Legal Aspects of the qb50 Mission

New Perspective on European and International Cooperation on Space Projects

Jean-François Mayence
Vienna University - March 2014
Preliminary Statement

This presentation is based on information and data made public by the QB50 Project Coordinator. It does not intend to provide an accurate, up-to-date and/or legally relevant description of the QB50 Project.

The author of this presentation does not in any way represent the QB50 Project Coordinator, or his partners, or any other person involved in the Project.

Nothing in this presentation can be construed as prejudicing any decision or consideration from the Belgian authorities on the execution and the implementation of the QB50 Project, including the possible authorization and supervision of the mission.
QB50 Mission Project Description

**Project & Mission:** design, manufacturing, simultaneous launch, operation, down-/upload & networking of 50 cubesats (10 cm³) at 350 km altitude

**Mission Purposes:**

- in situ study of the temporal and spatial variations of a number of key constituents and parameters in the lower thermosphere (90-320 km) with a network of about 40 double cubesats, separated by a few hundred kilometres and carrying identical sensors.
- study of the re-entry process by measuring a number of key parameters during re-entry and by comparing predicted and actual cubesat trajectories and orbital lifetimes.
QB50: A Multinational Mission Project

QB50 – CU Teams

Map showing countries and their participation in the QB50 project.
Participants
50
~40 countries
to provide cubesats

Partners
~15
9 countries
to provide instruments

Coordinator
(VKI – Belgium)

EU

8 M€

LSP

OPERATION
QB50 Mission Project: Additional facts

• Some cubesats will be equipped with autonomous propulsion or orientation means
• Participants are expected to provide their own national or sub-contracted upload/download capacity to the network
• Launch Service Contract (LSC) will be placed by Coordinator or under its authority
• First Launch (Precursor) in 2014 [DNEPR – Ukraine]
• Second Launch (Mission) in 2015 [CYCLON-4 – Brazil]
Small or Big: What’s the point?

- legally speaking: none
- small satellites often without any propulsion / orientation means
- small satellites > lower cost > accessible to small industry, incl. non-space industry
- small satellites > specific missions
- small satellites > small budget > cheap launch solutions (connected issues: safety, liability, ITAR, etc.)

But technological progress tends to mitigate the differences
Multiple Satellites Missions

• one single launch (for each phase) with multiple cubesats
• from various origins (institutes / countries)

➢ one single Appropriate State
➢ multiple Launching States
➢ one single State of registry
Identification of the Appropriate State

1. External Empirical Approach

- Consider all States involved
- Eliminate all States not providing for authorisation and supervision of the mission according to their national law, either because of
  - no national space law, or
  - national space law not applicable

- Identify the most appropriate State among those left
  - objective selection: link between States and activities (main location, main participant, etc.)
  - subjective selection: State willing to authorize the mission
Identification of the Appropriate State

2. Internal Legal Approach

- State considers its involvement in the mission

- State’s national law doesn’t provide for a regulatory regime (no prohibition, no authorization)

- State’s national law provides for a regulatory regime (prohibition, authorization under conditions)
  - State identifies the mission as subject to its national (space) law: Appropriate State
  - State identifies the mission as not subject to its national (space) law: not the Appropriate State

This approach doesn’t guarantee one single Appropriate State
Identification of the State of Registry

**Belgium** qualifies as a (co-)Launching State (Art. I Liability Convention) because the Belgian Government contributes to QB50 project funding

- Belgium will register all the objects launched under the authority of the Coordinator
- Belgium will exercise jurisdiction & control on those objects
- Appropriate agreements with other States involved might be considered if necessary
- Belgian jurisdiction & control will not affect individual rights on objects
- Assurance on registration is compulsory for placing Launch Service Contract
Space Liability

- Damage to third parties covered by the LSC (e.g. launch & positioning phase)
- Damage to third parties not covered by the LSC (e.g. in-orbit/deorbiting operation phase):
  - Belgian Space Law provides for a limited liability of the Operator. Further apportionment among Participants & Partners might be considered by them
  - Belgium might act against other co-Launching State (State of the launch, State of the involved Participant or Partner)
Other Procedures and Requirements under Belgian Law

- Environmental Impact Assessment (EIA)
- Insurance Policy
- External Review (e.g. Space Debris Mitigation Guidelines compliance)
- Radio-Frequencies Licensing
Remaining Issues

• QB50 Project illustrates a dramatic complexisation in international space cooperation with important legal consequences
• In practice, difficulty to organize calendar and mutual information to allow intergovernmental agreements between all States involved in the Project (cf. 2004 UNGA Resolution 59/115 on the Concept of Launching State)
• No obligation from non-governmental entities to report on multinational cooperation projects
• Role of EU: ‘procures the launch’, but EU is no Launching State due to non-acceptation of UN Space Treaties
  ➢ What’s the liability attached to funding from EC?
• Could we use a single authorization process to be handled by any EU Member States with national space legislation, according to common criteria (e.g. EU, ESA and/or UNCOPUOS standards) and with a reporting to States involved?
• Could we use a multilateral by default apportionment agreement for (space & non-space) liability in European Union space projects (just as within ESA: apportionment based on contribution to the project funding)?
Recommandations

See DLR/University Köln Conference “In Heaven as on Earth? The Interaction of Public International Law on the Legal Regulation of Outer Space Activities”, Bonn, June 2012

➢ One single State in charge (‘Licensing State’)

✓ Licensing State to authorize and supervise activities carried out under its territorial jurisdiction (territory + quasi-territory);
✓ Licensing State to bear international liability for damage caused by the activities
✓ Licensing State to register space object(s)
✓ Licensing State to conclude appropriate agreements with other States, possibly as a condition to authorize the launch or the mission

➢ International Liability Regime

✓ Absolute liability for damage at the earth surface or to aircraft in flight
✓ Waiver of liability for damage caused in outer space, except non-compliance with international standards or best practices as agreed in applicable bilateral or multilateral instruments