
Space Security: Its Socio-economic Importance and its impact

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Space systems are...

- Critical for socio-economic welfare
- Indispensable for modern military systems
- Vulnerable to intentional and unintentional damage
- Losing space assets will have devastating effect on our socio-economic lives and security of the world

Space is indispensable for our society

- Weather forecast, GPS navigation, Mapping services, Satellite broadcasting etc.
- Critical infrastructure
 - Financial institutions: time stamp
 - Search & Rescue
 - Air traffic management
 - Emergency communications
 - Water management
 - Reconstruction after disaster: geoinformation services
 - Sustainable ecosystem: Forestry and fishery
 - Monitoring infectious diseases
 - Management of conflict zone and peacekeeping

World Economic Forum Report (2015)

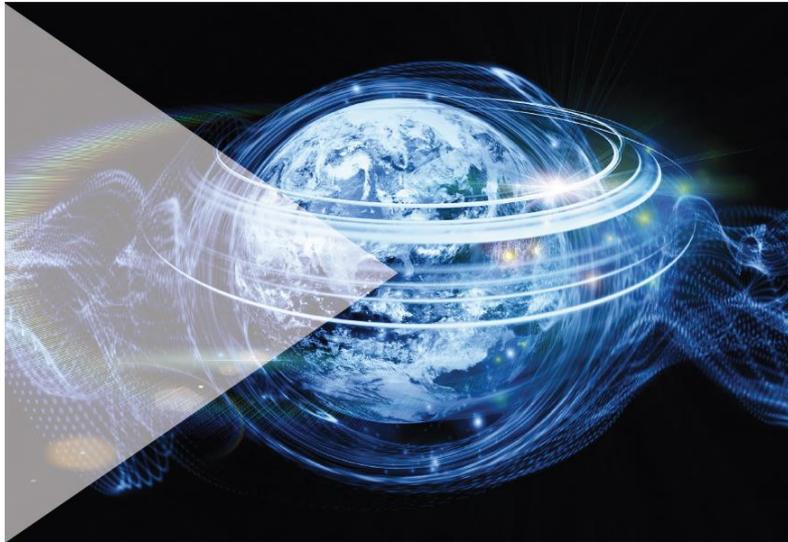


Global Agenda

Bringing Space Down to Earth

by the World Economic Forum's Global Agenda Council on Space Security

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- Communications satellites and the future telecoms ecosystem
- Improving access to education with space technology
- Space technology and healthcare
- Precision agriculture and food security
- Using space technology to protect human rights
- Climate change and space
- Space assets for Arctic governance
- Sustainable management of forests, fisheries and water
- How space technologies can help in disaster management
- Nuclear security and satellites
- Preparing for catastrophic risks from space
- The challenge of the long-term sustainability of space activities

http://www3.weforum.org/docs/WEF_Bringing_Space_Down_to_Earth.pdf

Vulnerabilities in Space

- Space systems are vulnerable
 - High velocity due to orbital speeds of approximately 28,000 kilometers per hour mean virtually any impact can kill a satellite
 - Space debris can destroy satellites
 - Solar flares, electromagnetic pulses also threats
- It is also vulnerable to intentional attacks
 - Kinetic or non-kinetic: ascending missiles, jamming, spoofing, dazzling, cyber, on-orbital anti-satellite system, electro-magnetic attack

How to protect space assets

- Protection from non-intentional risk
 - ❑ Weight and cost problem
 - ❑ Space monitoring (SSA) and avoid collision
 - ❑ Increasing number of space objects: Space Traffic Management
 - ❑ Traffic management requires rules of the road
- Protection from intentional risk
 - ❑ SSA for transparency and confidence building measures (TCBM), especially for active debris removal or on-orbital services: Dual-use nature of space activities
 - ❑ Management of global commons: requires rules

Setting up international rules

- International rules requires...
 - Consensus among spacefaring nations
 - Applicable to both public and private entities, especially for new start ups
- Preventing weaponization and arms race
 - Definition of space weapon is difficult: anything can be weapon against other spacecrafts
 - Rules to regulate behavior in orbit: mitigating risks
 - Rules to place weapons for missile defense should be discussed separately