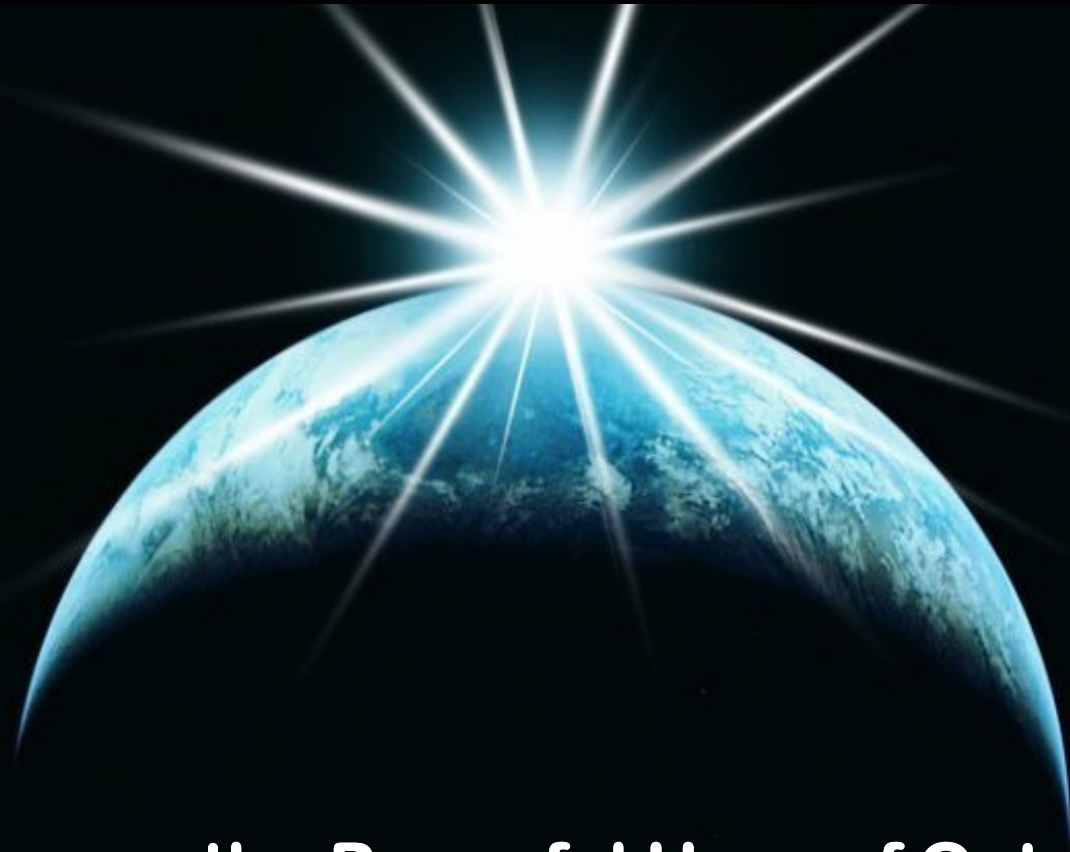


SPACE SECURITY INDEX



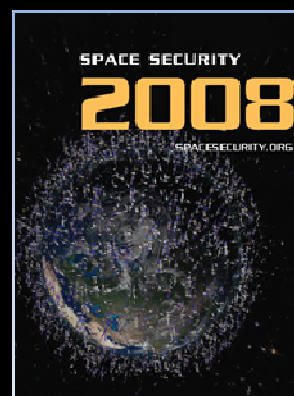
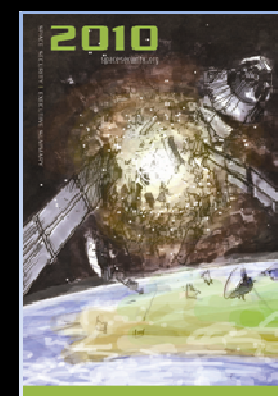
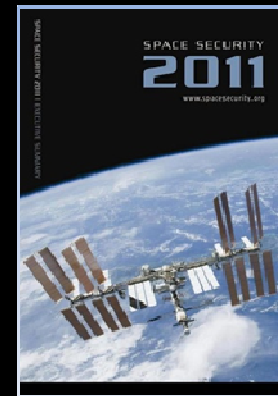
Committee on the Peaceful Uses of Outer Space

Vienna, 13 June 2013

Cesar Jaramillo - SSI Project Manager

The Space Security Index

- Provides objective and fact-based research to promote *transparency and confidence* in space activities
- Supports the development of *policy* to ensure secure access to space for all





“The secure and sustainable access to and use of space, and freedom from space-based threats”

Space Security Themes and Indicators



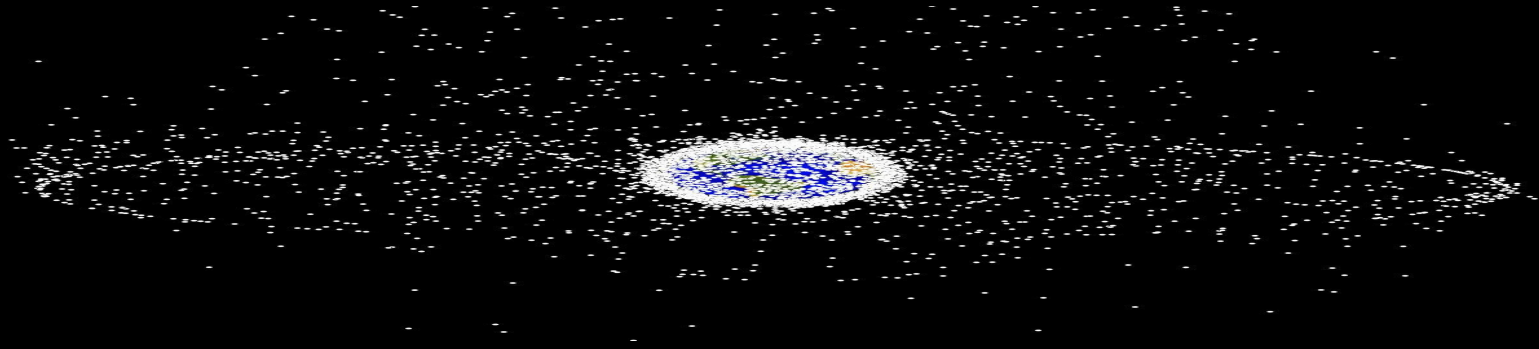
- **Theme 1:** Condition of the space environment
- **Theme 2:** Access to and use of space by various actors
- **Theme 3:** Security of space systems
- **Theme 4:** Outer space policies and governance



Theme 1: Condition of the space environment

- *Indicator 1.1: Orbital debris*
- *Indicator 1.2: Radio frequency (RF) spectrum and orbital positions*
- *Indicator 1.3: Near-Earth Objects*
- *Indicator 1.4: Space weather*
- *Indicator 1.5: Space situational awareness*

- **Key challenge: Threat posed by space debris by spacecraft of all nations**
- **Amount of manmade space debris in orbit growing each year**
- **Awareness of the space debris problem has grown considerably**
- **Greater willingness to share space situational awareness data through international partnerships**



Key Developments in the *Space Security Index 2013*:

- **International dialogues on debris problem, active debris removal, and other solutions continue**
- **Orbital debris continues to threaten safe space operations of both satellites and the International Space Station**
- **Growing demand for and crowding of RF spectrum**
- **Space weather events continue to affect space operations**
- **Efforts continue to increase SSA sharing among various space actors**



Theme 2: Access to and use of space by various actors

- *Indicator 2.1: Space-based global utilities*
- *Indicator 2.2: Priorities and funding levels in civil space programs*
- *Indicator 2.3: International cooperation in space activities*
- *Indicator 2.4: Growth in commercial space industry*
- *Indicator 2.5: Public-private collaboration on space activities*
- *Indicator 2.6: Space-based military systems*

- Limited nature of some space resources will pose governance challenges to ensure equitable access for newcomers
- International cooperation assists in the transfer of expertise and technology for the access to, and use of space, by emerging space actors
- A healthy space industry can lead to decreasing costs for space access and use, and may increase the accessibility of space technology for a wider range of space actors
- Military space sector has been an important driver in the advancement of capabilities to access and use space, but may be source of friction

Key Developments in the *Space Security Index 2013*:

- Navigation systems of various nations continue to evolve
- China conducts first manned mission to Tiangong-1 space station
- Analysts and industry predict continued satellite industry growth
- Space X delivers first commercial payload to ISS
- Major spacefaring nations continue to update military space systems

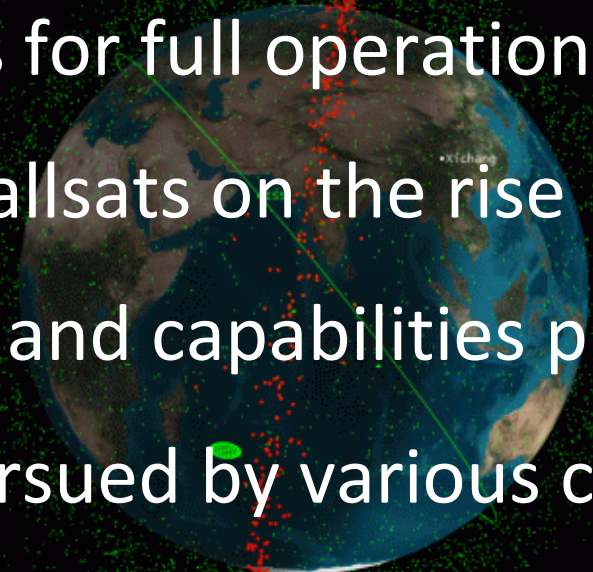


Theme 3: Security of space systems

- **Indicator 3.1:** Vulnerability of satellite communications, broadcast links, and ground stations
- **Indicator 3.2:** Protection of satellites against direct threats
- **Indicator 3.3:** Capacity to rebuild space systems and integrate smaller satellites into space operations
- **Indicator 3.4:** Earth-based capabilities to attack satellites
- **Indicator 3.5:** Space-based negation enabling capabilities

- The dynamics of space systems protection and negation are closely related and, under some conditions, protective measures can motivate adversaries to develop weapons to overcome them
- Offensive/Defensive space capabilities are not only related to systems in orbit and include orbiting satellites, ground stations and communications links
- While no hostile anti-satellite (ASAT) attacks have been carried out, recent incidents testify to the availability and effectiveness of ground-based systems to destroy satellites

Key Developments in the *Space Security Index 2013*:

- High Integrity Global Positioning System (HIGPS) capability prepares for full operational deployment
 - Deployment of smallsats on the rise
 - Jamming incidents and capabilities proliferate
 - Missile systems pursued by various countries
 - Orbital rendezvous and docking capabilities continue to be pursued
- 
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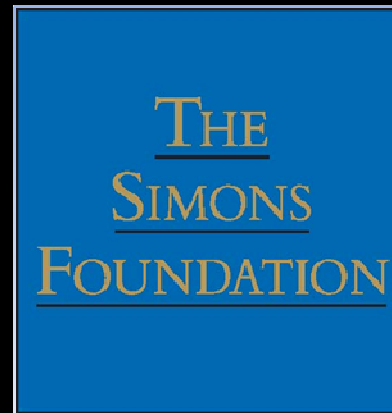
Theme 4: Outer space policies and governance

- *Indicator 4.1: National space policies and laws*
- *Indicator 4.2: Multilateral forums for space governance*
- *Indicator 4.3: Other initiatives*

- Existing normative architecture for space activities is *insufficient*
- International space actors have been unable to reach consensus on the exact nature of a space security regime and issues to be covered by an updated normative regime for outer space
- Current alternatives for consideration include both legally binding treaties (such as PPWT) and politically binding norms of behavior (such as ICoC)
- Establishment of GGE and LTSSA Working Group widely seen as positive developments

Key Developments in the *Space Security Index 2013*:

- Deadlock continues at Conference on Disarmament; unable to agree on Programme of Work
- Working Group on Long-Term Sustainability of Space Activities holds first formal meetings
- First meeting of UN Group of Governmental Experts on TCBMs in Outer Space Activities convened
- EU kicks off multilateral consultation process on proposed International Code of Conduct for Outer Space Activities
- UNIDIR hosts 11th annual Space Security Conference



www.spacesecurity.org

