

Current Challenges and Developments in International Space Law

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Four grand challenges to space law

1. Lunar exploration & exploitation
2. Mixing military & commercial satellite operations
3. Tackling space debris & going beyond – to promote space sustainability & STM
4. National space legislation & the risk of fragmentation

From general principles...

◆ 1967 Outer Space Treaty

- 112 States parties (+ 23 signatories)
 - Including all major spacefaring States
- ≈ Considered customary international law
= ‘Principles Treaty’
- & Drafted in Cold War era
- Military use outer space addressed succinctly
 - No serious consideration of ‘space mining’, ‘space environmental issues’ & privatization



...to interpretation & implementation

◆ Treaty interpretation tools

- Includes “subsequent practice in the application of the treaty” (Art. 31(3)(b), Vienna Convention on the Law of Treaties)
→ *national space legislation & other legal acts*

& Customary international law:

- State practice & *opinio juris* → *national space legislation & other legal acts*

Vienna
Convention
on the law
of the
Treaties

International law

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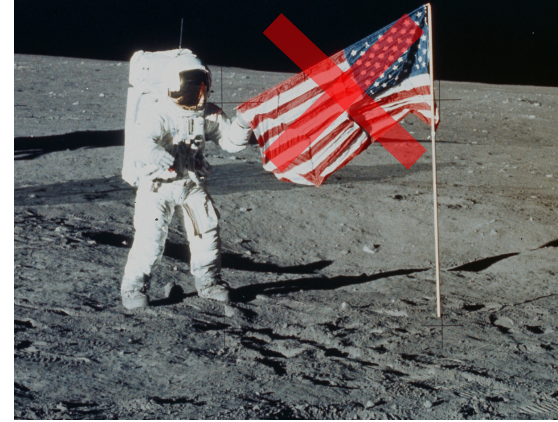
1. Lunar exploration & exploitation

- ◆ Early 2010s: US companies interested in space mining
- 2015: US Commercial Space Launch Competitiveness Act, Title IV
- ◆ 2017: launch Artemis Program
- 2020: Artemis Accords
- 2021: Russo-Chinese International Lunar Research Station (ILRS)



The baseline legal issue

- ◆ Art. II, OST, prohibits national appropriation of any part of outer space by any means
- ◆ Two generic interpretations inherently possible:
 1. Outer space belongs to all of humankind → all resources also somehow belong to all of humankind
 2. Outer space ≈ ‘global commons’ → all States are entitled to use resources for their own benefit (& allow their private sector to join) (= essentially US approach)

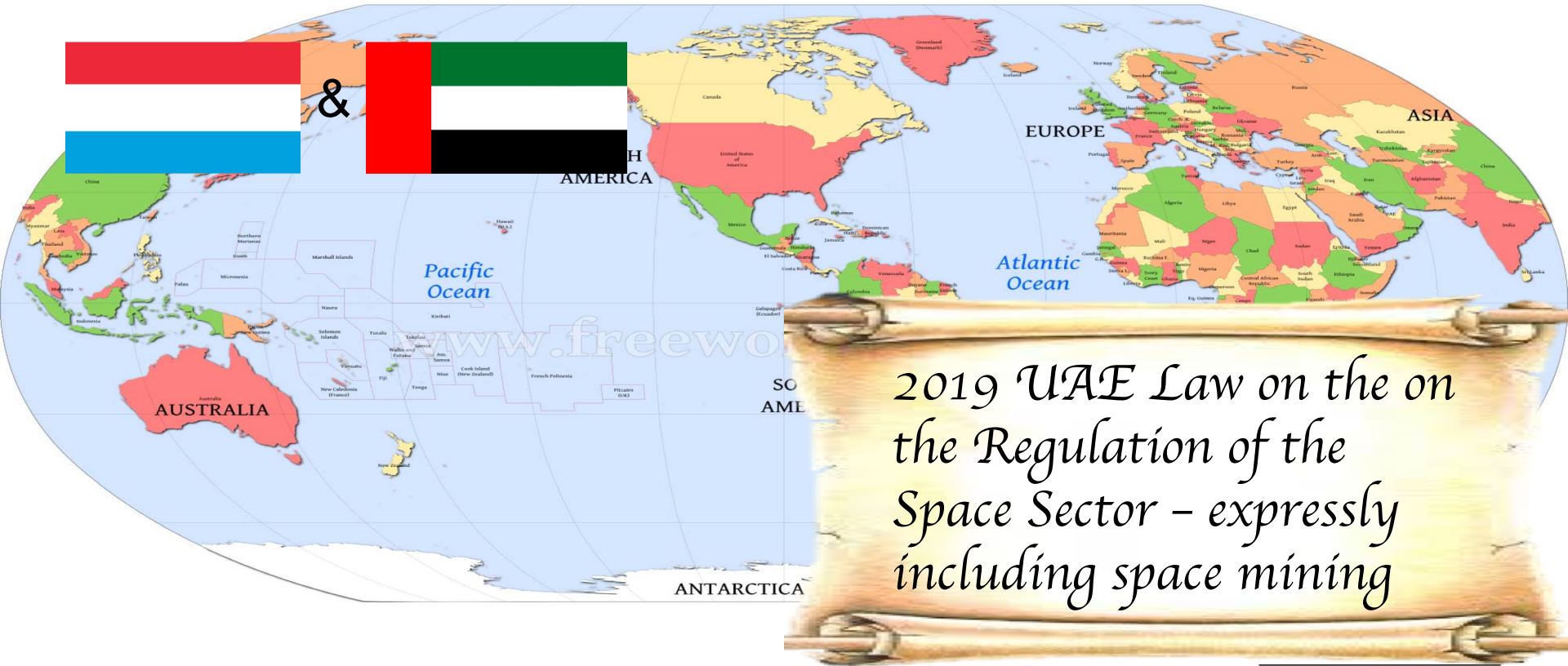


International discussions...



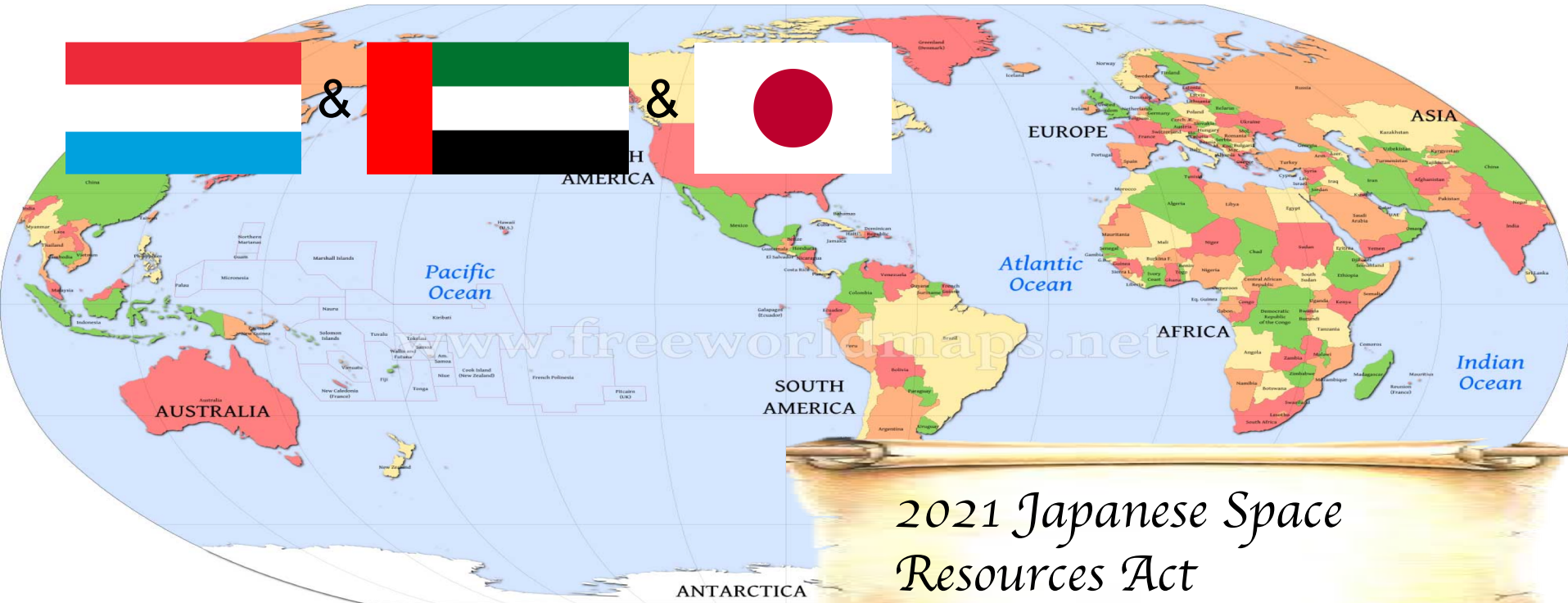
2017 Luxembourg Law on the Exploration and Use of Space Resources

International discussions...



2019 UAE Law on the Regulation of the Space Sector - expressly including space mining

International discussions...

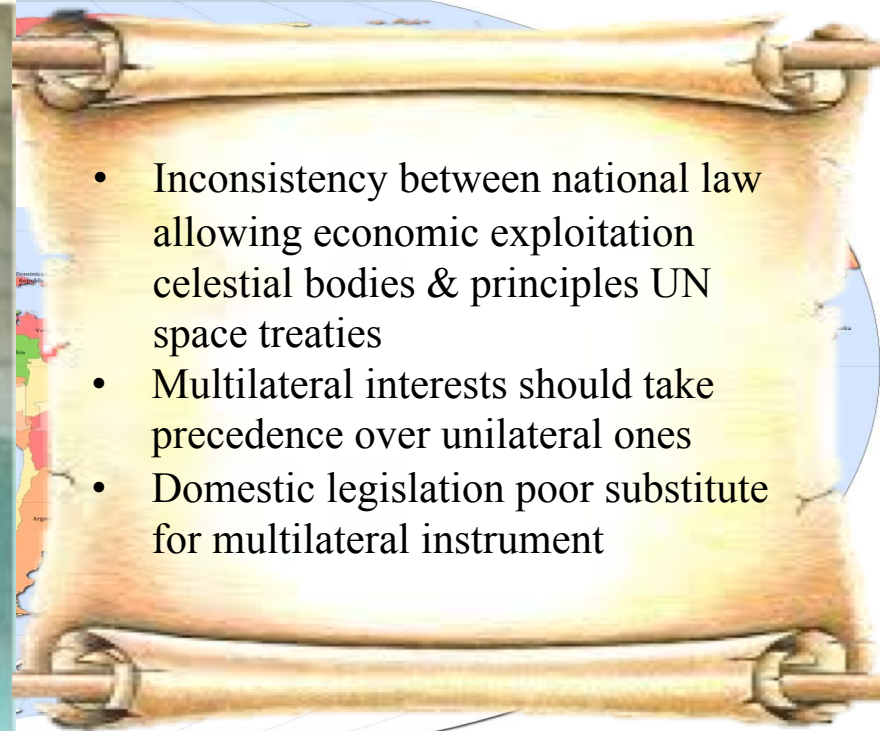


International discussions...



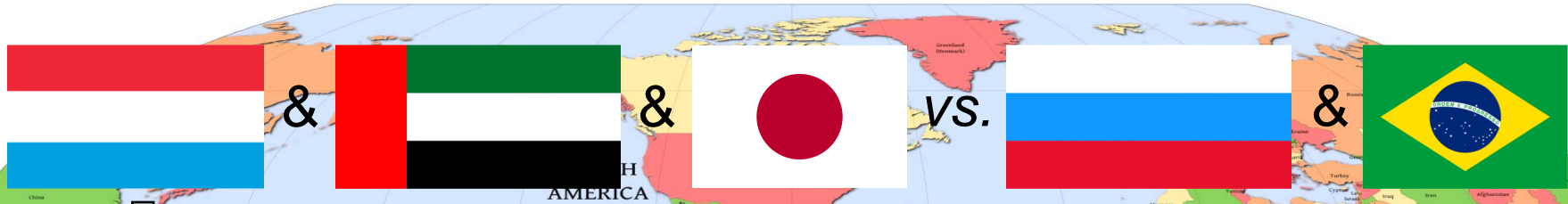
- Disrespect for international law by allowing US private sector to appropriate & sell space resources as per Title IV, 2015 Act
- New interpretation of 'non-appropriation outer space'
- Disregard for discussions in context Moon Agreement
- Element of US doctrine of 'domination of outer space'
- 'Freedom of use of outer space' not law but theory of experts & specialized fora

International discussions...



- Inconsistency between national law allowing economic exploitation celestial bodies & principles UN space treaties
- Multilateral interests should take precedence over unilateral ones
- Domestic legislation poor substitute for multilateral instrument

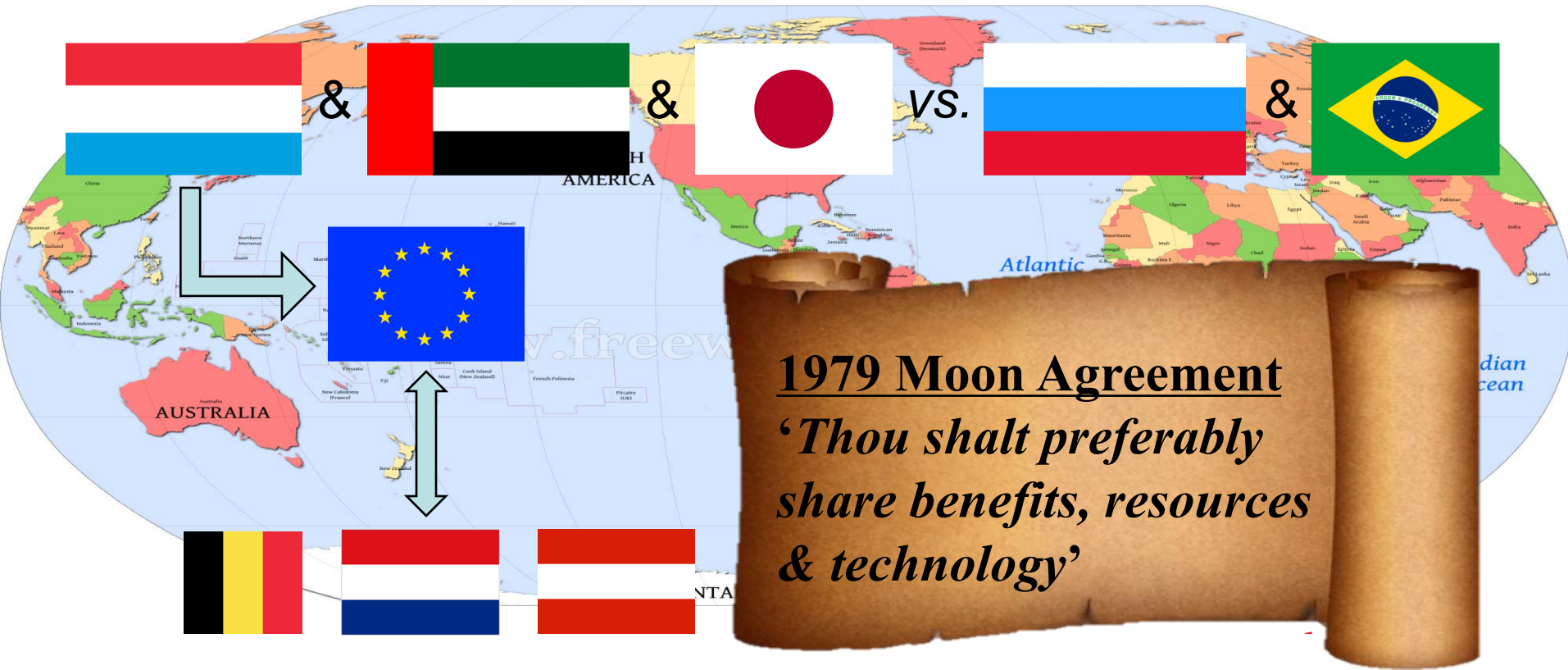
International discussions...



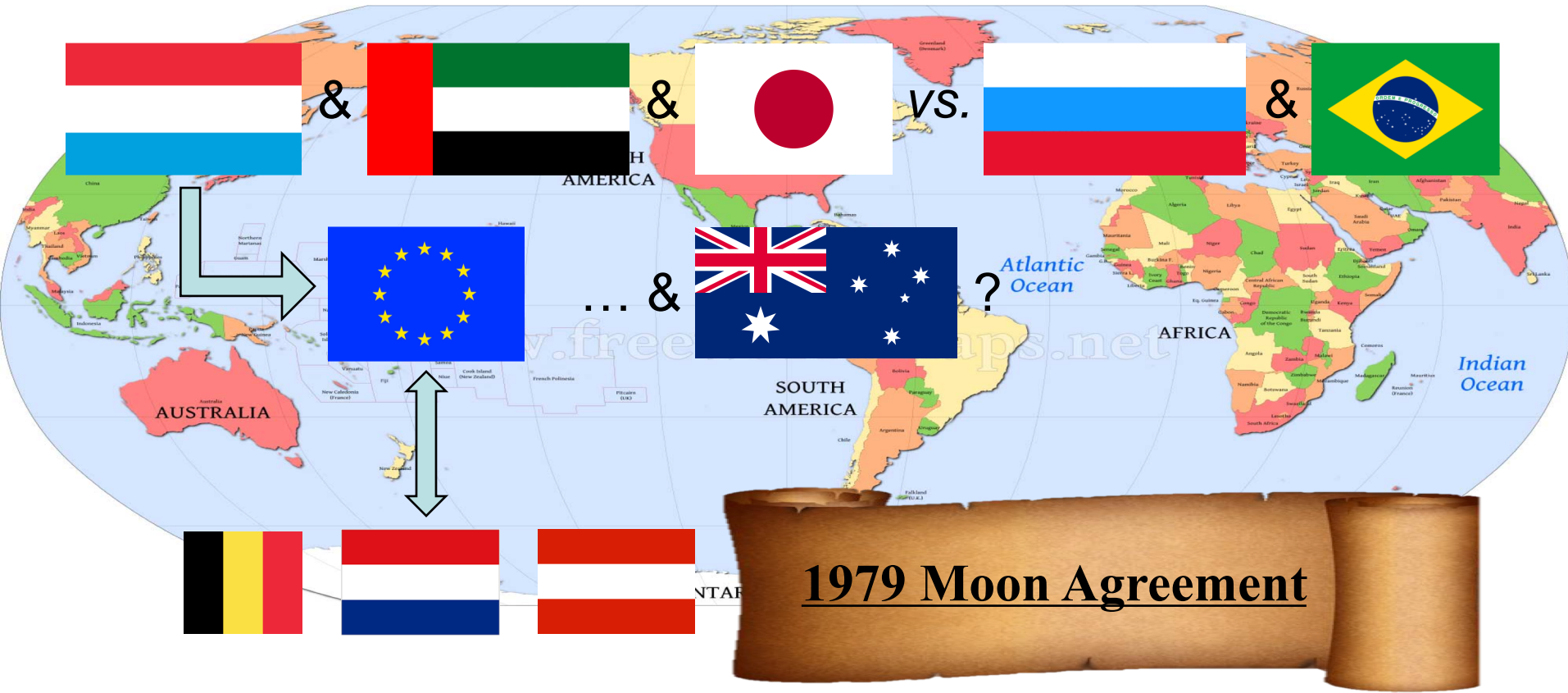
Art. 28(2), TFEU

*‘Products third countries
in free circulation benefit
from free trade regime’*

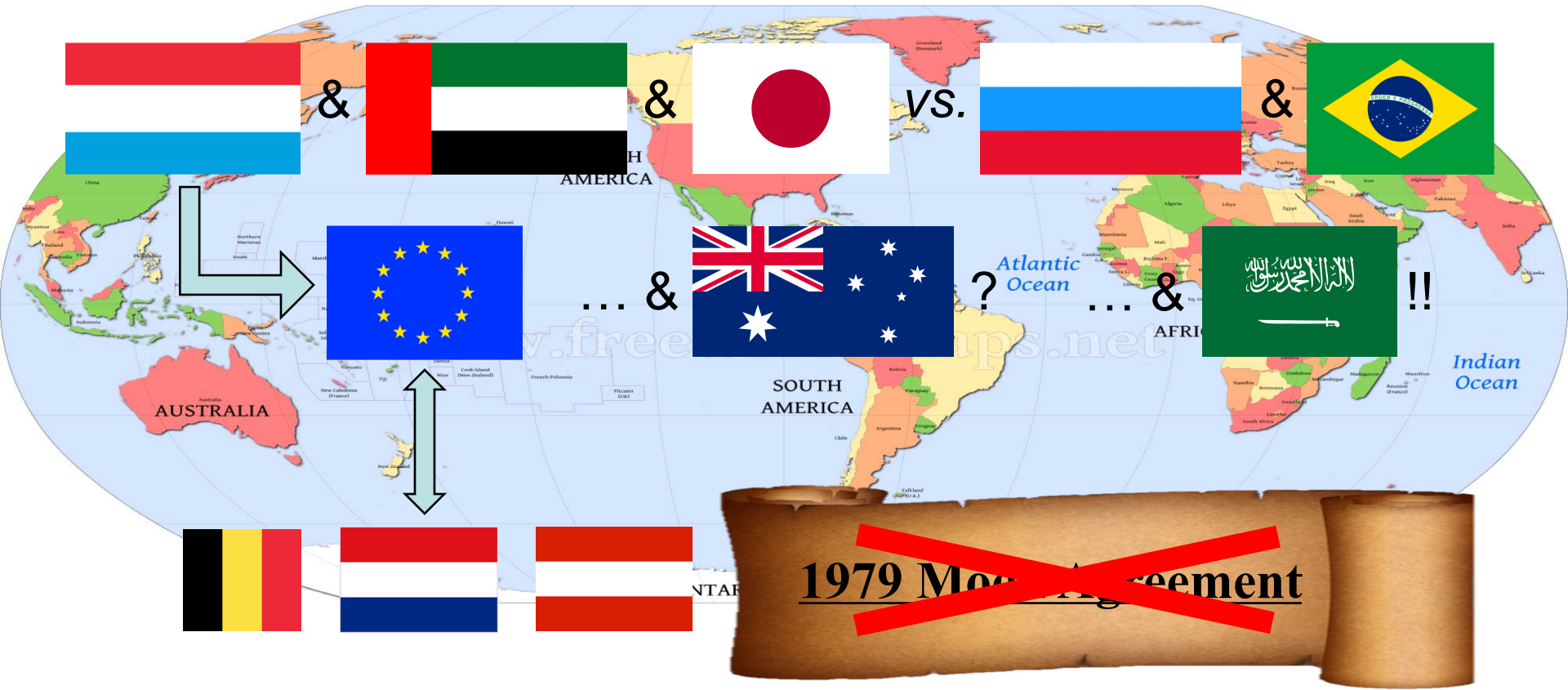
International discussions...



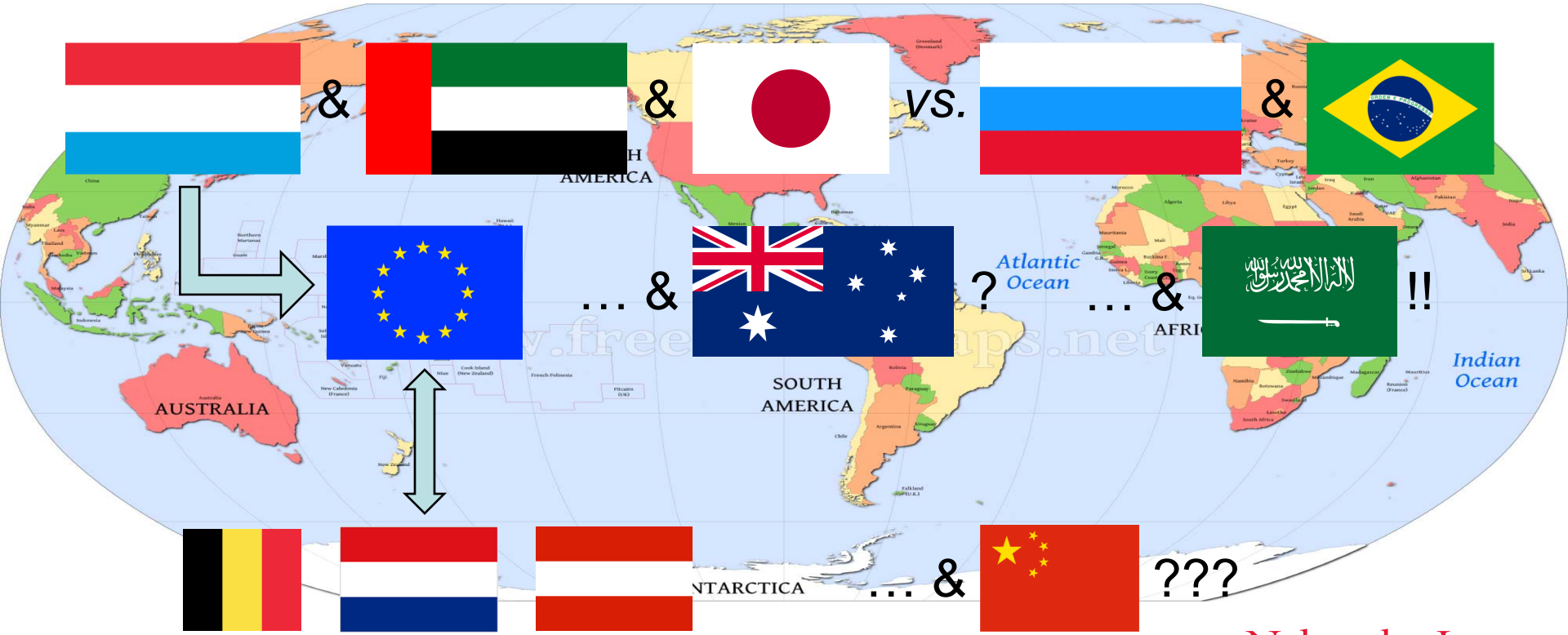
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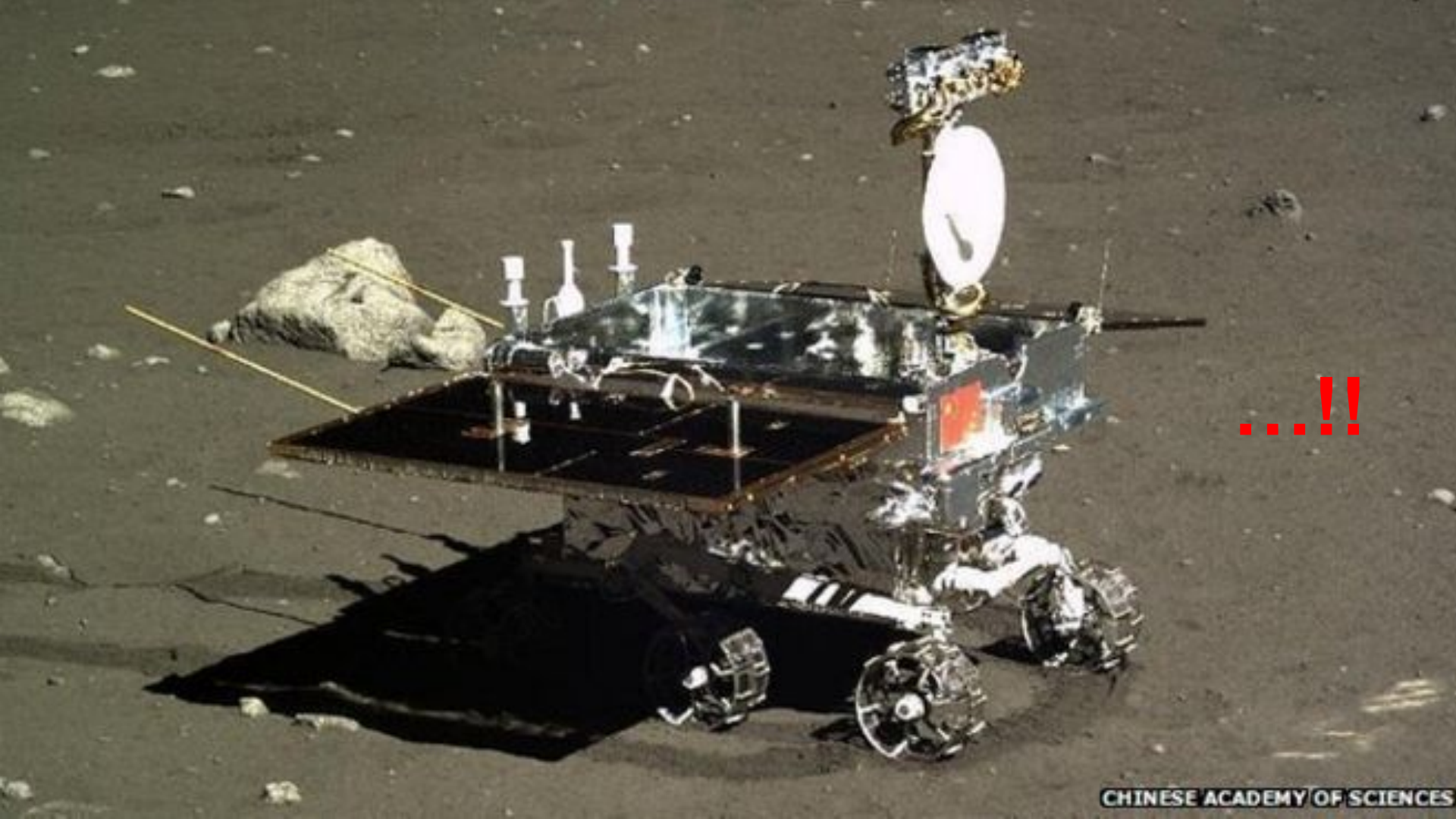


International discussions...



International discussions...





...!!

International discussions...

◆ Artemis Accords

- Includes principle of freedom of space mining as baseline for operations under Artemis program
 - *Not a treaty*, technically speaking...
- ↔ *May* however evolve into customary international law...



Current status Artemis Accords

Space agencies of Angola, Argentina, Australia, Bahrain, Belgium, Brazil, Bulgaria, Canada, Colombia, Czech Republic, Ecuador, France, Germany, Greece, Iceland, India, Isle of Man, Israel, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Nigeria, Poland, Romania, Rwanda, Saudi Arabia, Singapore, South Korea, Spain, Ukraine, United Arab Emirates, United Kingdom, United States & Uruguay

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Beyond the Artemis Accords

- ◆ ILRS: **China** & **Russia**; plus Azerbaijan, Belarus, Egypt, **Pakistan**, South Africa & **Venezuela**
- ◆ Bilateral agreements **Luxembourg** with **UAE**, **Japan**, Portugal, **China**, Czech Republic, Poland **United States**, **Belgium**, New South Wales & India on international space mining cooperation
- ◆ Note: **Russia** discussed bilateral agreement with **Luxembourg** as well

2. Mixing military & commercial

- ◆ Case study: Ukraine
- ◆ 24 February 2022:



The baseline legal issue (1)

- ◆ Art. VI, OST, makes States directly internationally responsible for private space activities qualifying as “national activities”
- & Art. VII, OST, & 1972 Liability Convention make States directly liable for damage caused by private space activities for which they qualify as “launching States” & allows them to claim damage on behalf of their private sector operators, too...

The baseline legal issue (2)

- ↔ Under classical LOAC private assets & activities would potentially present legitimate targets for use of (armed) force, *if*:
- They concern private sector entities of a *belligerent* or otherwise substantively supporting militarily supporting one
 - & Such use would be compliant with principles such as *military necessity & proportionality*
- ↔ *But to what extent does such LOAC apply in a non-domain-specific manner to outer space...?*

Phase 1 (II/22–IX/22)

- ◆ Delivery terminals partly financed by Ukrainian allies
- ◆ Free provision of services largely at expense Starlink
- ◆ Both military (defensive command centers, defensive operations & communications with US military) & civilian (hospitals, banks, refugees & news reporting) usage

Phase 2 (IX/22–VIII/23)

- ◆ Increased use for drone attacks → outages...?
- ◆ Separate service Starshield for military services → contract with US DOD VI/23
- ◆ Use restricted to Ukrainian-controlled territory ↔ Russian-occupied territories Ukraine...
- ◆ Musk: ‘only peaceful activities, not for fighting wars’; ‘no escalation to WW III’; calls for backing by US government

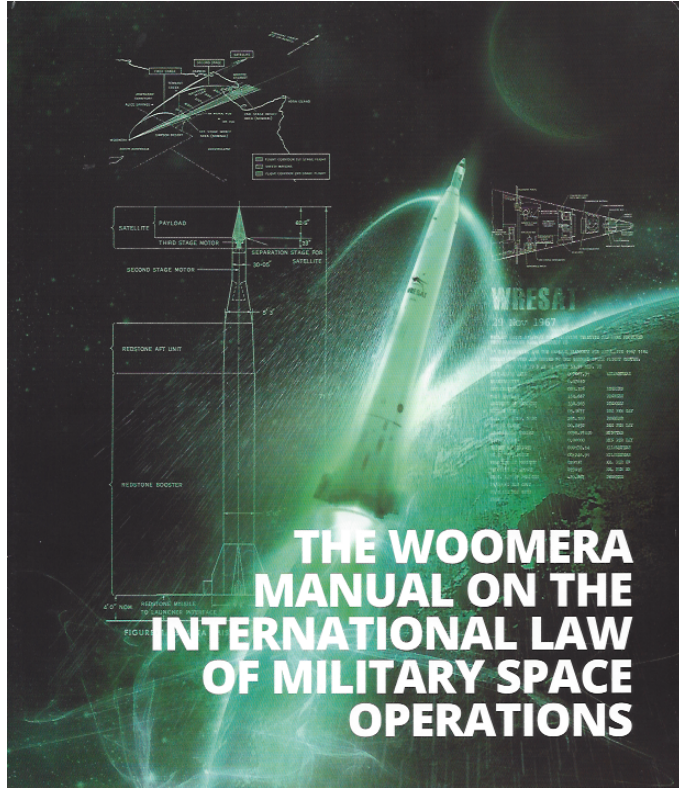
Phase 3 (VIII/23–now)

- ◆ Musk (presumably?) spoke with Putin (VIII/23)
- ◆ Russia: ‘Western satellites used to help Ukraine could become legitimate targets for retaliatory strike’
- ◆ Cyberattacks directed against terminals
- ◆ Service in Crimea continues to be disabled
- ◆ Criticism power Musk to make major politico-strategic decisions which should be domain US government
- ◆ Russian use of Starlink system (?)

Legal issues *revisited*

- ◆ To what extent would US be responsible (& liable) for Starlink's support to Ukraine?
- ◆ To what extent would Starlink satellites present legitimate targets for retaliatory action?
- ◆ To what extent could US claim Russian liability for Starlink losses?
- ◆ To what extent would US become responsible under international law for supporting aggressor?

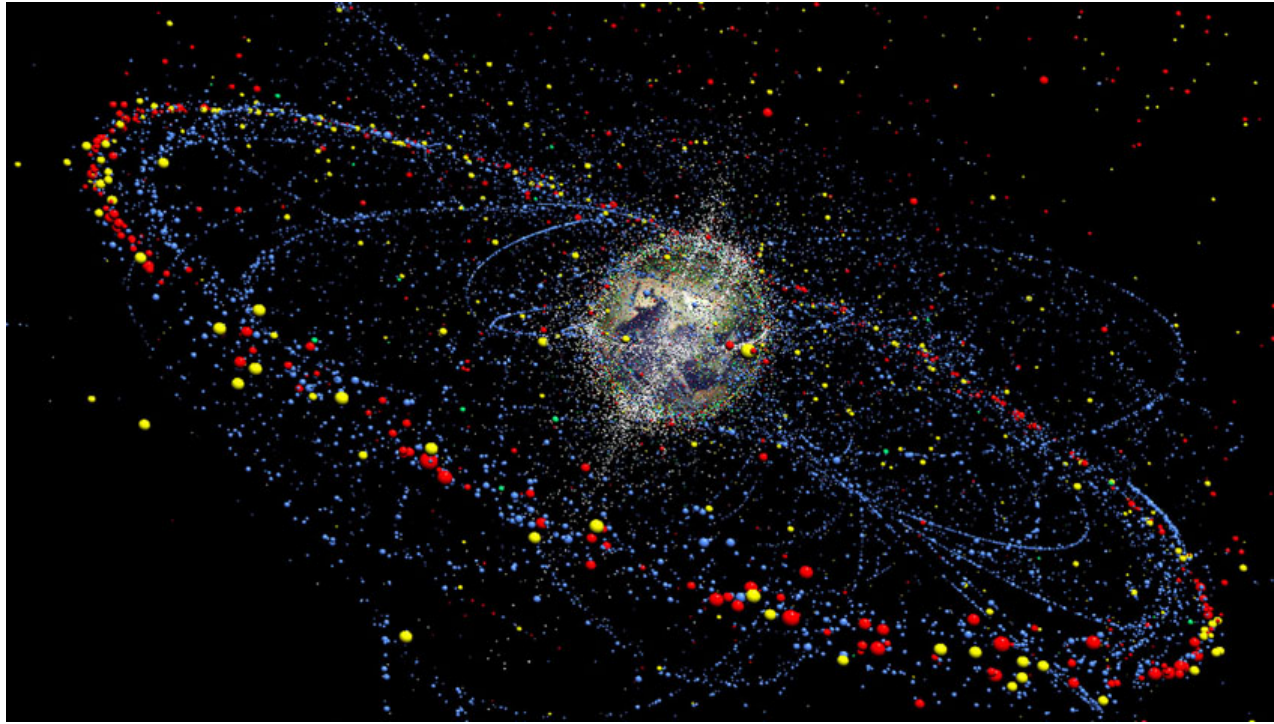
Woomera Manual...



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3. Space debris & 'beyond'



Space debris



Space
sustainability



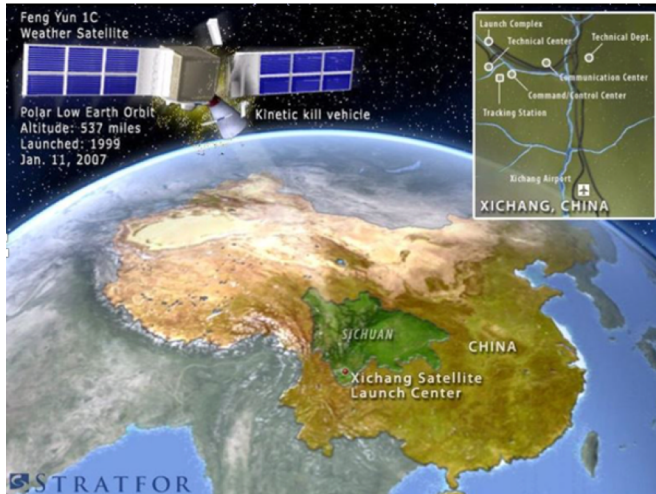
Space Traffic
Management

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Baseline legal issue – space debris

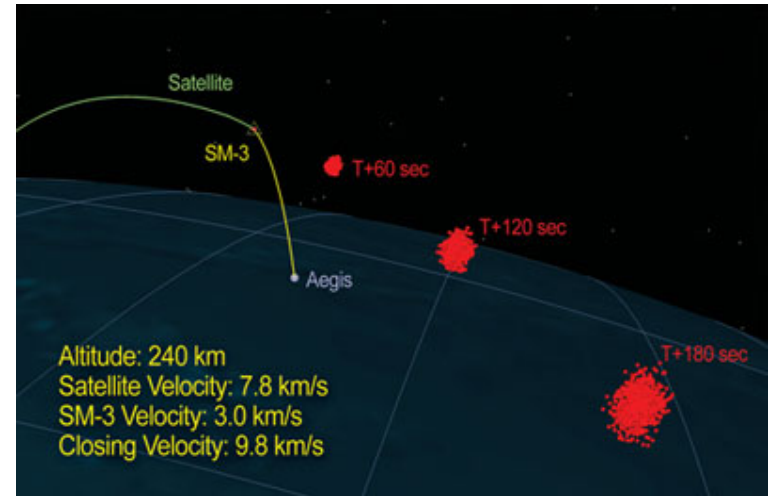
- ◆ Art. IX, OST, apart from ‘due regard’ only requires consultation in case of likely serious harm...



← 2007

Feng
Yun 1C

2008 →
USA-193

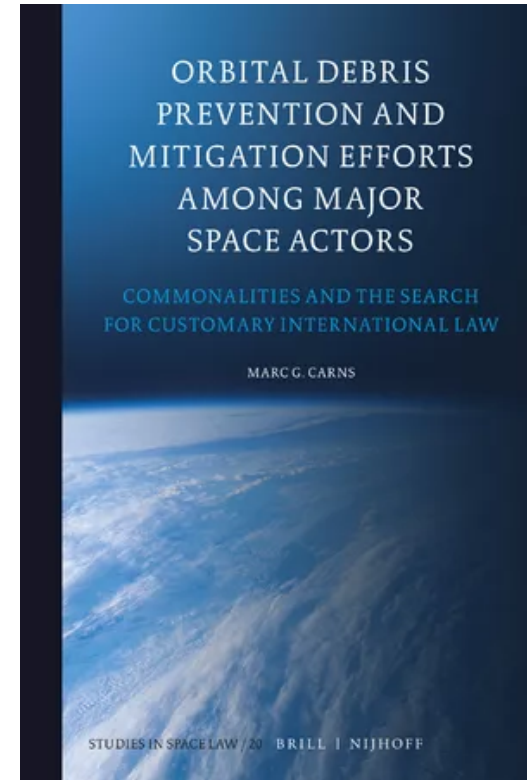


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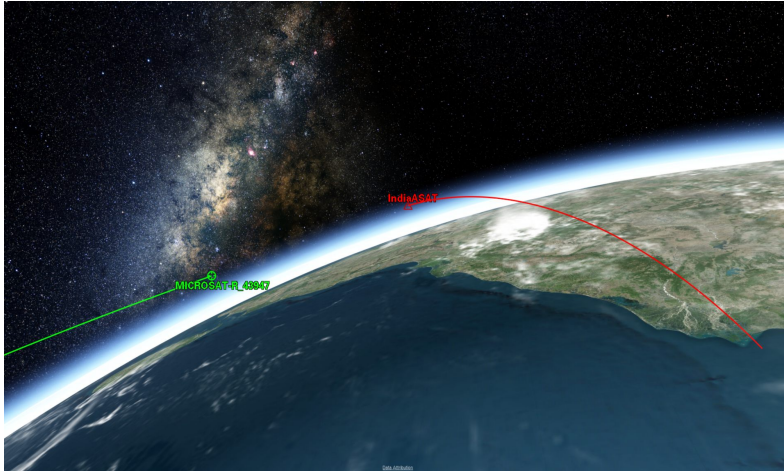
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→ Customary international law?

- ◆ IADC Guidelines 2002 → COPUOS Guidelines 2010 → voluntary compliance main agencies & increasing domestic implementation
 - Focus on LEO & GEO
 - Main strategies: 1. limit release debris normal operations; 2. minimize likelihood in-space disintegration; 3. post-mission disposal; 4. avoid in-space collisions

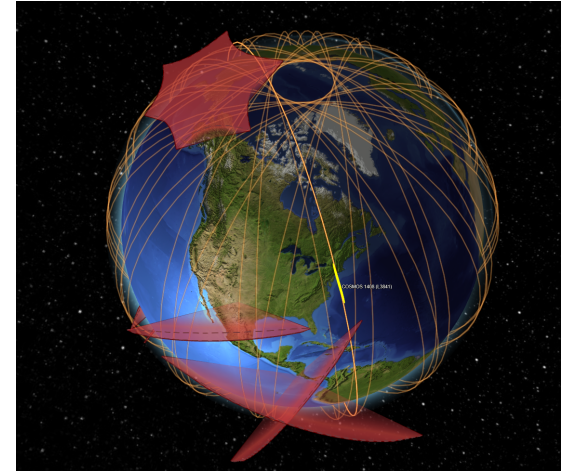


Alas...



← 2019
Microsat-R

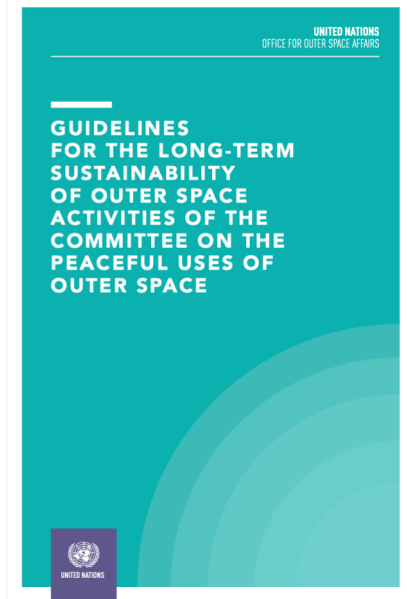
2021 →
Kosmos 1408



- 2022 UN resolution on ASAT test ban
- Following US announcement unilateral moratorium
 - Vote: 154–8 (...! ...?); 8 other States followed US example

Baseline legal issue – sustainability

- ◆ Moving beyond (wanton creation) space debris proper → beyond Art. IX, OST
- ◆ 2008 International Code of Conduct for Outer Space Activities (ICoC)
- 2021 UN Guidelines for the Long-term Sustainability of Outer Space Activities



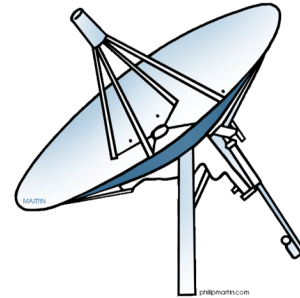
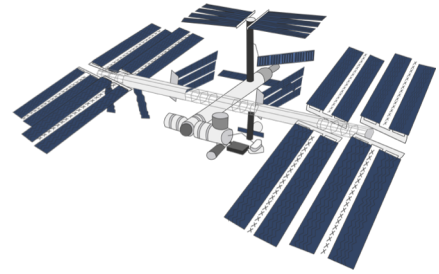
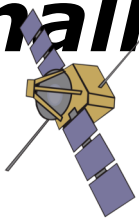
Main thrust UN Guidelines

- A. Develop domestic policy & regulatory frameworks also addressing supervision, frequency use & registration space objects
- B. Share information & data relevant for safe operations
- C. Promote general international cooperation & capacity building
- D. Promote & support scientific & technical research & development

Baseline legal issues – STM

- ◆ Moving to full-fledged space traffic management (?)
- ◆ Pursuant to State responsibility (Art. VI, OST), State liability (Art. VII, OST), registration (Art. VIII, OST & 1975 Registration Convention) & ITU regime
- How to realign some measure of binding STM with freedom of space activity (Art. I, OST) & absence of territorial sovereignty in outer space (Art. II, OST)?
 - *Cf.* ATM international airspaces?

A challenge of *mic proc* ...



A challenge of cosmic proportions...

- ◆ *Apart from strictly-international-law & political obstacles:*
 1. Given speeds & sizes: requirement of very high-level of SSA
 2. Majority of space objects without humans & maneuverable only with great difficulty/at great cost
 3. Majority of non-human-carrying space objects not controlled anymore

4. Privatization: race to the bottom?

- ◆ ±1970 onwards: commercial satcom operations
- ◆ ±1980 onwards: commercial launch operations
- ◆ ±1985 onwards: (efforts towards) commercial satellite remote sensing
- ◆ ±2005 onwards: (efforts towards) commercial suborbital (& orbital) spaceflight
- ◆ Towards ADR, OOS, space mining...



Baseline legal issue (\approx repeat)

- ◆ Art. VI, OST, makes States directly internationally responsible for private space activities qualifying as “national activities” – & *requires* them to authorize & continuously supervise those!
- & Art. VII, OST, & 1972 Liability Convention make States directly liable for damage caused by private space activities as ‘launching States’ – *providing strong stimulus* to authorize & supervise those, too...

→ National space legislation

- ◆ Including system for authorization & continuing supervision, & handling international State liability



***De facto* harmonization...**

- ◆ Scope *ratione personae* of authorization regimes:
 - Nationals, including companies with nationality
 - Anyone operating on national territory
 - (Usually) anyone operating from quasi-territories
- ◆ Inclusion of obligations to reimburse government on international third-party/tort liability claims
 - (Often) also addressing national third-party/tort liability claims
- ◆ (Usually) single government agency established

...versus de facto fragmentation

- ◆ *Scope ratione materiae* of authorization regimes
 - Sometimes launch operations or satcom operations or satellite remote sensing operations only
 - Many States have no (proper) authorization regime at all...
- ◆ Details third-party/tort liability regimes:
 - Insurance sometimes mandatory, sometimes not
 - Third party/tort liability sometimes capped, sometimes not
 - If capped, sometimes fixed cap, sometimes ‘tailor-made’
 - Sometimes interparty/contractual liability also addressed

'Cheap flags' & 'license shopping'?

◆ Case of launch of Swarm's SpaceBees in 2018

↔ Different from flags of convenience on the high seas:

- *'The beauty of space law'*: States fully responsible & liable for compliance with international law & international damage resulting from activities conducted from national territory
- & *'The reality of the space business'*: launch phase still by far most dangerous phase of space operations

