Space Traffic Management (STM) and the Governance of Space Activities (GSA)

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overview

- Introduction
- Challenges to the GSA
- Observation on a STM regime from perspective of different dimensions of GSA
- Conclusions and remarks

0. Introduction

- STM, as a perspective, is conducive to academic research on GSA.
  - Space Traffic Management: Towards a Roadmap for Implementation, IAA Study, 2014-2016
  - Chapter 5: Individual elements of an STM regime
- a contribution to and a significant reference for GSA

0. Introduction

- This prensentation, is Question-guided rather than Conclusion-guided

"The question shall also be raised, when and under which conditions, States might be ready to negotiate a completely new set-up for space activities."

---purpose of this symposium

main questions

- **What is a STM regime?**
  - soft or hard
  - soft: technical standards, regulatory guidelines, code of conduct or a combination?
  - hard: regulatory rules only or extending to technical standards?
  - Is it for a near-term (within 10) or a medium(10-20) or long-term(20-?) vision?

main questions

- **Whether a STM regime is necessary and feasible for the governance of space activities at this stage?**
  - What are the technical, regulatory, legal and political implications and requirements of STM?
  - What's the relationship and interaction between a STM regime and the existing GSA regime?
    - space treaties, relevant UN resolutions and guideline, technical standards and national regulatory rules; reflect or be reflected, collect or scattered?

1. Challenges to GSA

- 2014: 90 space launches; more than 180 spacecraft
- rapid development of space technology and non-traditional commercial space activities
- treaty stasis in space
  - Outers Space Treaty, 1967 ; Rescue Agreement, 1968; Liability Convention, 1972; Registration Convention, 1975; Moon Agreement, 1979
- insufficiency of national regulatory framework

2. a STM regime: dimensions of GSA

- National and international
- Technical, legal or regulatory and political

2. a STM regime: dimensions of GSA

- 2.1 National and international level
  - national level

"A space traffic management regime has to consider the question of harmonizing national space legislation (much of which has yet to be established), and national licensing standards and procedures, since they may provide the building blocks for assuring technical safety."

--Cosmic Study on STM, 2006, P.12

2. a STM regime: dimensions of GSA

- 2.1 National and international level

  - national level

Internationally uniform STM rule or national rule, which is more appropriate for governing emerging space activities, which is more proper to contain specific requirements?

- (1) the "appropriate state" is obliged and entitled to govern its emerging space activities;

"The activities of non-governmental entities in outer space, .., shall require authorization and continuing supervision by the appropriate State Party to the Treaty" --Art.VI, Outer Space Treaty, 1967

2. a STM regime: dimensions of GSA

- 2.1 National and international level

  - national level

    - (2) State is the most appropriate one to formulate specific technical standards/procedures as requirements to its own space actors or contractors;

"Outer space, ..., shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies" "

--Art.I (2), Outer Space Treaty, 1967

2. a STM regime: dimensions of GSA

- 2.1 National and international level
  - national level
    - (3) State has the sovereignty, *inter alia*, legislative jurisdiction, over its GSA;
    - (4) A more accepted approach: more and more national standards/procedures --to conclude the common or best practice, as international standards/procedures, and recommend to other states--adopted or partly adopted by some states on a voluntary basis

2. a STM regime: dimensions of GSA

- 2.1 National and international level
  - ➢ international level
    - What’s the relation between a STM regime and existing or under-making international rules and standards?
    - Are there gaps between these rules and standards? If so, what’s the expected function of a STM regime here? As a supplement to the gaps? Is it the most proper way to “fill in” the gap? Or to be a new regime taking place of the old ones in total?

2. a STM regime: dimensions of GSA

- 2.1 National and international level
  - ➢ international level
    - (1) Space Treaty and principle
      - ✓ UNCOPUOS LSC
      - ✓ consistency and efficiency
    - (2) Technical standards
      - ✓ ITU, ISO, IADC; institutional support, fixed experts group, regular meeting...
    - (3) regulatory rules
      - ✓ LTS, GGE, ICOC
      - ✓ notification, information sharing, conjunction assessment, maneuver...

2. a STM regime: dimensions of GSA

- 2.2 Technical, legal or regulatory, political level
  - technical level

"This international inter-governmental agreement would comprise a legal text, which cannot be changed easily and technical annexes, which can be adapted more easily (modelled on the legal texts of the ITU, ICAO or IMO and WTO)."

--Cosmic Study on STM, 2006, p.14

- Is it necessary and practical for a STM regime (convention, agreement) contain specific technical standards (rules)?

2. a STM regime: dimensions of GSA

- 2.2 Technical, legal or regulatory, political level
  - legal or regulatory level

"Through this definition, the purpose of space traffic management becomes clear: it is to provide appropriate means for conducting space activities without harmful interference"

--Cosmic Study on STM, 2006.

- how to define harmful interference?
- STM *per se* could not cover all the issues of GSA
- have been or should be discussed within the UN framework

2. a STM regime: dimensions of GSA

- 2.2 Technical, legal or regulatory, political level
  - ➢ political level
    - (1) a STM treaty?
      - ✓ To which extend could such the regime be recognized, acceptable and applicable for the majority of space faring states and between space faring states and non space faring states?
      - ✓ old balance: Is it worth to break this balance to cater for a STM concept?
    - (2) The new treaty making lacks of a sound, friendly international environment due to political reasons

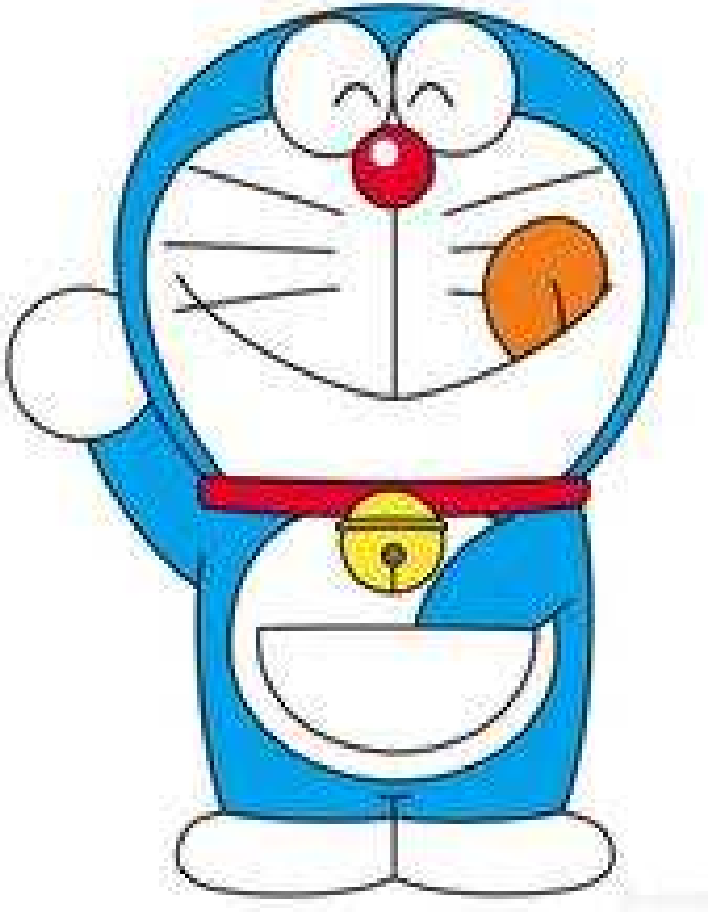
2. a STM regime: dimensions of GSA

- 2.2 Technical, legal or regulatory, political level
  - political level
    - (3) yield rights to the international community to limit its freedom of exploration and use of outer space?
      - ✓ *"Space traffic management however, will limit the freedom of use of outer space."*
      - ✓ *"Therefore an international consensus on internationally binding regulations will only be achieved, if States identify certain urgency and expect a specific as well as collective benefit – including an economic benefit - from this."*
      - ✓ Is making a new space treaty the only way to handle with "certain urgency"?

3. Conclusions and remarks

- As a target of academic research, STM is positive, since it offers a new perspective to examine GSA;
- As a regime or a topic to be concentrated on by the international community, it might give the way to other items, fora, initiatives conducted by COPUOS, ITU, ISO, IADC, etc., at this stage, regarding the discussion on existing space treaties, principles, regulatory rules and technical standards and national regulations.
- At this stage, it’s not necessary or practical to establish a treaty-basis STM regime, due to the technical, legal or regulatory and political concerns.
- STM is not a Doraemon’s magic pocket, containing everything you want, since some critical concern and issues might be missing.

3. Conclusions and remarks



3. Conclusions and remarks

- A way forward for GSA is to build up a *quintic element space*: like addressed in the movie interstellar *by the strongest will* of human being, which is already sanctified in OST: The principle of free exploration and use of outer space and for the benefits and in the interests of all mankind.

3. Conclusions and remarks

- the key of international GSA is to take full use of the platform of UNCOPOUS, to concentrate on clarifying the basic issues in space treaties and principles, promoting guidelines making as a useful supplement, developing appropriate technical standards, and facilitating various international cooperation.

thank you!