



**International  
Academy of  
Astronautics**

**From the 2006 to the 2016**

# **Space Traffic Management Studies**

**of the**

## **International Academy of Astronautics**

**Corinne Jorgenson**

**IISL/ECSL Symposium at the  
UNCOPUOS Legal Subcommittee**

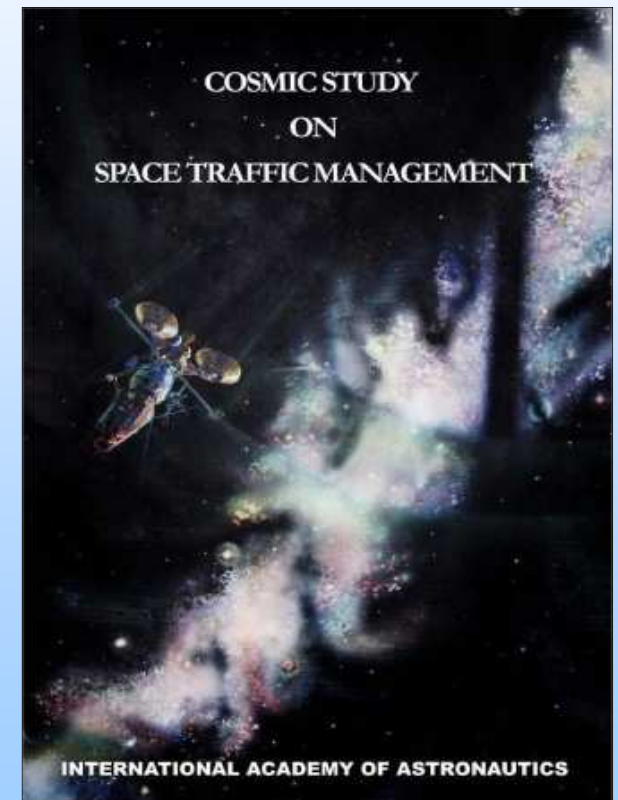
**Vienna, 13 April 2015**



## ► Definition of “Space Traffic Management”

„...the set of technical and regulatory provisions for promoting safe access into outer space, operations in outer space and return from outer space to Earth free from physical or radio-frequency interference.”

(following the study by the International Academy of Astronautics, IAA Paris 2006, eds. Contant-Jorgenson/Lala/Schrogl)





## ▶ **Background of the 2016 STM Study**

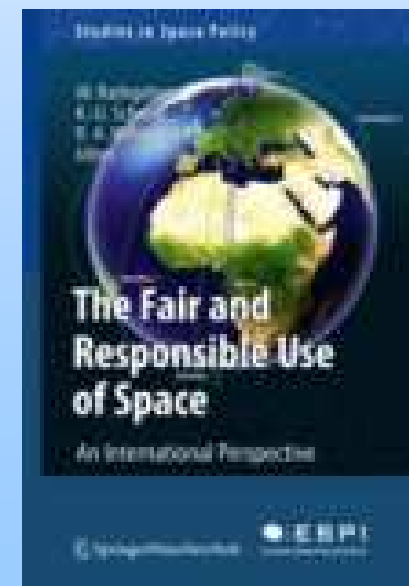
- First ideas i.a. by Lubos Perek (IISL paper of 1982 using the term)
- AIAA Workshops in 1999 and 2001
- IISL/ECSL Symposium 2002 at the UNCOPUOS Legal Subcommittee
- 2001-2006 IAA Study Group with 20 contributors of 8 countries resulting in the **IAA Cosmic Study on STM published in 2006**
- Following this publication: numerous other academic products as well as a slowly emerging policy debate
- The present study will be prepared by another international team (joint text without personal attribution); it will advance the 2006 study containing proposals for the implementation of STM
- The **new study shall be published in 2016** (ten years after the first study)



## ► Academic research since 2006 (I)

More and more public and private institutions work on the concept of Space Traffic Management:

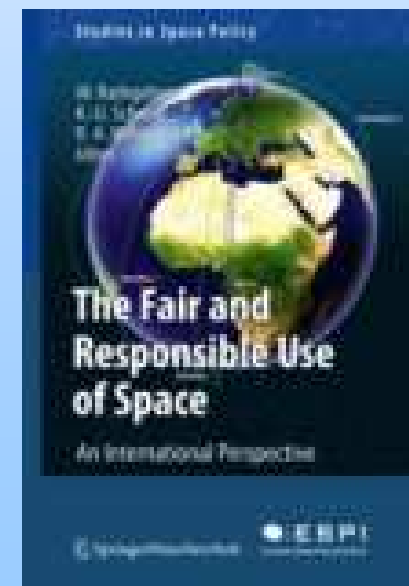
- International Association for the Advancement of Space Safety (IAASS) with the publication of comprehensive report in 2007...
- ... followed by a book publication „The Need for an Integrated Regulatory Regime for Aviation and Space – ICAO for Space?“ in 2011.
- The International Space University has conducted a team project on STM in 2007.
- Dedicated session on STM at the European CEAS Conference 2007.





## ▶ Academic research since 2006 (II)

- Workshop on “The Fair and Responsible Use of Space: An International Perspective” (Co-organized by ESPI with IAA and SWF on 20/21 November 2008 at ESPI in Vienna: Result: “10 Steps to Achieve Fair and Responsible Use of Outer Space” and book publication).
- U.S. House of Representatives Hearing: Space Subcommittee hearing - Space Traffic Management: How to Prevent a Real Life “Gravity”, | 2318 Rayburn HOB Washington, D.C. 20515 | May 9, 2014 10:00am
- Conference on STM at Embry-Riddle Aeronautical University, November 2014.
- STM as the topic of the IISL/ECSL Symposium at the UNCOPUOS Legal Subcommittee 2015 (again after 2002).
- Dedicated session on STM at the IISL Colloquium at IAC 2015.





## ▶ Further activities / initiatives related to STM

- **ICAO**, through the President of its Council in 2005, showed interest but has not taken further steps. Only in 2015, ICAO set up a „learning group“ on civil space. ICAO/UNOOSA AeroSPACE Symposium „Making civil space travel a reality“ March 2015.
- STM has been mentioned in various **NASA** Authorization Acts (for 2010: PUBLIC LAW 111–267—OCT. 11, 2010 124 STAT. 2805) even using the STM definition of the 2006 IAA Study (in 2008: PUBLIC LAW 110-422-OCT. 15, 2008 STAT. 4779; SEC.1102 (a)).
- **Commercial operators** do now coordinate in the Space Data Association since 2009.
- Further development of **Space Situational Awareness** programmes (in Europe by ESA and EU; in the US through bilateral agreements with partners).
- **Space Debris Mitigation** Guidelines of UNCOPUOS of 2008; ISO 24113: Space Systems - Space Debris Mitigation.
- Regulations on **suborbital flights** by FAA and EASA.
- Numerous programmes on **Space Weather**
- **ESA's** Clean Space Initiative.



## ▶ Recent diplomatic initiatives ...

... which could be precursors, or which contain elements of STM:

- Three initiatives on the governmental level relevant for STM:
  - The [Long-Term Sustainability of Outer Space Activities](#) Working Group in the Scientific and Technical Subcommittee of the UNCOPUOS, set up in 2010, which presents its results in 2015.
  - The Governmental Group of Experts (GGE) on [Outer Space Transparency and Confidence Building Measures \(TCBM\)](#) established by the Secretary general of the UN in 2010, which presented its results in 2013.
  - The Draft [International Code of Conduct for Outer Space Activities](#) tabled by the EU in 2007, expected to be adopted by a conference of interested States (perhaps in 2015).

⇒ **How to deal with/possibly merge these outputs?**

⇒ **STM can provide a perspective.**





# Space Traffic Management: Towards a Roadmap for Implementation

The study proposal has been accepted by IAA during IAC 2014.

## The timeline foreseen:

- Drafts for the seven sections July 2015
- Full draft September 2015
- Discussion in IAA Commission 5 from IAC 2015 until end of 2015
- Final Draft for IAA Peer Review: IAA Spring Meeting 2016
- Adoption by IAA: IAC October 2016
- **Publication: November 2016**





## Management

**Chair: Kai-Uwe Schrogl, Germany (ESA)**  
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**Co-Secretary: Alexander Soucek, Austria (ESA)**

## Contributors:

**Didier Alary, France (Airbus Defence and Space) (conf.)**  
**Christina Giannopapa, Greece (Technical University of Eindhoven) (conf.)**  
**Niklas Hedman, Sweden (UNOOSA) (conf.)**  
**Ken Hodgkins, U.S. (Department of State) (conf.)**  
**Shouping Li, China (Beijing Institute of Technology) (conf.)**  
**K.R.S. Murthi, India (Jain University, Bangalore) (conf.)**  
**Peter Stubbe, Germany (DLR) (conf.)**  
**Kazuto Suzuki, Japan (University of Hokkaido) tbc.**  
**Olga Volynskaya, Russian Federation (Roscosmos) (conf.)**  
**Guoyu Wang, China (Beijing Institute of Technology/Chatham House) (conf.)**

## Advisors

**William H. Ailor, U.S. (The Aerospace Corporation) (conf.)**  
**Jimena Blumenkron, Mexico (ICAO) (conf.)**  
**Michel Brafman, France (La Reunion Spatiale/AAE)**  
**Tare Brisibe, Nigeria (...) tbc.**  
**Richard Crowther, UK (UKSA) (conf.)**  
**Stephen Earle, U.S. (FAA) (conf.)**  
**Michael Gerhard, Germany (EASA) (conf.)**  
**Yasuaki Hashimoto, Japan (NIDS) (conf.)**  
**Yvon Henri, France (ITU) (conf.)**  
**Diane Howard, U.S. (Embry-Riddle Aeronautical University) (conf.)**  
**José Monserrat Filho, Brazil (...) (conf.)**  
**Azzedine Oussedik, Algeria (ASAL) (conf.)**  
**Rainer Sandau, Germany (IAA) (conf.)**  
**Jan Schmidt, Germany (Swiss Re) (conf.)**  
**Bernhard Schmidt-Tedd, Germany (DLR) (conf.)**  
**Tommaso Sgobba, Italy (IAASS) (conf.)**  
**Brian Weeden, U.S. (SWF) (conf.)**



Executive Summary

Preface

1. Introduction and scope of the study

2. Academic research update since the 2006 STM IAA Cosmic Study

3. **The space environment 2015-2030**

3.1 Global trends 2030 and the role of space

3.2 Space activities

3.3 Space debris environment

4. **Status of regulation**

4.1 The current regulatory regime for space activities

4.2 Current regulatory regimes of comparable traffic systems

5. **Refined elements of a STM regime**

5.1 Launch phase

5.2 In orbit phase

5.3 Re-entry phase

6. **A roadmap for implementation of a STM regime**

6.1 A draft structure for a STM treaty

6.2 Experiences from the implementation of comparable (traffic) regimes

6.3 A roadmap comprising institutions and timeline

6.4 An alternative incremental bottom-up approach

7. An action plan for implementation

Bibliography

About the authors



## ▶ What will the new study bring?

- **Multidisciplinary** approach
- **Global** participation through contributors and advisers
  
- **Update** of space activities 2030
- **Detailed** set-out of potential traffic rules
  
- **Structure for a STM regime** outlining legal instruments down to the level of articles
- **Concrete roadmap** for implementation with timeline