical component) cannot glean adversary intentions out of ambiguous activity in orbit;
- Space powers must invest in intelligence monitoring and gathering of adversary space operations, tactics and techniques, doctrine and strategy, and policy interactions with other instruments of power to gain better insight into intentions;
- This intelligence investment can be supplemented by intelligence sharing and assessments with allied countries.

Mitigating SSA Misperception & Misunderstanding: Civil & Commercial Space

- Since majority of threats are military in nature, engagement and cooperation with civil agencies useful indirect route to communication and reassurance;
- Civil agencies that interact bilaterally or multilaterally can relay information/messages to military counterparts;
- Civil space agencies can act as proxies for initial contacts and confidence-building measures;
- Certain commercial space operators can also be useful proxies for engagement with adversary states;\
- Commercial organisations, such as the Space Data Association, are also models for state-on-state engagement where trust is low/nonexistent;
- Compare and understand commonalities and differences in SSA technical standards.

Mitigating SSA Misperception & Misunderstanding: Diplomacy

- States with mutually high threat perceptions of other's space activities should incorporate space security in high-level bilateral strategic dialogue;
- Similarly, regional and multilateral institutions should be utilised for conveying red lines and side dialogues on space security/threat issues;
- Clear and unambiguous communication of what is acceptable and unacceptable behaviour in space domain is critically important;
- Diplomatic cooperation with friendly and allied countries on space security/threat interests can apply pressure on adversary actor;
- Diplomacy useful for gaining advantage in public and third party perceptions and sympathy when space threats are perceived to be acute, or dialogue with adversary not forthcoming.

Mitigating SSA Misperception & Misunderstanding: Military-to-Military Dialogue

- As part of evolving bilateral strategic dialogue, start military-to-military dialogue on space threats and security issues;
- Exchange information and broad doctrinal principals in effort to create mutual transparency;
- Discuss threat perceptions and red lines in order to explore concrete areas where unnecessary misperceptions and misunderstandings exist;
- If talks progress, allow mutual inspections of bases/installations, technical information exchanges;
- Explore timely notification procedures for legitimate operations that might be perceived as ambiguous or threatening by the other side.

Mitigating SSA Misperception & Misunderstanding: Arms Control/C of C

- As bilateral political differences are resolved and improved, prospect for space arms control improves;
- (Arms control paradox: when you most need arms control it is impossible, when you least need arms control it is unnecessary);
- Arms control agreements can codify mutually beneficial and non-threatening activity and behaviour in orbit, further building trust and reducing misperception and misunderstanding;
- Similarly, advocating for and adhering by principles in international codes of conduct on space activity can demonstrate consistency in space operations, and so calm adversary threat perceptions.

Be Proactive and Bust Out of Silos

- Effective SSA is not just a technical endeavor, but also encompasses wider intelligence activities; civil and commercial space engagement; diplomacy and strategic dialogue; military-to-military exchanges; and ultimately arms control and codes of conduct;
- This requires domestic political engagement in the issue – space threat perceptions can only be mitigated once political leadership is convinced of their importance/danger;
- The more information on the adversary and its intentions in space, the more threat perceptions can be managed and treated realistically;
- To achieve all this key institutions and decision makers must be proactive, institutions must be prepared to share information.

Caveat Emptor: NOTHING is Certain

- Technical improvements in SSA scope of coverage and granularity, combined with efforts previously outlined, cannot guarantee certainty or guarantee that conflict in space will never occur;
- Mitigating misperception and misunderstanding in space does not mean mitigation of misperception and misunderstanding in other domains and politically;
- Sometimes wars start deliberately, not by accident – space is a place where a war might kick off despite efforts outlined above.



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