

National space legislation as a tool for economic development of space activities

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Introduction



Humans & law

- Law comes to be developed once humans start relevant activities – and follows their lead...
- 1957 Sputnik → 1967 Outer Space Treaty
- Domain of States



Space law



- State-oriented: rights & duties of States
 - IGOs only included at secondary level
 - Private entities only referenced – as “non-governmental entities”
- Applies also to follow-up treaties
- & Applies to ITU-regime on orbits & frequencies

Paradigm change



- How would / should / could private sector fit into international space law?
 - How to make sure it also complies?
 - How to make sure its legitimate interests are taken into account?

General answer (1)



- Three main UN space treaties generally & widely accepted in particular by the major spacefaring nations provide legal structure guiding the handling of the paradigm change
 - 1967 Outer Space Treaty (110 + 23)
 - 1972 Liability Convention (98 +19)
 - 1975 Registration Convention (69 + 3)

General answer (2)



- Outer space = 'global commons' (1)
 - Not subject to territorial sovereignty States (Art. II, Outer Space Treaty)
 - States can exercise territorial jurisdiction *over operators on national territory undertaking – remote-controlled – space activities*
 - States can exercise quasi-territorial jurisdiction *over operators undertaking – remote-controlled – space activities from national ships & aircraft*
 - States can exercise personal jurisdiction *over nationals anywhere undertaking space activities*

General answer (3)



- Outer space = 'global commons' (2)
 - States can exercise quasi-territorial jurisdiction over space objects registered by them (Art. VIII, Outer Space Treaty + Registration Convention)
 - Free for States to explore & use as long as compliant with obligations under the treaties (Art. I, Outer Space Treaty)
 - & Private operators only allowed within that context (Art. VI, Outer Space Treaty)

Two concepts (1)

- Responsibility \leftrightarrow liability



Two concepts (2)



- Language issue
 - Art. XVII, Outer Space Treaty: Chinese, English, French, Russian & Spanish versions equally authentic!
 - *Responsabilité* \leftrightarrow *responsabilité pour les dommages*
 - *Otvetstvennost'* \leftrightarrow *gosudarstva otvetstvennost'*
 - *Responsabilidad* \leftrightarrow *responsabilidad por daños*

Art. VI, OST



- States shall bear ***international responsibility*** for the conformity with international space law of ***national activities in outer space***, also if carried on by non-governmental entities
- The activities of non-governmental entities in outer space shall require ***authorization and continuing supervision*** by the ***appropriate State***

Art. VII, OST



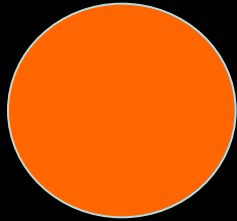
- Each State that ***launches or procures the launching*** of an object into outer space, and each State from whose ***territory or facility*** an object is launched, is ***internationally liable*** for damage caused by that object
- Further elaborated by Liability Convention

Implement treaties



- Authorization requirement
 - Ensuring compliance with international law by licensee – since State is responsible
 - Including obligation to compensate State for international liability claims it has to pay
 - Monitoring mechanisms – in view of authorization and supervision requirements
- Reflections national policy priorities & consistency with domestic legal order

Core duties

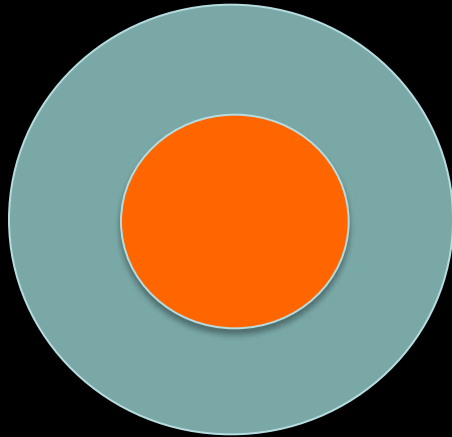


Hard rules international space law which national space law has ensure compliance with without further ado

Example: no weapons of mass-destruction



Inner ring

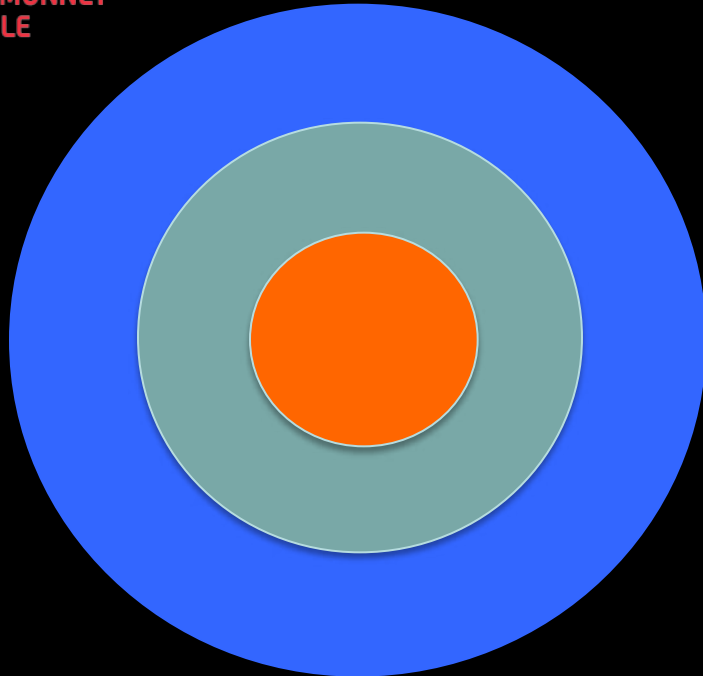


Grey area international space law which national space law has to ensure compliance with, but has options / discretion within parameters given

Example: due diligence for other States' activities



Outer ring



No specific international
space law – national
space law enjoys
complete discretion

*Example: stimulation
private sector by fiscal
measures*



National space law

- The current situation



Policy options (1)



- Wide *versus* narrow interpretation responsibility *ratione materiae* under Art. VI, OST?
 - How to interpret ‘*activities in outer space*’?
 - *Launching (& return), satcom, satellite EO, satnav, space mining, space tourism...?*
 - Wide: allows control over wide range of *activities*
 - ↔ Narrow: allows denial of responsibility in many scenarios

Scenario (1)



- State A has a national space law requiring license only for launch services
 - Company B, registered & headquartered in A, uses capacity on satellite launched from State C to offer telecom services
 - State D claims company B provides services to drug- & arms-traders
- *Can State A be held internationally responsible for company B's activities?*

Policy options (2)



- Wide *versus* narrow interpretation responsibility *ratione personae* under Art. VI, OST?
 - How to interpret ‘*national* activities in outer space’?
 - *Nationality of operators? Territory of operation? Ships, aircraft & space objects of operation?*
 - Wide: allows control over wide range of *actors*
 - ↔ Narrow: allows denial of responsibility in many scenarios

Scenario (2)



Which State(s) is/are responsible for which activities?

Policy options (3)



- Liberal *versus* limited acceptance of liability under Art. VII, OST & Liability Convention?
 - How to interpret ‘launching State’?
 - Liberal: allows taking comprehensive protective measures
 - ↔ Narrow: allows denial of liability in many scenarios



Scenario (3)



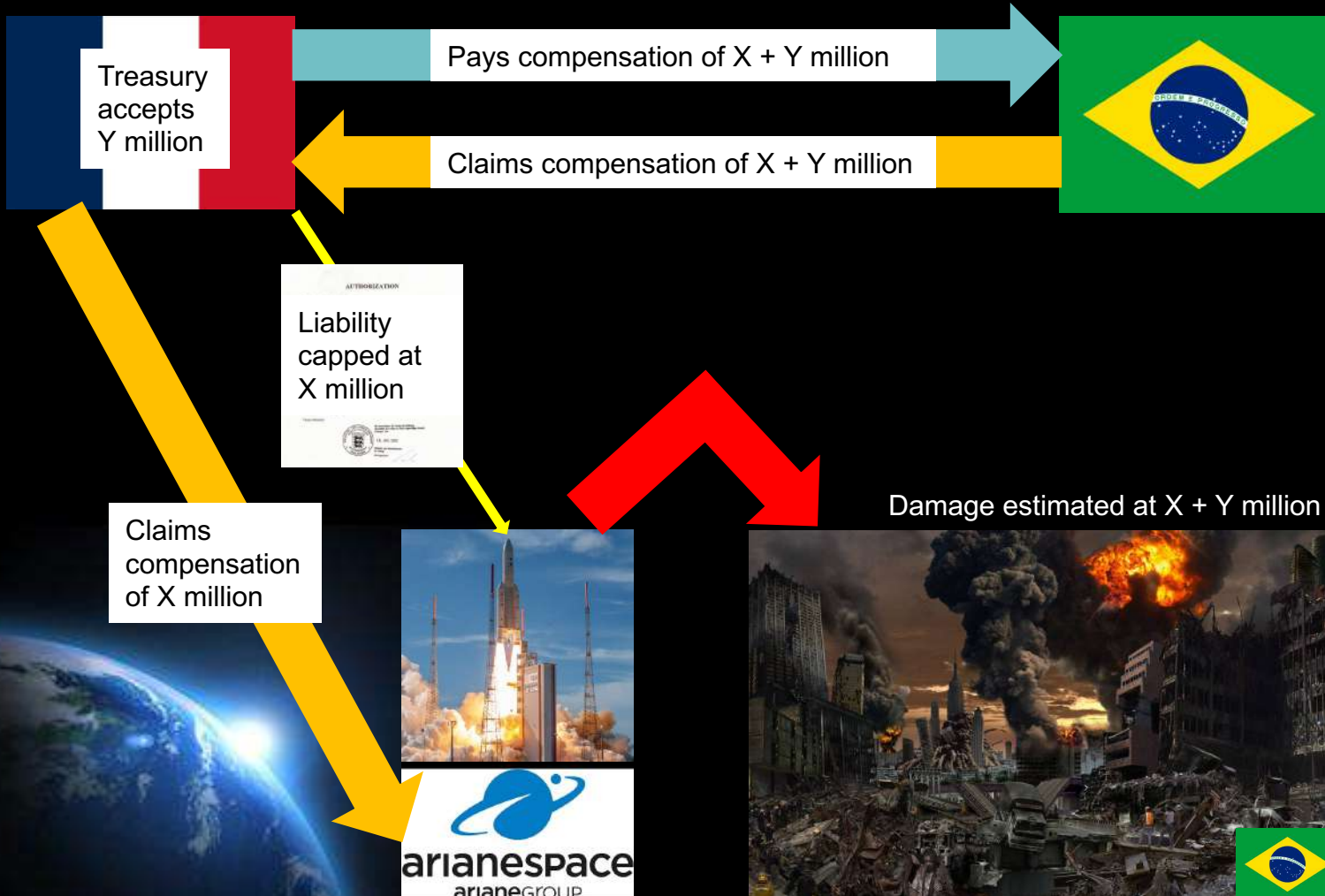
Which State(s) is/are liable for whatever damage occurring?

Policy options (4)



- Generous or protective handling of unlimited liability under Art. XII, Liability Convention?
 - Generous: limiting recourse to private operator to a certain amount \leftrightarrow risks State treasury has to compensate part of the damage above the limit
 - \leftrightarrow Protective: recourse to private operator fully shifting unlimited liability \leftrightarrow risks lack of private sector interest

Scenario (4)



UN Res. 68/74 (1)



- December 2013
- § 1: national space legislation...
 - *...should* address, as appropriate: launch of objects into & their return from outer space, operation launch or re-entry site & operation & control of space objects in orbit
 - *...may* address design & manufacture of spacecraft, application of space science & technology, & exploration activities & research

UN Res. 68/74 (2)



- § 2: national space legislation...
 - ...taking into account obligations as launching State & State responsible for national activities in outer space, should address space activities carried out from territory under its jurisdiction and/or control as well as carried out elsewhere by its citizens and/or legal persons established, registered or seated in territory under its jurisdiction and/or control

State practice (1)



1. Wide interpretation *ratione materiae* (1)



Any activity immediately connected with operations to explore and use outer space, including the Moon and other celestial bodies



Activities carried on entirely in outer space, plus launching of objects into outer space & all measures to manoeuvre or in any other way affect objects launched into outer space



Activities targeting outer space, including its discovery, making an impact thereon, using, or utilizing it

1. Wide interpretation *ratione materiae* (2)



Launch, flight operation or guidance of space objects in outer space

Problem: what to do with unguided small sats?

- ISIS: secondary payload cubesat programme
 - Dutch authorities: no need for a license
 - Still international responsibility & liability...
- & ISIS requested being licensed
- Dutch law amended: now includes unguided satellites

1. Wide interpretation *ratione materiae* (3)



Range of Acts dealing with specific sector of space activities & private sector involvement therein:

- 1970: 1934 Communications Act applied to satcoms
- 1984: Commercial Space Launch Act on launching
- 1984: first Land Remote Sensing Act on satellite EO
- 2015: chapter in broader Act on space mining
- NASA *de facto* authority for ISS operations

Problems: overlaps, gaps & inter-agency disputes

State practice (4)



1. Narrow interpretation *ratione materiae*



Only launching objects into outer space
Because of early date & focus on liability!



Only satellite remote sensing
Because of focus on specific security risks!



Only space mining
Because of desire to act quickly!

2. Wide interpretation *ratione personae*



Space activities from Swedish territory by any party & by Swedish natural/juridical persons anywhere else



Space activities carried out within Denmark & space activities carried out outside Denmark on Danish craft/facilities / by Danish operators

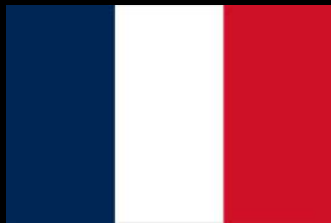


Space activities carried out on Austrian territory, on board vessels/airplanes, registered in Austria / by natural person with Austrian citizenship / legal persons seated in Austria

State practice (6)



2. Wide interpretation *ratione personae*?



Launch & return activities: both from territory & by nationals \leftrightarrow all other space activities: by nationals only



Activities 'under jurisdiction / control State' (= from territory & quasi-territory) – plus: if provided by international agreement, also by nationals elsewhere



Activities from territory, ships or aircraft – *may* be extended to activities by nationals if in other State not party to Outer Space Treaty

2. Narrow interpretation *ratione personae*?



1986 Outer Space Act: only activities by nationals, defined in quite some detail

Because no launch activities were foreseen on UK territory, which would carry most direct risks of UK liability being invoked!

Problem: recent plans private spaceflight from UK?

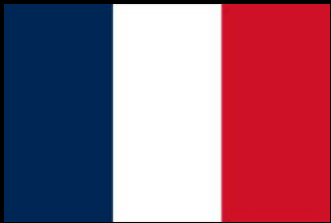
→ 2018 Space Industry Act: now addresses activities if undertaken from territory

– *But problems of overlap remain...*

3. Liberal acceptance of liability?



Includes private procurement of launches not otherwise covered by national space law



Includes private procurement of launches not otherwise covered by national space law



Includes launches by national operators – in spite of definition Liability Convention

Also includes launches from private launch facilities not otherwise covered by national space law (the case of *Sea Launch*)

3. Narrow acceptance of liability?

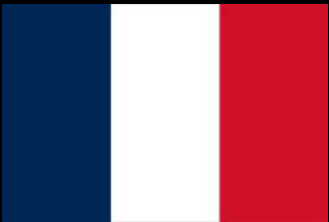


Normally does not includes private procurement of launches not otherwise covered by national space law



All do not include private procurement of launches not otherwise covered by national space law

4. Generous handling of liability



All limit derogation in principle to € 60 M per launch

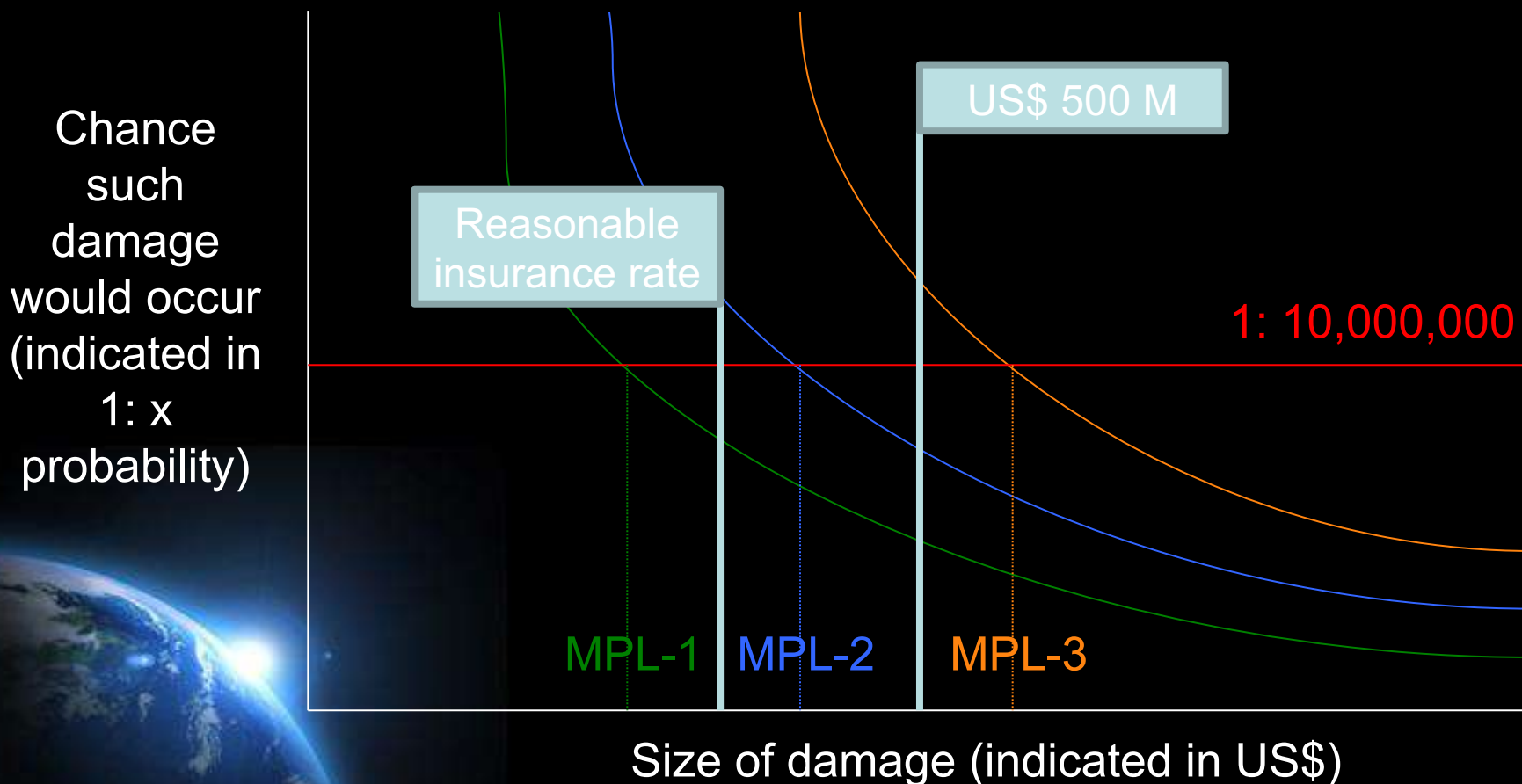


Applies flexible caps on derogation as per Maximum Probable Loss (MPL)



Applies flexible caps on derogation as per the lesser of: (1) MPL; (2) US\$ 500 million; (3) maximum insurance available at reasonable rates

- MPL & cap determination United States



State practice (12)



- Liability derogation practice United States
 - Highest amount ever quoted: US\$ 261 M for Delta-IV launches
 - WhiteKnightOne + SpaceShipOne: US\$ 3 M
 - WhiteKnightTwo + SpaceShipTwo: US\$ 9 M
 - ...2014 crash...
 - WhiteKnightTwo + SpaceShipTwo...
 - From Mojave Air & Space Port US\$ 45 M
 - From Spaceport America US\$ 36 M

State practice (13)



- Time horizons United States national law
 - Currently, generous liability arrangements apply until 30/IX/2025
 - New determination whether maturity launch industry & competitiveness US industry globally will still require such generous arrangements
 - Similarly, the compulsory waiver of passenger liability for private spaceflight operators (as long as ‘informed consent’ by passenger is given) applies until 30/IX/2023

State practice (14)



4. Generous handling of liability?



State has a right of recourse against operator responsible for that space object, capped at amounts to be defined



Derogation may be limited by authorities on conditions to be determined



Authorities may lay down regulations to limit the operator's liability to pay damages

4. Protective handling of liability?



Liability for damage was paid by the State shall be disbursed to the State, “unless special reasons tell against this”



1. State shall guarantee full compensation
2. If damage caused by private licensee, compensation shall be paid by that licensee
3. Liability licensee shall be limited to amount of insured sum
4. If insured sum insufficient for compensation, recourse against property licensee possible

General approach



- State agencies authorizing and supervising activities private sector are charged with protecting public interests
 - Safety, security, environment
 - Public *economic* interests *may* be part of that, and some States actually do include measures of (in)direct support private sector



US approach (1)



- State agencies undertaking in space activities charged to engage private sector
 - NASA to “seek and encourage, to the maximum extent possible, the fullest commercial use of space”
 - Allow commercial activities on ISS
 - Promote commercial use GPS
 - Support private orbital service projects
 - Commercial Orbital Transportation Services (COTS) → Commercial Resupply Services (CRS) & Commercial Crew Development (CCDev)

US approach (2)



- State agencies authorizing and supervising activities private sector are charged with protecting public interests *and* with promoting interests of (US) private sector
 - FAA Office for Commercial Space Transportation (OCST) to “promote economic growth and entrepreneurial activity through use of the space environment for peaceful purposes”

Conclusions (1)



- States are *almost* required to adopt national space legislation to address national private sector participation in space activities
- Such national space legislation then also presents an excellent instrument for supporting private sector participation in many ways, to the extent desired

Conclusions (2)



- Ultimately, the extent to which private sector participation in space activities is to be condoned or even supported is a matter of sovereign discretion and national policy...
- ...but private sector space activities are here to stay, so better make the best of it and try to ensure they will be conducted in the most beneficial manner feasible

