

SPACE TRAFFIC MANAGEMENT: A CHALLENGE OF COSMIC PROPORTIONS

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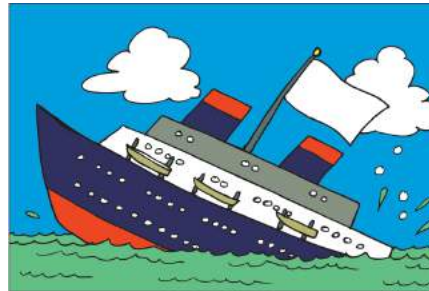
Legal Issues of Space Traffic Management
International Astronautical Congress, Jerusalem, 14-10-2015

WHAT ARE WE TALKING ABOUT?

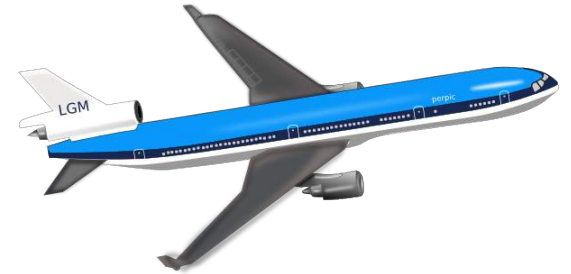
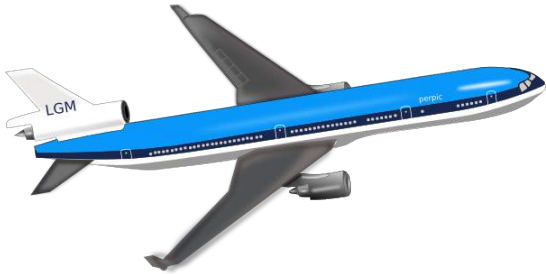
- ◆ IAA Cosmic Study of 2006:
 - *“The set of technical and regulatory provisions for promoting safe access into outer space, operations in outer space and return from space to Earth free of physical or radio-frequency interference.”*



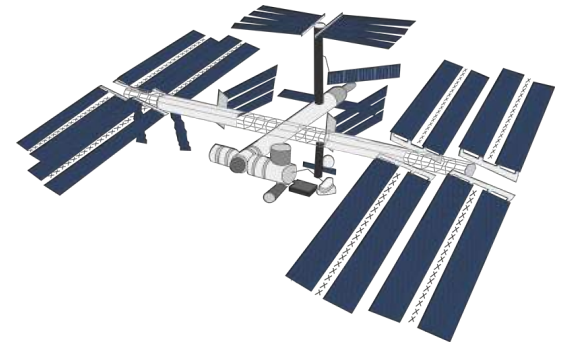
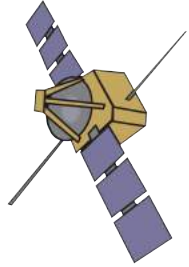
SEA TRAFFIC MANAGEMENT...?



AIR TRAFFIC MANAGEMENT...?



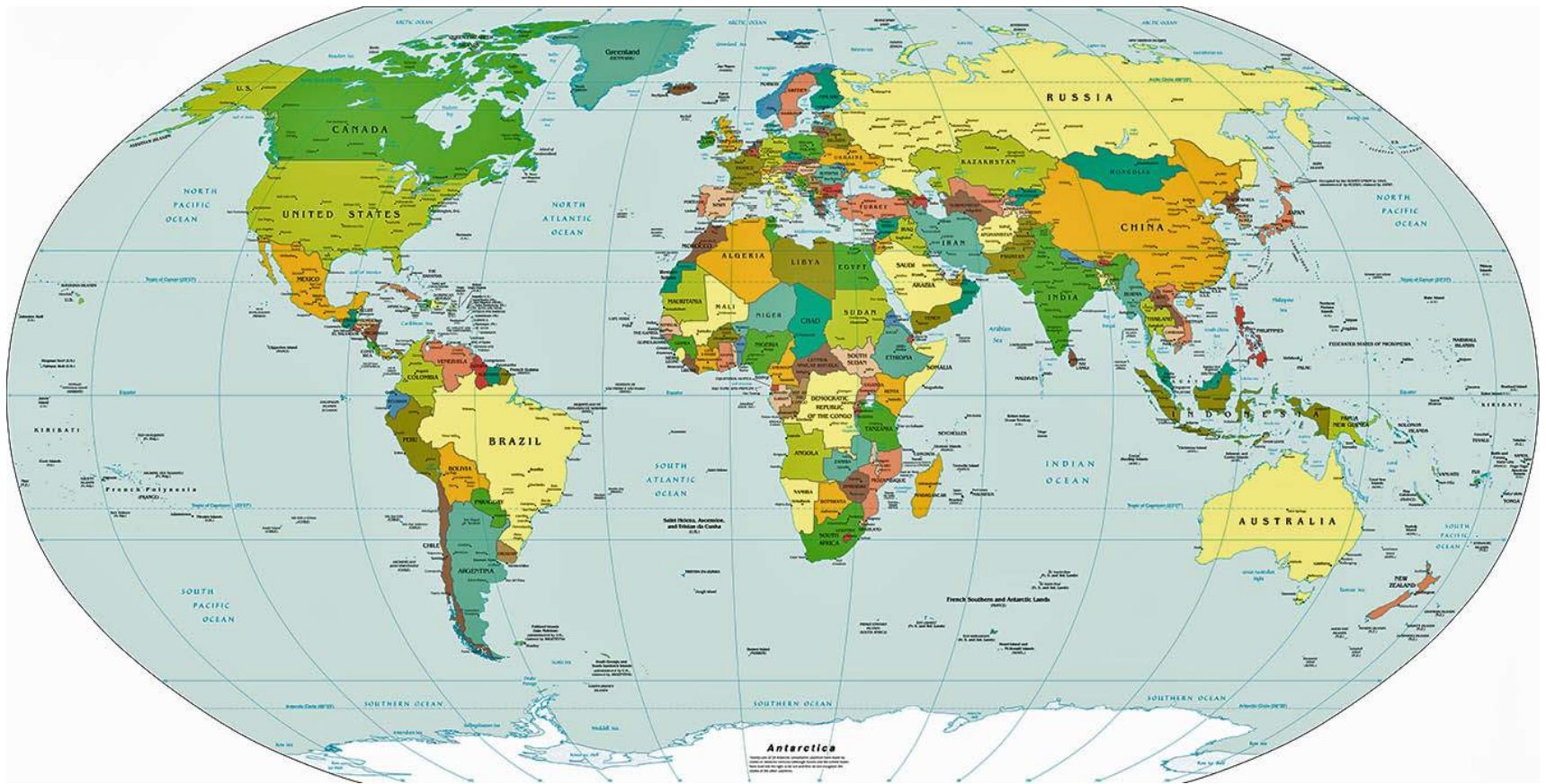
SPACE TRAFFIC MANAGEMENT...!



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AIR LAW & TRAFFIC MANAGEMENT



- ◆ Territorial airspace – national sovereignty
- ◆ International airspace – via ICAO

ATM SUMMARIZED

- ◆ Baseline category targeted vehicles = aircraft
 - Focus on civil aviation
 - Commercial aviation, military aviation, amateur flight, sporting events, balloons: all limited exceptions
- ◆ Baseline legal regime = national sovereignty
 - International regime could be developed on that basis
- ↔ Reality of spaceflight
 - At least four fundamental & very different categories of vehicles – *correction: items*
 - No territorial sovereignty

LESSONS TO BE LEARNED...?

- ◆ ATM (& other traffic management systems) have two main overarching components
 1. **Awareness** at a central entity of positions & intended trajectories of all vehicles in three-dimensional space
 2. **Competence** of such an entity with legal framework to direct specific vehicles to change position or trajectory for safety/security/efficiency purposes
 - *Both* functions following Chicago Convention centralised with ICAO to the extent necessary for international aviation – based upon sovereignty of states & experience with national aviation

THE AWARENESS ISSUE & SPACE

- ITU on slots & frequencies
- UN (OOSA) on space objects
- Some national registrations

- ITU on frequencies
- Only OST
- General international law

- No centralized international data collection (authority)
- International space law: only OST & RC
- Some national data collection efforts

- ITU on frequencies
- Only OST
- General international law

- ITU on orbits & frequencies
- UN (OOSA) on space objects
- Some national registrations

- Registered with UN (OOSA)

- No centralized international data collection (authority)
- International space law: only OST...?

- No centralized international data collection (authority)
- International space law: only OST & RC

- ITU on international frequencies
- National registrations?

THE COMPETENCE ISSUE & SPACE

- ITU on slots & frequencies
- International space treaties on specific issues
- Many national laws

- ITU on frequency interference
- Only OST
- General international law

- ITU marginally
- International space law marginally – OST; IADC/ COPUOS?
- Some national laws

- ITU on frequency interference
- Only OST
- General international law

- ITU on orbits & frequencies
- International space treaties on specific issues
- Many national laws

- No international authority
- International space treaties on specific issues – plus ISS IGA

- No international authority
- International space law embryonically
- Only US law

- No international authority
- International space treaties on specific issues – OST, RA, LC, RC

- ITU on international frequency issues
- General international law
- Many national laws

THE COMPLICATIONS

- ◆ Simply extending ATM from aviation to spaceflight...? *Beware:*
 1. **Awareness:** communication with vehicles much more complicated & less self-evident
 2. **Competence:** only limited number of states have actual experience with spaceflight – less reciprocity to allow for acceptance of certain state competences to act on behalf of international community
 3. **US approach:** not aviation, but launch
 4. **Delimitation & ‘innocent passage’ issues**

TOWARDS A SOLUTION?

- ◆ Start with ‘awareness’ & integrate existing roles & experience of relevant international entities
- ◆ Develop international ‘competence’ structure following aviation over international waters
 - Delegate to specific spacefaring nations certain realms of outer space to take care of in terms of STM
 - (1) Optional → (2) Consequences liability allocation → (3) Binding with international dispute settlement
- ◆ *Disclaimer: no responsibility or liability whatsoever for lack of political feasibility*