



INTERNATIONAL
ASTRONAUTICAL
FEDERATION



IAF TC.26 on Space Traffic Management

Space Traffic Management: the IAF initiative

Chairs: Christophe Bonnal – Darren McKnight
Secretary: Serge Plattard - Liaison: Didier Alary

Oct. 27th , 2021

General context

Ever increasing orbital population

23,691 catalogued objects

Only \approx 17% active spacecraft

Highest level priority is the proper compliance to the existing Mitigation Rules

Concerns over near future

Large number of small spacecraft with no collision avoidance capacity

Very large number of medium size spacecraft constellations

Kessler syndrome clearly present in some orbital regions (750 - 1,100 km)

Decision in 2018 to organize a dedicated Joint Action – MOU

Between IAA (International Academy of Astronautics), IISL (International Institute of Space Law) and IAF (International Astronautical Federation)

⇒ *Comprehensive approaches and proposals for STM in order to promote the safe use of outer space*

⇒ Dedicated IAF Technical Committee



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MEMORANDUM OF UNDERSTANDING

between

The International Astronautical Federation (IAF)

and

The International Institute of Space Law (IISL)

and

The International Academy of Astronautics (IAA)

Building on the specific competences of the three organizations as IAA's individual multi-disciplinary talent and experience, IAF's extended network of agencies, industry, operators and users, and IISL's global expertise in legal and regulatory matters;

IAF, IISL and IAA join in a cooperative initiative to develop comprehensive approaches and proposals for STM to be addressed to decision-makers on national and international level in order to promote the safe use of outer space.

International
Astronautical
Federation

Jean-Yves le Gall
President

International
Institute of
Space Law

Kai-Uwe Schrogel
President

International
Academy of
Astronautics

Peter Jankowitsch
President



Connecting @ll Space People

IAF Space Traffic Management Technical Committee #26

Terms of Reference + Modus operandi available

<https://iafastro.directory/iaf/folder/tc/spacetraffic/>

Phase 1 membership

- 135 members subdivided into 9 Working Groups
- Following the IAF “3G”
Generation – contribution of SGAC, Gender – 30/70%, Geography – 23 countries)
- Nice “Who’s who” file on the web site, to be completed

List of thematic topics

- 23 topics initially identified
- Fundamentally inspired by the 21 UNCOPUOS LTS (Long Term Sustainability) Guidelines
- 9 selected for the first phase
- 5 for the second phase

Work structured under small groups dedicated to one topic:

- Typically 10 - 15 members maximum per sub-groups, from all over the world
- 2 coordinators (or chairs...) per WG

Connecting @ll Space People



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		1st Phase	2nd Phase	Merged	Postponed	Not yet started	
Thematic	1	Terminology - Common understanding and Definitions					
	2.1	Improving the knowledge - New technical means of space objects monitoring					
	2.2	Improving the knowledge - Improve trackability and identification of small objects					
	2.3	Improving the knowledge - Data fusion - Merging of information - Shared catalog					
	2.4	Improving the knowledge - Improvement of orbital data precision and accuracy					
	2.5	Improving the knowledge - Improvement of the UN registration					
	2.6	Improving the knowledge - Shared Catalog (merged with 2.3)					
	2.7	Improving the knowledge - Hazards associated with reentry					
	3.1	Space capacity management					
	3.2	Management of RF interferences					
	3.3	Improvement of the collision avoidance process					
	3.4.1	Future operations - Spacetugs, IOS, IOM, IOR					
	3.4.2	Future operations - Massive constellations					
	3.4.3	Future operations - Sub-orbital activities					
	3.4.4	Future operations - Ground support activities such as spaceports					
	3.4.5	Future operations - Transits through airspace					
	3.4.6	Future operations - Impact of constellations on Astronomical observations					
	3.5	Future operations - Preparation of future activities					
	3.6	Future operations - Traffic from orbit to Moon (and Mars)					
	4.1	Technical regulations - Current references					
	4.2	Technical regulations - New activities					
	4.3	Technical regulations - Effective compliance to Technical Regulations					
	5	Outreach					

People



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IAF Space Traffic Management Technical Committee #26 – Phase 1

Name	First name	e-mail	Country	1	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3	3.4.1	3.4.2	3.4.3	3.4.4	3.4.5	3.4.6	3.5	3.6	4.1	4.2	4.3	5
Agapov	Vladimir	agapov@ancprotek.ru	Russia	1	1	1	1	1	1	1				1												
Agueda Maté	Alberto	aagueda@gmv.com	Spain					1																		
Ailor	William	william.h.ailor@aero.org	USA								1					1										
Alary	Didier	didier.alary@gmail.com	France	1											1	1							1		1	
Alonso	Inés	ines.alonso@cdti.es	Spain	1								1									1		1		1	
Anilkumar	A. K.	akanil2007@gmail.com	India	1				1						1								1				
Anselmo	Luciano	Luciano.Anselmo@isti.cnr.it	Italy																							
Anz-Meador	Phillip	phillip.d.anz-meador@nas.nasa.gov	USA							1					1									1		
Auburn	John	j.auburn@astroscale.com	United Kingdom				1	1						1	1						1					
Baiocco	Paolo	paolo.baiocco@cnes.fr	France						1																	
Balbir	Singh	balbir.s@manipal.edu	India																		1		1		1	
Bastida-Virgili	Benjamin	benjamin.bastida.virgili@dlr.de	Germany												1	1			1	1						
Berend	Nicolas	nicolas.berend@onera.fr	France											1												
Bevilacqua	Riccardo	bevilacqua.r@gmail.com	USA												1											
Bonnal	Christophe	christophe.bonnal@cnes.fr	France								1									1						
Bouilly	Jean-Marc	jean-marc.bouilly@onera.fr	France																							
Agreed members				9	9			9						12	13					6				11	9	78

IAF Space Traffic Management Technical Committee #26 – Phase 1

	1	2.1	2.2	2.3	2.4	2.7	3.1	3.3	3.4.1	3.4.2	3.4.6	4.2	4.3	5	total	Coordinators
Algeria			1												1	
Angola											1				1	
Australia		1							1						2	
Austria												1	2		3	
Belgium (EC)	1														1	
Canada								1		2					3	
China	1	1		1	1			2	2	1	1	2	1		13	1
ESA		2	1	1	1				1				1		7	2
France	1	1		2	2	2		2		1	3	1	1		16	2
Germany (wo ESOC)	1	1				1	1	1	2	1	1				9	1
India	1	1			1					1		1			5	1
Italy	1	1				1	1	2	2	1	2	2			13	1
Japan					1	1	1			1		1	1		6	1
Korea							1			2					3	
Netherlands (ESTEC)						1					2				3	1
Portugal									1						1	
Russia	1				1				1						3	1
Slovenia	1													1	2	
Spain	1	2			1			2	1		1		1		9	
Switzerland		1					1								2	
UK	1			1			1	2	1						6	1
USA	3			2	3	1	2	4	2	2	1	2	2		24	6
Zimbabwe						1						1			2	
Total	13	11	2	7	11	8	8	16	14	12	12	11	9	1	135	18

IAF Space Traffic Management Technical Committee #26

General principle:

- 1) Background; why is this topic important?
- 2) What is the situation (on this topic)?
- 3) What is missing?
- 4) What could we propose to improve the situation: challenges and expected benefits.
- 5) Do not invent, no “requirements” but recommendations.

Final product per group:

- 10-15 pages + 1 page Exec summary

First step of contribution for the IAF part:

- 2 pages synthesis + main findings (in order to be read)
 - + the 9 Exec Summaries
 - + the 9 x 10 pages reports as annex, or something similar
- ⇒ **Phase 1 mostly available (≈ 80%) today – Final form before Christmas**

Liaison with IAA & IISL ongoing to define merged Final Document