

# Status update on the LTS discussions in UN COPUOS

RELEVANCE TO SMALL SATELLITE ACTIVITIES

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Chair, UN COPUOS WG on LTS

# UN COPUOS

- A standing committee of the United Nations General Assembly
  - Established in 1959 by 24 Member States
- Membership
  - 84 Member States
  - 35 permanent observers
- Subcommittees
  - Scientific and Technical Subcommittee
  - Legal Subcommittee
- Decisions are reached by consensus
- Reports to the Fourth Committee of the General Assembly
  - Annual resolution on “International cooperation in the peaceful uses of outer space”



# Terms of Reference

## WG ON LONG-TERM SUSTAINABILITY OF SPACE ACTIVITIES

- The Working Group will examine the long-term sustainability of outer space activities in the wider context of sustainable development on Earth, including the contribution to the achievement of the Millennium Development Goals, taking into account the concerns and interests of all countries, in particular those of developing countries.
- The work will take into consideration current practices, operating procedures, technical standards and policies associated with the long-term sustainability of outer space activities, including, inter alia, the safe conduct of space activities throughout all the phases of the mission life cycle.
- The Working Group will take as its legal framework the existing United Nations treaties and principles governing the activities of States in the exploration and use of outer space.

# Organisation of work

- National focal points established (47 countries and 4 IGOs as of Jan 2017)
- Dedicated controlled-access web page in the UN OOSA website for this WG
- Four Expert Groups established (deliberative fora)
- Expert Groups met on margins of COPUOS and STSC meetings, and at other agreed times from 2011-2014.
- Membership of Expert Groups comprised experts nominated by
  - Member States
  - Inter-governmental organisations with PO status with COPUOS
- Inputs received from
  - States and intergovernmental organisations
  - International organisations (e.g. IAA, IADC, CCSDS, etc)
  - Non-governmental entities & industry associations (e.g. SWF, SDA)

Much of the work is done inter-sessionally

# Organisation of work

**Expert Group A: Sustainable space utilization supporting sustainable development on Earth**

**CO-CHAIRS: FILIPE DUARTE SANTOS (PORTUGAL), ENRIQUE PACHECO CABRERA (MEXICO)**

23 States  
5 IGOs



7 candidate guidelines  
4 topics for future consideration

**Expert Group B: Space Debris, Space Operations and Tools to Support Collaborative Space Situational Awareness**

**CO-CHAIRS: RICHARD BUENNEKE (USA), CLAUDIO PORTELLI (ITALY)**

23 States  
4 IGOs



8 candidate guidelines  
3 topics for future consideration

**Expert Group C: Space Weather**

**CO-CHAIRS: TAKAHIRO OBARA (JAPAN), IAN MANN (CANADA)**

27 States  
5 IGOs



5 candidate guidelines  
2 topics for future consideration

**Expert Group D: Regulatory Regimes and Guidance for Actors in the Space Arena**

**CO-CHAIRS: SERGIO MARCHISIO (ITALY), MICHAEL NELSON (AUSTRALIA)**

25 States  
6 IGOs



11 candidate guidelines  
5 topics for future consideration

# Candidate guidelines

- The Expert Groups produced 31 candidate guidelines for consideration by the WG.
- The Working Group consolidated these draft guidelines and Member States introduced ten further/alternative guideline proposals.
- As of January 2016, we had 29 draft guidelines.
- These guidelines can be broadly grouped into implementation-oriented categories:
  - Policy and regulatory framework for space activities
  - Safety of space operations
  - International cooperation, capacity building & awareness
  - Scientific and technical research and development

# Guidelines agreed in 2016

## POLICY, REGULATORY AND ORGANIZATIONAL

- Adopt, revise and amend national regulatory frameworks for outer space activities
- Elements to consider when developing, revising or amending legislation
- Supervision of national space activities
- Equitable, rational and efficient use of spectrum and orbits

# Guidelines agreed in 2016

## SAFETY OF SPACE OPERATIONS

- Improving accuracy of orbital data on space objects and sharing of such data
- Collection, sharing & dissemination of space debris monitoring information
- Sharing of operational space weather data and forecasts
- Development of space weather models & tools. Sharing of practices on mitigation of space weather effects.



# Guidelines agreed in 2016

## SCIENTIFIC & TECHNICAL

- Research on ways to support sustainable use & exploration of outer space
- Investigation of measures to address space debris in the long term

## INTERNATIONAL COOPERATION & CAPACITY BUILDING

- Promoting and supporting Capacity building
- Raising awareness of space activities

# Developments in 2017

- 54<sup>th</sup> session of STSC - Feb 2017
  - Guidelines discussed
  - Preambular text
- 3<sup>rd</sup> Intersessional Mtg \_ June 2017
- 60<sup>th</sup> session of COPUOS - Jun 2017
  - Guidelines discussed
  - Preambular text
- 4<sup>th</sup> Intersessional Mtg - Oct 2017

# Guidelines still under consideration

## POLICY AND REGULATORY

- *Enhancement of practice in registering space objects*
- Commitment to carrying out space activities solely for peaceful purposes
- Operational and technological self-restraints to forestall adverse developments in outer space
- Refraining from dangerous alterations to the space environment

# Guidelines still under consideration

## SAFETY OF SPACE OPERATIONS

- *Provision of contact information and sharing of information on space objects and orbital events*
- *Performing conjunction assessments during all orbital phases of controlled flight*
- *Identification of possible conjunctions of newly launched objects with orbital objects*
- *Ensuring the safety and security of ground infrastructure*

# Guidelines still under consideration

## SAFETY OF SPACE OPERATIONS

- *Preclusion of interference with the operation of foreign space objects*
- *Development of criteria for safe ADR operations*
- Modalities for the safe conduct, in extreme cases, of operations to destroy orbital space objects
- Development of common understanding and safe practices for removal or destruction of unregistered space objects
- Mitigation of risks associated with uncontrolled reentries
- Measures of precaution when using laser beams
- *Approaches to design and operation of small satellites*

# Guidelines still under consideration

## INTERNATIONAL COOPERATION AND CAPACITY BUILDING

- *International cooperation in support of LTS*
- *Sharing of experiences related to LTS and development of procedures for information exchange*

# Factors shaping negotiations

- Growing interest among COPUOS members
- Growing membership of COPUOS
- Regional and like-minded groups
- Definitions & Terminology
- Preambular text
- Finite work plan
  - Process to decide which draft guidelines will make it into the compendium
  - What to do with those that don't?
  - Process for review and updating of guidelines

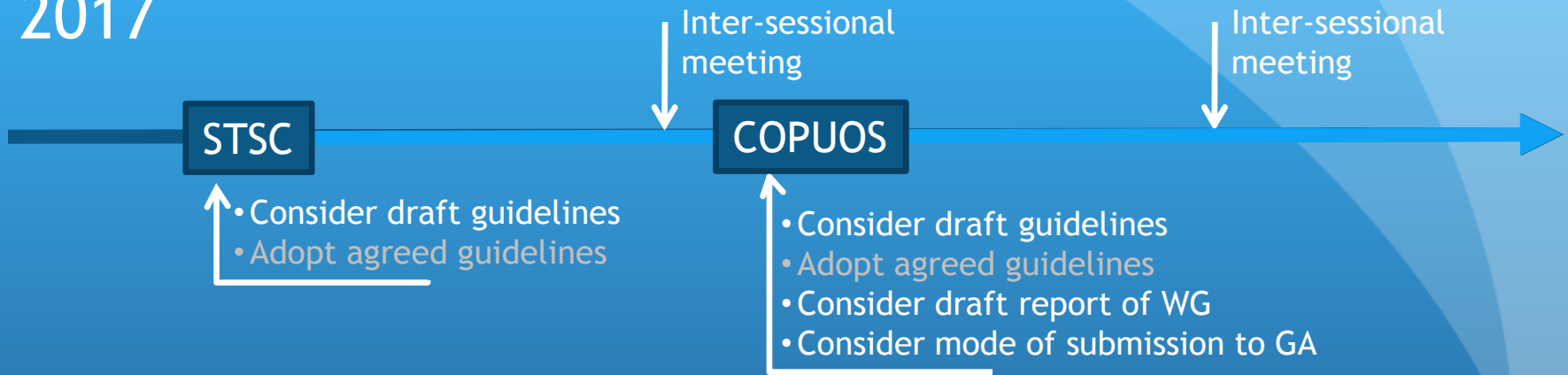
# Can we have criteria for what makes a good guideline?

	Implementable	Verifiable
<b>Who?</b>	Who is it intended that the actions will be performed by?	Who will be able to verify that the action has been performed?
<b>What?</b>	What is the action that should be performed? Is it clearly identified and understood?	What should be verified? Is it the action, or evidence of the action?
<b>Why?</b>	What is the value/benefit of performing the action?	A clear understanding of why it is important to be able to confirm action has been performed (i.e. independent verification). Is it permanent or reversible?
<b>When?</b>	At what point in time should the action be performed?	At what point is verification performed?
<b>How?</b>	How should the action be performed?	How can the actions be verified?

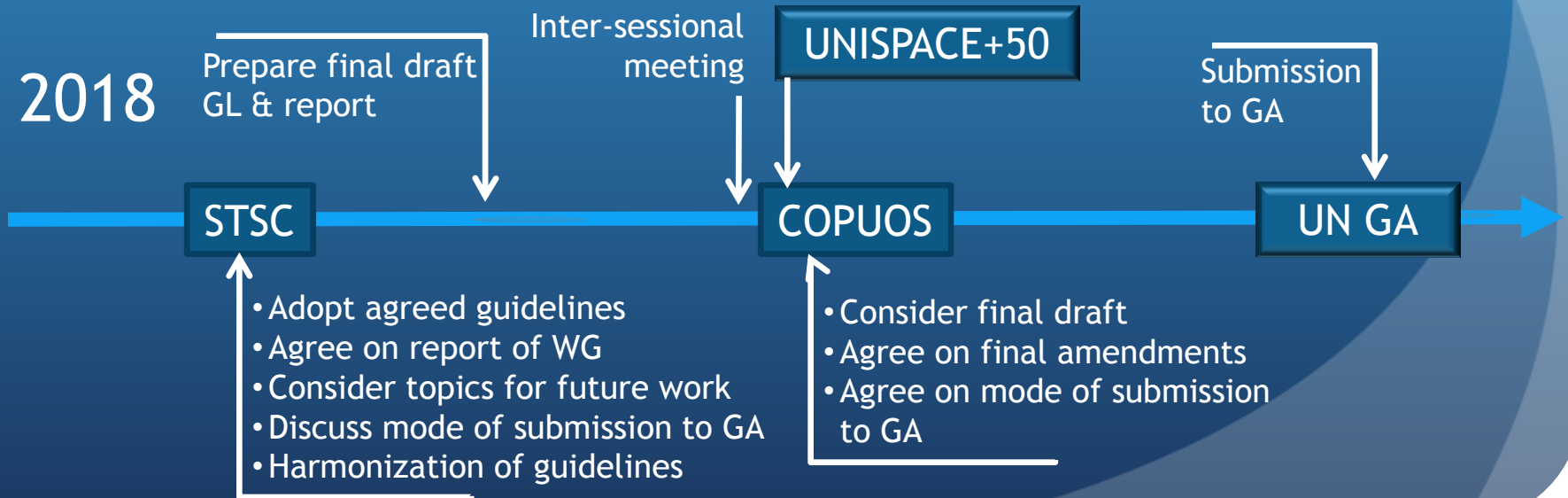


# The way forward

2017



2018



# The future

- Era of multi-functional, multi-layered orbital constellations
- The UN process is necessary but not sufficient effort to ensure space sustainability
  - National regulators
    - Authorisation & supervision (spectrum, orbits, registration)
    - Coordination
    - Industry stimulus
  - Smallsat community (govt, academic & industry)
    - Technical and operational standards
    - Norms of behaviour
  - Launch providers
    - Gatekeeping function
    - Registration
  - Space traffic management
    - SSA information sharing (Rules & procedures)
    - Conjunction assessment

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Thank you