

# Inter–Agency Space Debris Coordination Committee



## 20 YEARS OF IADC

51<sup>st</sup> Session of the Scientific and Technical Subcommittee  
United Nations Committee on the Peaceful Uses of Outer Space  
February 2014

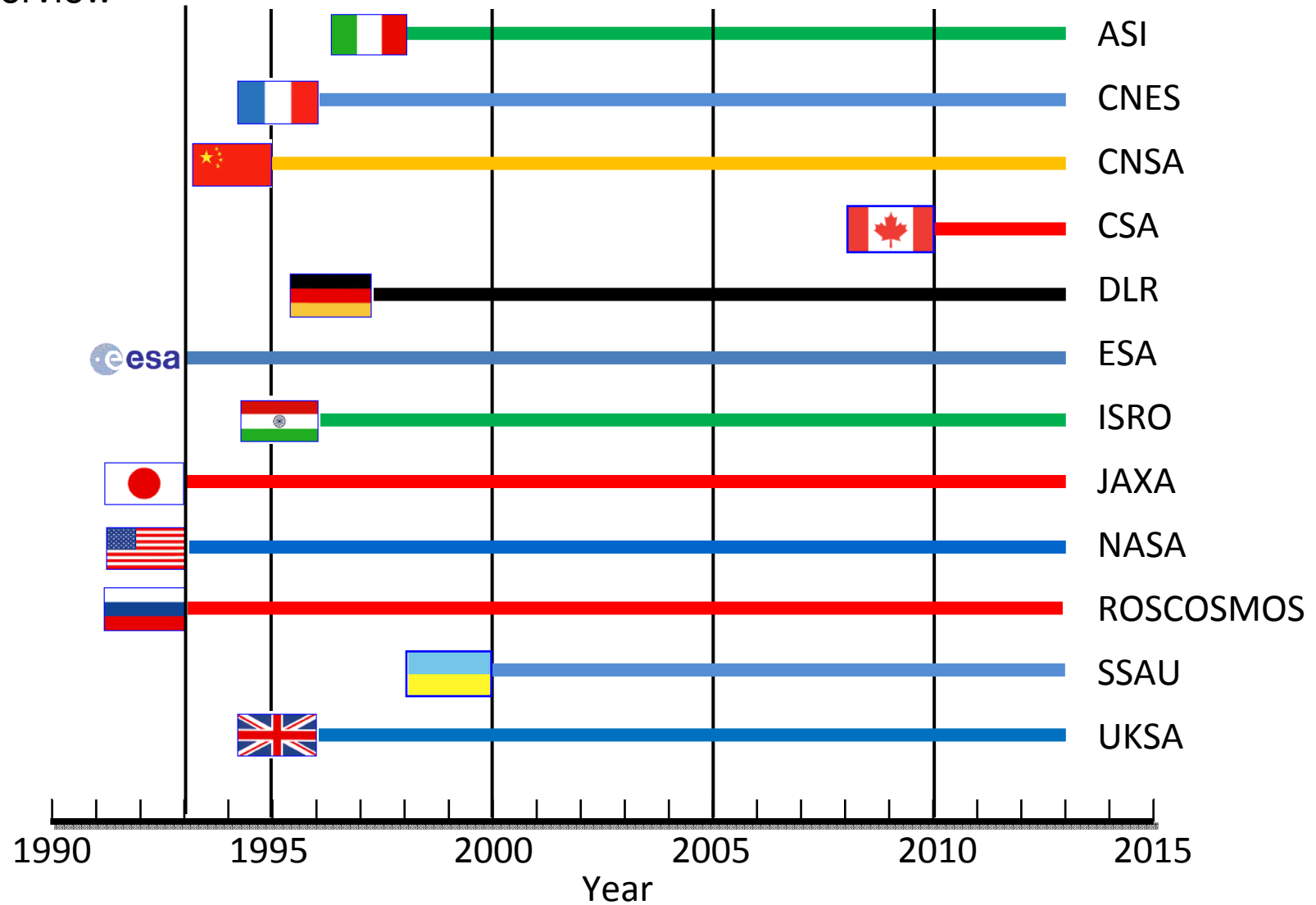
# Outline

- IADC Overview
- IADC Achievements
- IADC and UN
- Summary

# IADC Purpose and Members

- Inter-Agency Space Debris Coordination Committee was formed in 1993 by national space agencies of US, Russia, and Japan and by ESA. IADC now has 12 members
- Purpose of IADC
  - to exchange information on space debris research activities between member space agencies
  - to facilitate opportunities for cooperation in space debris research
  - to review the progress of ongoing cooperative activities
  - to identify debris mitigation options.

# IADC Overview



- IADC Members Participation Time**

**Inter-Agency Space Debris Coordination Committee** 51<sup>st</sup> Session STSC



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# IADC Organizational Structure

- 1 Steering Group
  - Guides the activities of the IADC
  - Coordinates with and respond to requests from other organizations on issues related to space debris
- 4 specialized Working Groups
  - Working Group 1: Measurements
    - Ground-based and space-based measurements and data exchange
  - Working Group 2: Environment and Data Base
    - Characterization and modeling of meteoroids and debris near the Earth and storage and access of the data by electronic means
  - Working Group 3: Protection
    - Design and technology of shielding against meteoroids and space debris and the associated test methods which include test facilities and procedures, hypervelocity impact data, simulation software, protection design and test commonality
  - Working Group 4: Mitigation
    - Study of all measures to reduce or avoid the creation of space debris and reduce the hazards created by space debris

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# IADC Meetings

- IADC Meetings are held each year in the spring, and the host of the meeting acts as the chairperson of this meeting and inter-sessional period before
  - More than 100 space debris experts attend
  - IADC had 31 meetings till 2013, and the 32nd IADC meeting will be hosted by CNSA in May 2014
- A separate Steering Group meeting is held each year, usually in conjunction with the International Astronautical Congress in the fall

# IADC Achievements(1)

- IADC key definitions
  - Authoritative definitions assist space debris terminology, including space debris, space debris mitigation, and debris environment remediation
- IADC Space Debris mitigation guidelines
  - Working Groups' Cooperative research and analysis results support the development of space debris mitigation measures
  - Implementation of debris mitigation guidelines is an important way to protect the current and future space environment
- IADC Re-Entry Test Campaigns
  - Annual exercises are conducted on re-entering objects, utilizing tracking networks, a data exchange platform, analysis tools, and prediction methods.
  - Exercises verify the readiness and technical expertise for a timely, well-founded response to high risk re-entry events on an international level.

## IADC Achievements(2)

- International 24hrs LEO Space Debris Measurement Campaigns
  - Provide more thorough orbital debris environment snapshots with combined results from IADC participating sensors.
  - Provide data for model verification and adjustment.
- International Space Debris Campaigns in Higher Earth Orbits
  - Searches for space debris in higher Earth orbits (MEO and GEO).
  - The results from the five participating groups for the first time mutually confirmed characteristics of the high altitude space debris environment, which were previously reported by individual groups only.



## IADC Achievements(3)

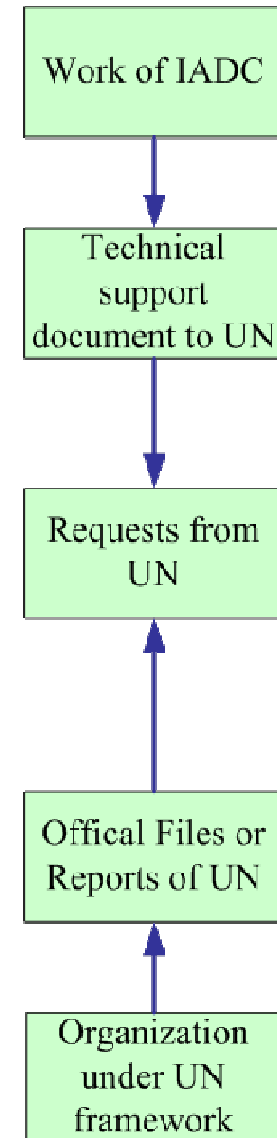
- Comparison of Space debris and Meteoroid Models
  - Different agencies' environment evolution models/ engineering models for determining space debris and meteoroid spatial densities and impact fluxes on spacecraft have been compared.
  - Comparison of results supports the applicability of models
- Stability of the future LEO environment
  - Simulations show current mitigation measures are not sufficient for future LEO environment stability.
  - Debris removal is an effective and necessary measure for preserving the future space environment.
- Protection Manual
  - Mutual calibration of hypervelocity impact experiments, protection methods, and failure mode assessment tools support spacecraft designs to mitigate hazards from space debris and meteoroids.

# IADC Achievements(4)

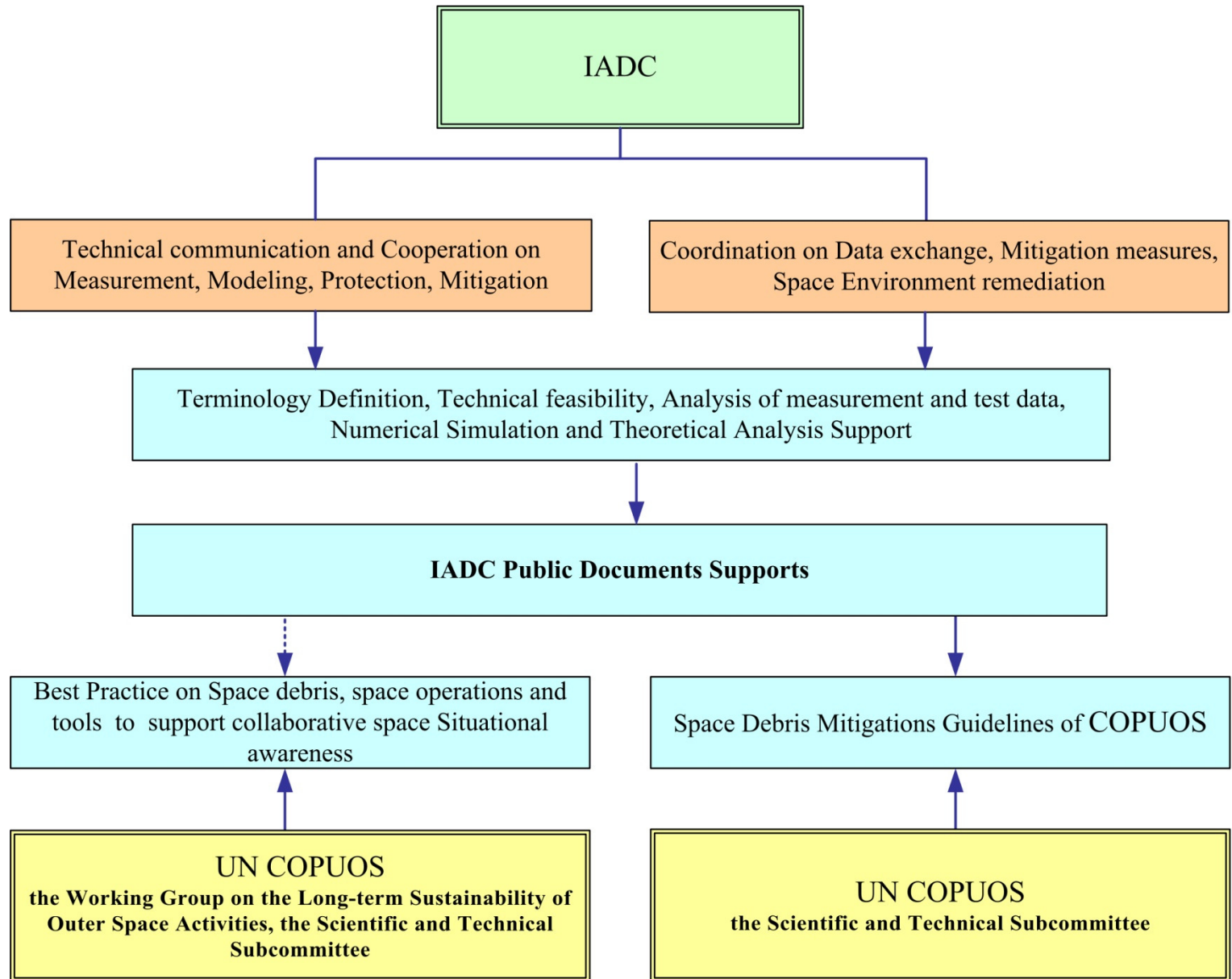
- **IADC Publications**
  - Data, findings, and reports about special interest, especially official IADC Action Items are released to the public
  - The IADC Publication web site homepage address is [www.iadc-online.org](http://www.iadc-online.org)

# IADC and UN

- IADC Contribution to UN
  - Data, findings, and reports from IADC released to the public
  - These outputs may be presented to UN and may form the basis for UN reports or guidelines
- UN requests to IADC
  - Some issues on the sustainable use of space as addressed by UN-associated organizations are related to space debris.
  - IADC may be requested to provide technical support to UN organizations.



# IADC and UN



# IADC and UN

## Space Debris Mitigation Guidelines

- 1999 IADC undertook development of the first set of consensus international space debris mitigation guidelines.
- The IADC Space Debris Mitigation Guidelines were adopted by consensus of the Steering Group in October 2002 and were presented to the Scientific and Technical Sub-Committee of the United Nations' Committee on the Peaceful Uses of Outer Space in February, 2003.
- The IADC Space Debris Mitigation Guidelines were used as a foundation for the development of the UN COPUOS Space Debris Mitigation Guidelines, which were adopted by COPUOS and later endorsed by the UN General Assembly resolution 62/217 in 2007.

# IADC and UN

## Space Debris Mitigation Guidelines

- The IADC Space Debris Mitigation Guidelines describe existing practices which have been identified and evaluated for limiting the generation of space debris, focussing on
  - limitation of debris released during normal operations
  - minimisation of the potential for on-orbit break-ups
  - post-mission disposal
  - prevention of on-orbit collisions

# Summary

- For 20 years, the IADC has promoted space debris cooperation and research among IADC members.
- The IADC provides a proven platform for space debris technical communication and cooperation among space agencies and organizations.
- The IADC serves as a mechanism for coordinated space debris research and its application.
- Current IADC On-going Studies include
  - Data sharing/Data exchange
  - Re-entry risk assessments
  - Space environment remediation