IAA-IISL-IAF Working Group on Space Traffic Management

- Draft preliminary ideas
- For discussions only
- Please comment
- Please indicate if you wish to contribute to the reflection
- Typical outcome: Synthesis report with recommendations by IAC 2021

Draft for comments only
1. Improvement of the knowledge of orbital population

- New means
  - Radars, telescopes
  - Including private, for instance private optical networks
    ➤ Recommendation: study and promote new systems, such as orbited sensors, laser detection from ground or orbit, others…
- Data fusion process
  - Merging of the information coming from various sensors
    ➤ Recommendation: share methodologies at international level
- Improvement of the orbital data precision
  - Improved computation means and filters
  - Use of star background
  - Laser ranging from ground or orbit
- Improvement of the UN registration
  - Currently rather poor despite regulation
    ➤ Recommendation: could there be a systematic pre-registration prior to any launch?
- Shared catalog
  - Question of protection of the data: legal solutions?
  - Question of military systems
  - Question of who serves as base for such catalog (or multiple bases?)
2. Use of such information

- Improvement of the collision avoidance process
  - Probability evaluation
  - Recommendation: sharing at ISO level through dedicated technical standards
- Thresholds
  - Recommendation: harmonization at international level (IADC, ISO)
- Use for Future operations
  - Spacetugs, IOS
  - Sub-orbital activities?
  - Ground support activities such as spaceports?
- Preparation of Future activities
  - ADR: Removal of the largest debris from crowded orbits to avoid statistical collisions
  - JCA: Nudging of a large debris to avoid a predicted collision
  - LDTM: Cataloging of large orbital debris and light nudging to avoid further critical situations
  - Recommendation: identify a shared position at international level (IAA studies, IADC tasks, National studies, …)
3. Technical regulation

Recommendations:
- Can be based on ISO
  - Converged at international level since more than 10 years
  - Coherent with IADC and National Standards established 20+ years ago
  - Already applied by ESA and China (?!); very close to FSOA
- Improvable
  - ISO standard for collision probability calculation
  - Inclusion of a threshold in the standard
  - ISO standard for the casualty risk calculation
  - Inclusion of a threshold in the standard
- Improvable
  - Shall include elements related to Space Tugs, IOS, ADR, JCA, LDTM
  - Shall include sub-orbital
  - May include Spaceports
- Major question:
  - Why is it so badly complied to? Action to understand…
- Proposal:
  - Education: Systematic inclusion of ISO in any contract
  - Naming & Shaming
  - Compliance file prepared before any space operation
4. Legal grounds

- Historical basis from UNCOPUOS
  - Debris guidelines (2007):
    - Less constraining than IADC guidelines (2002)
    - Never applied so far
  - LTS guidelines:
    - Questionable success
    - No agreed consensus over these guidelines
- Proposals
  - New organism
    - Could be ICSO
    - but C means Civil: how do we deal with “non civilian” operations?
  - Could be an extension of ToR of IADC (which includes militaries)
  - Would be in charge of:
    - Checking the proper inclusion of ISO in any contract and operation
  - New UN treaty
    - But question of the timeline: need to react in less than 5 years
    - But question of applicability: why is current compliance so low?

General recommendation: Space Traffic Coordination, instead of Management or Control