Space Debris and Sustainability Challenges: An International NGO Perspective

Victoria Samson, Secure World Foundation
International Symposium on Sustainable Space Development and Utilization for Mankind
Hosted by the Japanese Space Forum, Tokyo, Japan
March 2, 2012

©2012 Secure World Foundation. Used with Permission
The Importance of Space Sustainability

• **Space sustainability** can be defined as:
  – *Ensuring that all humanity can continue to use outer space for peaceful purposes and socioeconomic benefit*
  – Growing number of space actors overcrowding some orbits
  – Actions by one actor can negatively affect all

• Goal: **stable, predictable space environment**
  – Will allow us to enjoyed continued benefits from use of and access to space

• **Key elements** are:
  – Fostering *international cooperation*, strengthening *stability*, and promoting *responsible actions* to help prevent mishaps, misperceptions, and mistrust
Space Debris and Sustainability

• *Space debris poses a significant threat* to the long-term sustainability of the space environment
  – A few *recent critical events have undone progress* made toward mitigating space debris
  – Debris-on-debris collisions will begin to increase the space debris population at certain orbits regardless of mitigation activities
  – *International community must work on technical, legal, policy, and operational concepts to allow for active debris removal*
• Rendezvous and proximity operations (RPO) will become more important
  – While these activities hold great promise, they also raise many questions

• SWF will be working to examine the challenges posed by RPO, specifically on-orbit servicing (OOS)
  – Work to cooperate on international dialogue the operational, safety, legal, and policy challenges posed by it
  – This will be done via a series of private workshops and public conferences held in the United States, Europe, Asia, and elsewhere
• Space Situational Awareness (SSA) is a foundational part of ensuring the long-term sustainability of space activities
  — Growing need for non-military uses of SSA
  — Important for all space actors to have a basic level of SSA data and resource tools
  — Should have multiple and independent sources of data, as well as data-sharing and collaboration mechanisms

• Secure World Foundation has developed an online database of global SSA sensors, available at http://globalSSAsensors.org
  — Encourage all states with SSA capabilities to share public information on their capabilities
  — Technical, policy issues to sharing data, but not insurmountable ones
Collaborative SSA (2)

- The United States has greatly improved the conjunction assessment services it provides through its **SSA Sharing Program**
  - Encourage states with SSA capabilities to work with operators to improve the data provided through this program

- Creation of the Space Data Association (**SDA**) has helped with sharing data for satellite operations amongst certain companies
  - This *controlled, reliable, and efficient sharing of data* is critical to the safety and integrity of satellite operations
  - States that have SSA capabilities should work with the SDA to find the way to integrate and fuse owner/operator data for the benefit of all
Case Study on Space Sustainability: India

- **Changing nature** of its program from inherently *civil in nature* to one that has more emphasis on and interest in *military aspects*
  - Using its missile defense program as a technology demonstrator for an anti-satellite (ASAT) capability
  - Satellites are increasingly including national security missions

- Can see this change through *acquisition decisions and guidance documents* by the Defence Research and Development Organization (DRDO)

- India’s decisions on its space program can have ripple effects throughout Asia
  - Part of a *competition in Asia for space capabilities*
Case Study on Space Sustainability: China

• In January 2007, used an SC-19 missile to **deliberately destroy** one of its aging weather satellites, Feng Yun-1C
  – In January 2010, held a “missile defense” test, using the same interceptor but a different target and at a much lower altitude
  – International norm coalescing now of how to do a “**responsible**” ASAT **test**?

• Released **a white paper** in December 2011 on its space program and plans
  – Similar to earlier white papers
  – Spells out space priorities, including improved Earth Observation capabilities, researching human lunar landing
  – “Emphasizing regional space cooperation in the Asia-Pacific area, and supporting other regional space cooperation around the world”
International Approaches

- UN Committee on Peaceful Uses of Outer Space (**COPUOS**)
- UN *Group of Government Experts* on Space TCBMs
- Proposed *Code of Conduct* for Outer Space Activities
- Important to remember that *while space is a vacuum, the politics of space do not occur in one*
Questions?

Thanks!

vsamson@swfound.org

1.202.568.6213