

European Space Law – Part II

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Space Law: European Framework
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2002 ICT convergence package

- ◆ Directives 2002/19, /20, /21, & 22 on general regime
- ◆ Directive 2002/77 on competition aspects
- ◆ Decision 676/2002 on radio spectrum
- ◆ Directive 2002/58 on privacy & data access in highly electronic communication environment

Directive 2002/21 (1)

- ◆ Harmonized regulatory framework for all electronic communication networks & services (*'Framework Directive'*)
 - Determines authority & powers NRAs (Art. 1(1))
 - No prejudice to national law in accordance with EU law, or measures taken at EU / national level, in compliance with EU law, for general interest objectives (Art. 1(2) & (3))

Directive 2002/21 (2)

◆ Definitions (Art. 2)

- (a) Electronic communications network (ECN) =
“transmission systems & other resources which permit conveyance of signals by wire, radio, optical or other electromagnetic means, including satellite networks (...), as used for transmitting signals, networks used for radio & TV broadcasting, & cable television networks, irrespective of type of info conveyed”

Directive 2002/21 (3)

◆ Definitions (Art. 2) – *ctd.*

- (c) Electronic communications service = service normally provided for remuneration wholly or mainly conveying signals on ECN
- (b) Transnational markets = markets covering EU or substantial part thereof
- (d) Public communications network = ECN used wholly or mainly for provision of publicly available electronic communications services

Directive 2002/21 (4)

◆ NRA authorities & powers

- Safeguard internal market (Art. 7(2))
- Promote ‘technological neutrality’ (Art. 8(1))
- May contribute to implementation of policies on cultural & linguistic diversity, & media pluralism (Art. 8(1))

Directive 2002/21 (5)

- ◆ NRA authorities & powers – *ctd.*
 - Promote competition (Art. 8(2)), incl.:
 - (a) Users, incl. disabled users, shall derive maximum benefit in terms of choice, price, & quality
 - (d) Efficient use & management radio frequencies & numbering resources
 - Promote interests citizens EU (Art. 8(4)), incl.:
 - (a) Access for all citizens to a universal service
 - (c) High level of protection personal data & privacy

Directive 2002/20

- ◆ Further harmonization national rules for authorizing any relevant services (*'Authorization Directive'*)
 - Focus on technical neutrality
 - Art. 5(1): m/s shall, if risk harmful interference is negligible, include radio-frequency use in general authorizations

Directive 2002/19

- ◆ General regime on access & interconnection (*'Access Directive'*)
 - Starting point: commercial negotiations market players
 - Obligations may need to be imposed *re* access on operators with significant market power
 - To 'correct' uneven negotiation powers
 - NRAs may interfere if negotiations would fail
 - *E.g.* impose end-to-end connectivity obligations upon operators

Directive 2002/22 (1)

◆ *‘Universal Service Directive’*

- Defines minimum set of services to which all end-users must have access
 - Art. 3(1): guaranteed availability universal service at quality specified by Directive
 - Art. 4(1): reasonable requests for connection at a fixed location to be met by at least one company
 - Art. 6(1): public pay telephones for reasonable needs
 - Art. 7: specific measures for disabled end-users

Directive 2002/22 (2)

◆ Role undertakings

- Art. 8: m/s may designate undertaking(s) to guarantee provision universal service so that whole national territory can be covered, by efficient, objective, transparent & non-discriminatory designation mechanism
 - Rules on quality (Art. 11), fair costing (Arts. 10, 12), state aid (Arts. 12, 13) & transparency (Art. 14)
- Regulatory controls undertakings with significant market power in specific markets (Arts. 16-19)

Directive 2002/77 (1)

◆ Competition markets ECN & services

- Repeals Dir. 90/388 (Art. 10)

◆ Art. 2: Exclusive & special rights

(1) No more – for ECN or publicly available ECS

(2) Any undertaking entitled to provide ECS or ECN

(3) No restrictions imposed / maintained

(4) General authorization: objective, non-discriminatory,
proportionate & transparent criteria

Directive 2002/77 (2)

◆ Art. 4: Rights of use of frequencies

- (1) No exclusive / special rights of use of radio frequencies for provision of electronic communications services
- (2) Assignment to be based on objective, transparent, non-discriminatory & proportionate criteria

◆ Art. 6: Universal service obligations

- (1) National schemes to share cost of universal service proportional & with least market distortion

Directive 2002/77 (3)

◆ Art. 7: Satellites

- (1) No regulatory prohibitions / restrictions allowed anymore on the offer of space segment capacity to any duly authorized satellite earth station network operator
- (2) M/s party to international conventions setting up international satellite organizations shall, where such conventions are not compatible with competition rules TFEU, take all appropriate steps to eliminate such incompatibilities (...!)

Decision 676/2002

- ◆ Regulatory framework radio spectrum policy in EU (*'Radio Spectrum Decision'*)
- ◆ Due account t/b taken of IGOs incl. ITU & CEPT (Art. 1(3))
- ◆ Definition 'radio spectrum' (Art. 2)
 - Radio waves between 9 kHz and 3000 GHz – radio waves = electromagnetic waves propagated in space without artificial guide

Directive 2002/58 (1)

- ◆ Concerning processing of personal data & protection of privacy in electronic communications sector
 - Art. 1(1): harmonizes provisions national law to ensure equivalent protection level fundamental rights & freedoms, in particular right to privacy, with respect to processing of personal data; & to ensure free movement of such data & electronic communication equipment & services

Directive 2002/58 (2)

◆ Exceptions to application

- Art. 1(3): activities outside scope TFEU, *e.g.* activities concerning public security, defence, state security (incl. economic security) & state activities in areas of criminal law
- Art. 2(d): info conveyed as part of broadcasting service to the public over ECN to extent info can not be related to identifiable subscriber / user

Directive 2002/58 (3)

◆ Measures of protection

- Art. 4(1): provider must take appropriate technical & organizational measures to safeguard security services
- Art. 5(1): m/s must ensure confidentiality communications & related traffic data & shall prohibit any kinds of interception / surveillance of communications & related traffic data by persons other than users, without consent users concerned, except when legally authorized to do so

Directive 2002/58 (4)

◆ Exceptional circumstances

- Art. 15(1): m/s may adopt legislative measures to restrict scope rights & obligations where necessary, appropriate & proportionate within a democratic society to safeguard national security, defence, public security, & prevention, investigation, detection & prosecution criminal offences / unauthorized use electronic communication system on a temporary data basis – all as long as in conformity with EU law

State of the Internal Market?

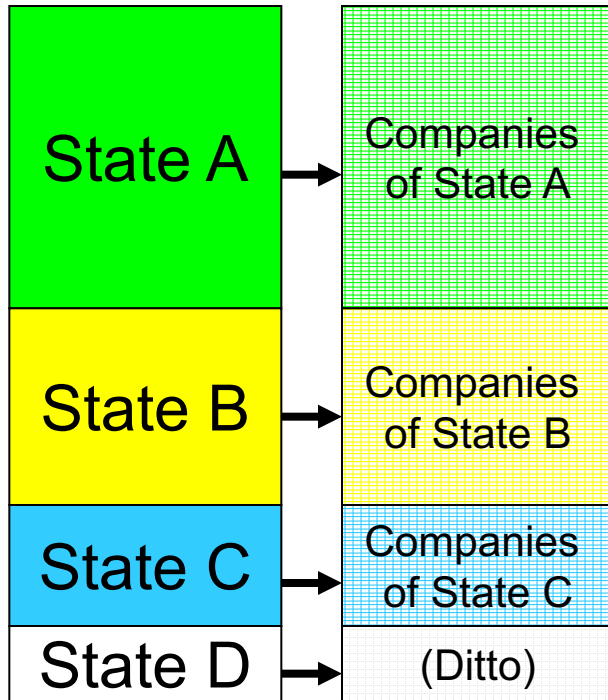
- ◆ Still no system of EU-licensing – only some mutual recognition & harmonized conditions
 - ↔ Nothing comparable to FCC in US context
 - 2002 package overhauled ‘outdated’ regulatory obstacles based on ‘old’ technical boundaries
 - ➔ Harmonization at least in terms of technological process & in the process also further erosion of m/s discretion to regulate as they like

Back to Europe at large: ESA & EU

- ◆ Spurious contacts since late 70s
 - Some technical projects in telecoms
 - But EU involvement in telecoms → satcoms took place completely outside of / without ESA
- ◆ Starting point ESA–EU cooperation:
 - Support for R & D incl. space under Single European Act (1986)
 - Support for ESA – ‘fair return’ (...?)

'Fair return' and competition (1)

◆ Project budget:



◆ *Could qualify as indirect form state aid under EU law*

- Concerns commercial 'undertakings'
- Companies of A clearly best chance of work

↔ Art. 107(1), TFEU

→ Is ESA (ab)used to 'circumvent' prohibition of state aid...?

'Fair return' and competition (2)

◆ Fair return \approx silently accepted

- Justified by special character space sector
 - Concerns R & D; specific structure space sector; interests in European competitiveness world-wide
 - Legal parameters
 - Exceptions under TFEU: if important project of EU-scope / for development economic activities (Art. 107(3), (b) & (c))
- ↔ Also ESA Convention requires efforts to “exploit advantages competitive bidding” (Art. VII(g))

ESA-EU convergence (1)

- ◆ Cooperation institutionalized as of 1992
 - Space Advisory Group (1993)
 - European Space Strategy (2000)
 - 1st joint meeting ESA Council & EU Council
 - Strengthening foundations space activities – launching in particular (Lead = ESA)
 - Enhancing scientific knowledge – *e.g.* ISS (Lead = ESA)
 - Reaping benefits for society & markets – *e.g.* through joint projects (Lead = EU)

ESA-EU convergence (2)

◆ EU gradually more dominant

→ Commission White Paper (2003)

- “Space: a new European frontier for an expanding Union – An action plan for implementing the European Space policy”
- Support space infrastructures & applications, for needs citizens & EU political objectives; consolidate scientific & technical basis space activities; update institutional structure EU
- EU & ESA distinct roles in space
 - ‘Federating demand’ *versus* ‘federating supply’

Institutional options (1)

◆ Status quo

- Inefficiency & lack of coordination ...?

◆ Status quo-plus

- More institutionalized cooperation

◆ EU absorbs ESA

- ESA as executive arm EU (Commission)
 - But: (lack of) expertise & capacity issues Commission
 - Exx.: European Environmental Agency; WEU

Institutional options (2)

- ◆ EU becomes member of ESA
 - Exx.: Eurocontrol (provisionally) & WTO
 - Depending upon the extent to which EU has exclusive / shared competence (...!)
 - ‘Not two captains on the spaceship, but ESA as captain & EU on the board of the shipping company’
 - ESA essentially itself a platform for national space policies – with its own prodding & part-shaping to mould that into some sort of European space policy

Reading break – 1

◆ *EC–ESA Framework Agreement*

Framework Agreement (1)

- ◆ EC–ESA, 25/XI/2003
- ◆ Art. 1: overarching aim
 - Coherent & progressive overall European space policy
 - Linking demand services & applications using space systems to supply space systems & infrastructure
- ◆ Art. 2: cooperation
 - Due regard respective tasks, responsibilities, settings & operational frameworks

Framework Agreement (2)

- ◆ Art. 4: each party compliant with own rules
- ◆ Art. 3: fields of cooperation – *everything...*
- ◆ Art. 5(1): ‘joint initiatives’
 - ESA manages for EU (& under EU law)
 - EU participates in ESA optional programme
 - Jointly coordinated & funded activities
 - Creation joint subsidiary bodies

Framework Agreement (3)

- ◆ Art. 5(2): *ad hoc* arrangements, *e.g.*:
 - Rules on IPR & other property rights
 - Respective roles & financial implications
 - ‘Industrial policy scheme’ (...!)
- Art. 5(3): financial contributions
 - Any contribution governed by financial provisions respective party & ‘under no circumstances EU bound to ‘geographical distribution’

Framework Agreement (4)

- ◆ Art. 8(1): establishment Space Council
 - Coordination & facilitation cooperative activities
 - Drafting European Space Policy (2007)
 - Extended to security- & defence-related areas, Space Situational Awareness, industrial policy & int'l relations
 - Preferred model: ESA acting as technical expert, manager of EU space activities & procurement agency for EU – applying EU law principles
 - Self-financed ESA programmes untouched

Emerging pattern

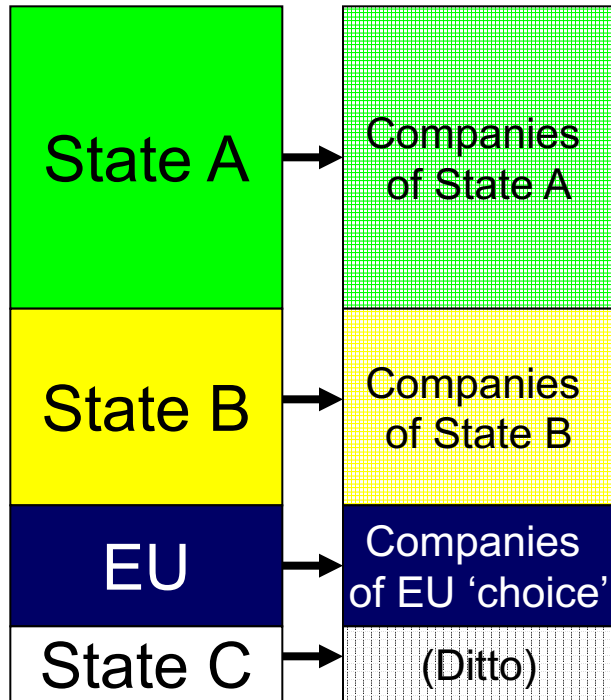
- ◆ EU starts shaping policy through ESA
 - *I.e.* not instead of ESA / by directing ESA
 - Using various options Framework Agreement
 - Joint initiatives: Galileo & GMES/Copernicus
 - ESA gradually receding with growth political / general consideration
 - Failure of Galileo PPP forced Commission to rethink insistence on private participation / role markets in space industry incl. ‘fair return’
 - Use by EU of more procurement-related instruments
 - & Use by EU of ESA through optional programmes

Flexibility & gradualness

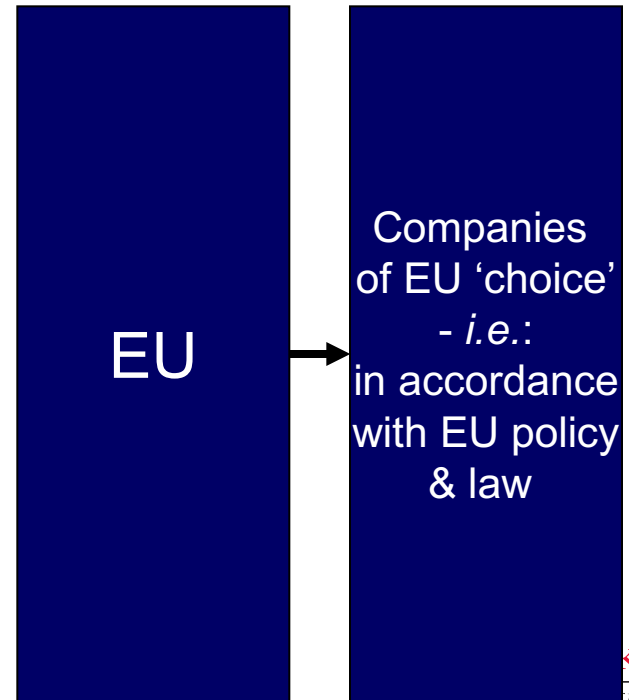
- ◆ EU first steps ‘on board’ ESA as ‘one of the m/s’
 - EU portion for EU policies’ purposes
 - Open competition – no ‘fair return’ for that portion
 - ‘Second chance’ for ‘losers’ national portions
 - Favouring ‘European Companies’ & SMEs
- ◆ As EU competencies & activities grow, so will measure of competition ...

'Fair return' and competition (3)

◆ Fair return Mk. II



◆ Fair return Mk. III



The EU 'space competence' (1)

◆ European Constitutional Treaty (2004)

- Art. I-3: includes space in new objectives EU
§ 3: to promote scientific & technological advance
- Art. I-14: on shared competences
§ 3: 'On research, technological development & space, EU shall have competence to carry out activities, in particular to define & implement programmes; exercise thereof competence shall not result in EU m/s being prevented from exercising theirs.'

→ Actually a parallel competence

The EU 'space competence' (2)

◆ European Constitutional Treaty – *ctd.*

■ Art. III-254: space policy

§ 1: to promote scientific & technical progress, industrial competitiveness & policy implementation, EU shall draw up European space policy & may promote joint initiatives, support R & TD & coordinate efforts exploration & exploitation of space

§ 2: 'To contribute to objectives § 1, European laws or framework laws shall establish necessary measures, which may take form of European space programme.'

§ 3: EU to establish appropriate relations with ESA

The EU 'space competence' (3)

◆ European Constitutional Treaty – *ctd.*

= *First* EU 'space competence'? \leftrightarrow Sector-wise:

- Space-related R & D since 1986 (Single European Act)
- Satellite communications since 1994 (Satellite Directive)
- 'Fringe' competencies: 1996 Database Directive (96/9)
- Satellite navigation since 2002 (Reg. 876/2002 on GJU)
- Satellite EO since 2010 (Reg. 911/2010 on GMES)

\leftrightarrow Overarching competence on anything related to space activities in / from EU ...

The EU 'space competence' (4)

→ Treaty of Lisbon (2007/2009)

- Art. 4(3) copies Art. I-14 ('parallel competence')
- Art. III-254 'replaced' by Art. 189, TFEU

§ § 1, 3: have remained identical

§ 2: to attain objectives § 1, EP & Council, acting in accordance with ordinary legislative procedure, shall establish necessary measures, which may take form of European space programme, *excluding any harmonization laws & regulations m/s*

§ 4: without prejudice to other provisions Title

The EU 'space competence' (5)

◆ Treaty of Lisbon – *ctd.*

- EU space competence in legal terms now limited to adoption secondary EU law ...
 1. ... establishing space project or space programme & taking care of financing through EU budgets; or ...
 2. ... applying freedoms of movement & competition regime to space sector (key aspects Internal Market) to the extent EU m/s have not already established / are interested in establishing national space law dealing with these aspects of space sector activities

Then 'space tourism' arrived...

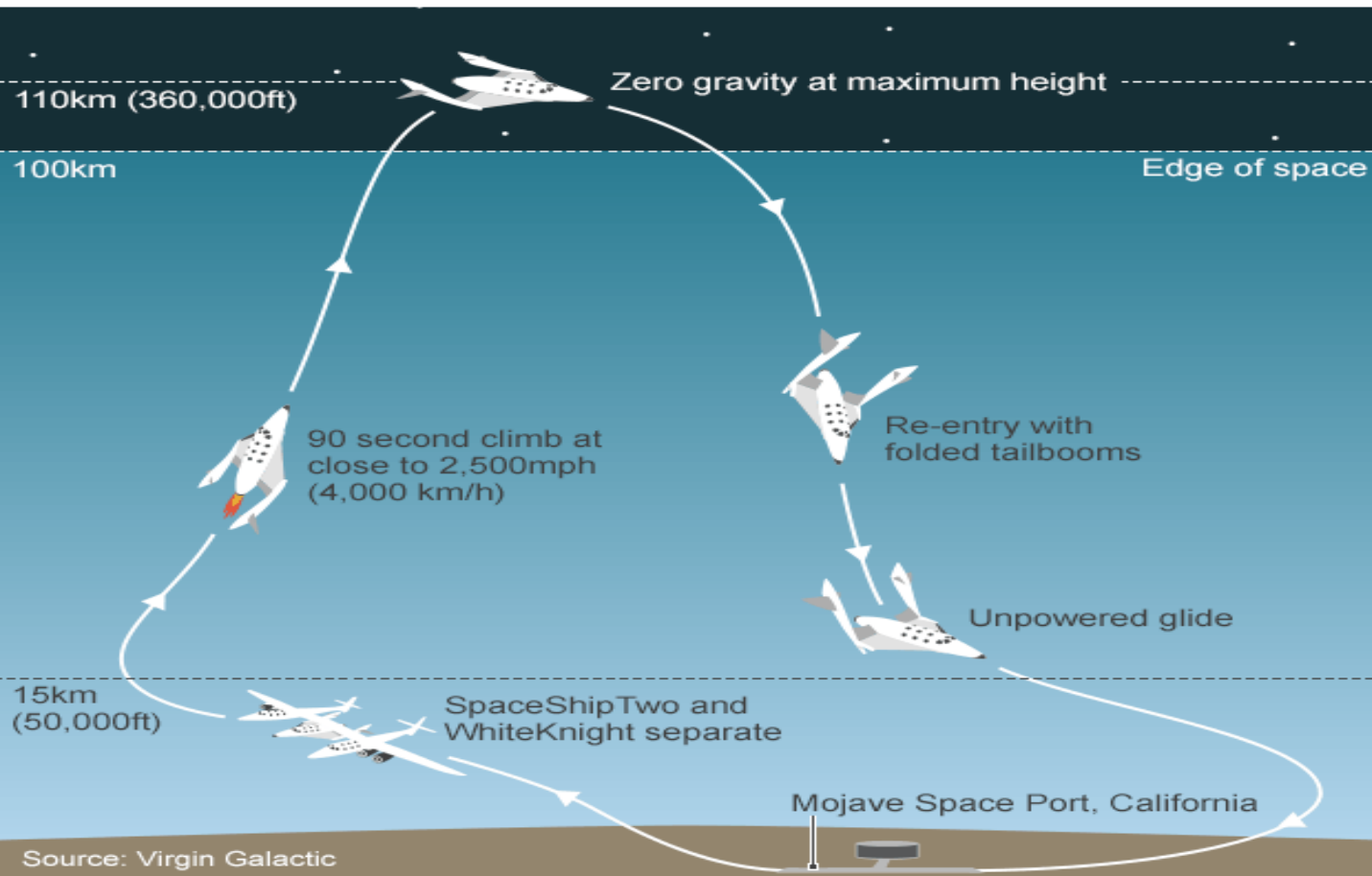
◆ Onwards from the X Prize

- 1996: 10 M US\$; 3 persons; 2 flights > 100 km
- X/2004: Scaled Composites wins X Prize
 - SpaceShipOne (to \pm 105 km)
- Virgin Galactic buys technology
 - Plans 1st flights SpaceShipTwo now 2018/9?
 - 6 passengers; up to \pm 120 km; 5 mins non-gravity
 - 200,000 US\$ p/p – later down to 50,000

Virgin Galactic WhiteKnightTwo plus SpaceShipTwo



SpaceShipTwo flight plan



Source: Virgin Galactic

XCOR Lynx



Other sub-orbital projects

Armadillo
Aerospace
Pixel
rocket



Blue Origin New Shepard



Boeing CST-100 – docking with International Space Station



Orbital projects

Blue Origin orbital spacecraft



Sierra Nevada Corporation Dream Chaser



...or rather 'private spaceflight'

- ◆ More legally precise term
 - Level of participation of private entities is key
 - Private operators offering flights and / or private individuals flying and / or flights being to privately-owned 'destinations'
 - Distinction suborbital & orbital gradual
- ◆ How to regulate? Air law versus space law!?
 - Depends on 'aircraft or spacecraft' & on 'airspace or outer space'

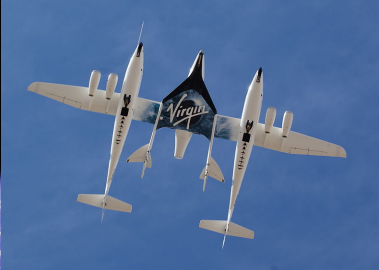
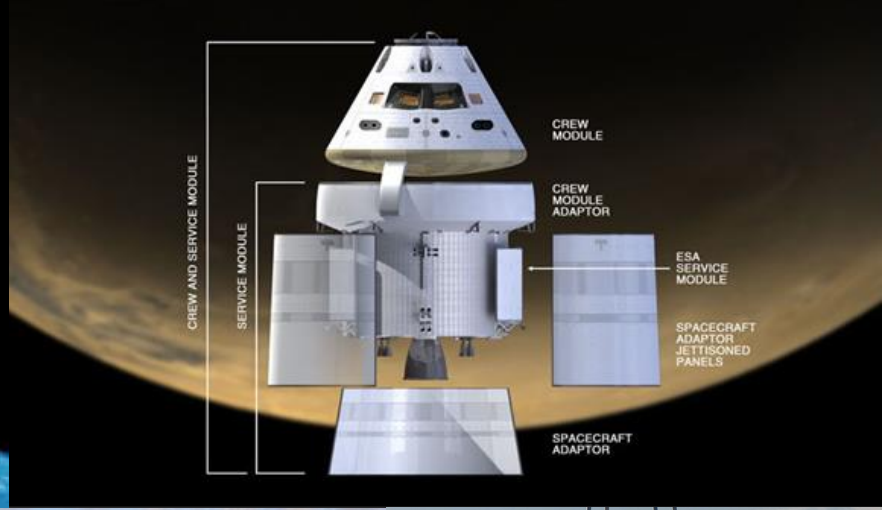
Aircraft or spacecraft?

- ◆ Aircraft = “Any machine that *can* derive support in the atmosphere *from the reactions of the air* other than the reactions of the air against the earth’s surface”



Aircraft or spacecraft?

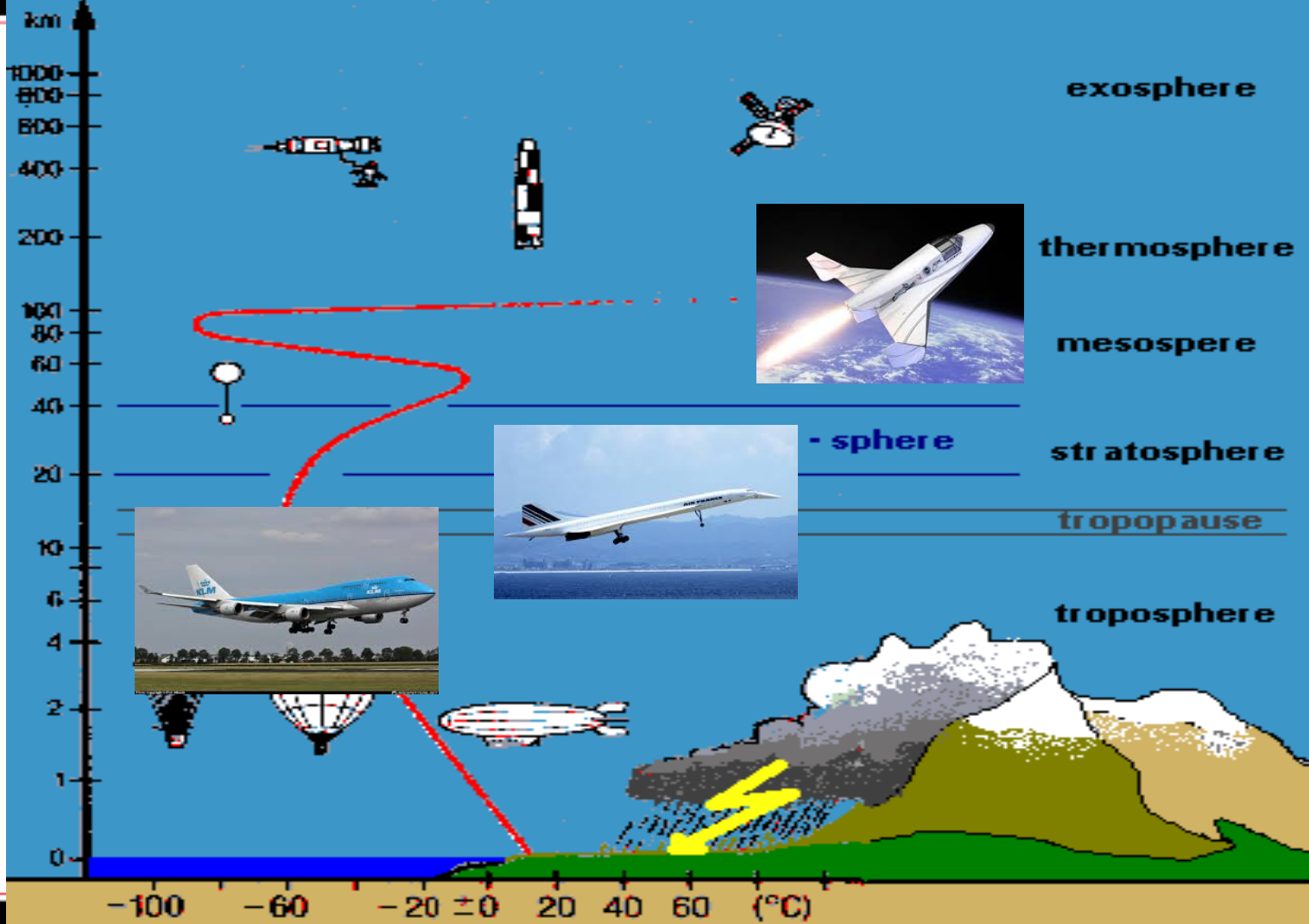
- ◆ Aircraft = “Any machine that *can* derive support in the atmosphere *from the reactions of the air* other than the reactions of the air against the earth’s surface”
- ◆ Space object = ‘Any man-made object intended to be sent into outer space’ – *including component parts & launch vehicle*



Nebraska Law

University of Nebraska

Air space or outer space?



The boundary issue

- ◆ Tendency to convergence – on 100 km
 - Various proposals for international treaties & documents
 - Russia, China, Germany, Pakistan
 - Several national laws
 - Australia, Kazakhstan, Nigeria, Denmark – & EU Regulation
 - Even in the US in some documents of differing kinds
 - Virginia draft statute, FAA astronaut wings, export controls
 - Various private initiatives

Reading break – 2

- ◆ *Arts. VI–VIII, XIII, Outer Space Treaty*
- ◆ *Arts. I–III, XXII, Liability Convention*
- ◆ *Arts. I–II, VI, Registration Convention*

The US applied space law (1)

- ◆ Decided not to use air law & regulation – lack of experience & considered too burdensome
- ◆ 1984 Commercial Space Launch Act
 - Licenses required for launches from US territory & facilities / by US citizens & for operation of launch site on US territory / by US citizens; both incl. by non-US operator if controlled by US citizens
 - Liability: full reimbursement US government for use of governmental facilities & third-party claims

The US applied space law (2)

- ◆ 1988 Amendments – mainly on liability
 - Obligations to compensate damage to federal launch site if used & obtain proper insurance up to certain level
 - The lesser of: Maximum Probable Loss / US\$ 100 million / reasonably insurable contractual liability coverage
 - Waiver of liability *vis-à-vis* other partners to launch
 - Third-party liability: same as inter-party liability *vis-à-vis* government
 - Except: maximum maximum now US\$ 500 million

The US applied space law (3)

MPL

Chance
such
damage
would
occur

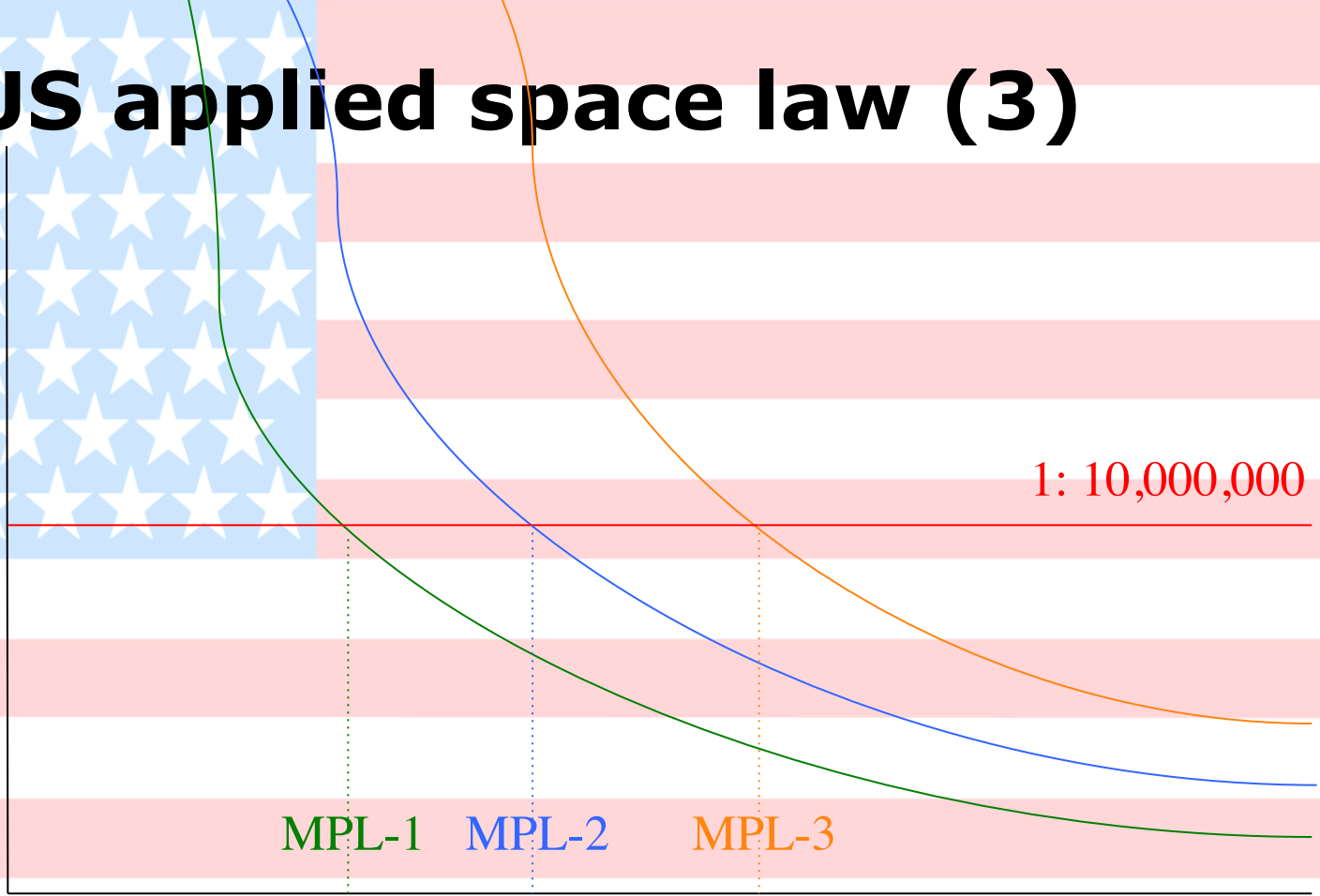
1: 10,000,000

MPL-1

MPL-2

MPL-3

Size of damage



The US applied space law (4)

◆ The practice on MPL:

- Contractual liability for use federal launch sites
 - Maximum of US\$ 100 million has occasionally been quoted
 - SpaceShipOne flights of 2004: MPL of US\$ 0 ...
 - Launch from private launch site – no issue for any MPL
 - Meanwhile handful such sites being developed & licensed
- Third-party liability
 - Maximum MPL imposed so far: US\$ 261 million
 - SpaceShipOne flights of 2004: MPL of US\$ 3.1 million

The US applied space law (5)

- ◆ 2004 Amendments – to adapt Commercial Space Launch Act to manned launch & re-entry
 - Possibility for experimental permit next to license
 - Inter-party liability regime continues to apply
 - Third-party liability regime continues to apply
- No contractual liability to ‘spaceflight participants’ but ‘informed consent’ regime & waiver of liability – for the time being...

The EU and the space treaties

- ◆ Under Outer Space Treaty EU remains effectively ‘classical IGO’ = platform for cooperation sovereign states
- ◆ EU has never deposited declaration regarding Liability Convention & Registration Convention
 - Responsibility, authorization & continuing supervision → licensing, liability & registration all remain prerogative EU m/s

The EU competences – *revisited*

◆ Air law:

- Internal Market for aviation \approx established
- European Aviation Safety Agency controls licensing, certification & safety standardization
- EU (almost) member Eurocontrol for ATS / ATM / ATC

↔ Space law:

- ‘No harmonization national laws & regulations’
- What national space laws are there in EU?

So far, seven EU member states...

- ◆ Sweden
- ◆ United Kingdom
- ◆ Belgium
- ◆ Netherlands
- ◆ France
- ◆ Austria
- ◆ *Denmark*

...and six with \approx serious projects

- ◆ Sweden
- ◆ Scotland & England = United Kingdom
- ◆ Curacao = Netherlands
- ◆ Catalonia = Spain \leftrightarrow *no national space law!*
- ◆ France?
- ◆ *Denmark?*

Sweden (1)

- ◆ 1982 Act on Space Activities
 - License required for space activities ... (Sec. 1)
 - Activities carried out entirely in outer space
 - Incl. launching & operation of space objects
 - Excl. launching of sounding rockets
 - ... from Sweden / elsewhere by Swedish citizen / company (Sec. 2)

Sweden (2)

- ◆ 1982 Act on Space Activities – *ctd.*
 - Licensee required to provide full reimbursement for international liability claims paid by Swedish government “unless special reasons tell against this” (Sec. 6)
 - No *statutory* insurance obligations
- ◆ 1982 Decree on Space Activities
 - Registration by National Board (Sec. 4)

United Kingdom (1)

◆ 1986 Outer Space Act

- License required for ... (Secs. 1, 3)
 - Launching
 - Procurement of launch
 - Operation of space object
 - Any other activity in outer space
- License required for UK nationals (Sec. 2)
- *Note: Spaceflight Bill currently under discussion...*

United Kingdom (2)

- ◆ 1986 Outer Space Act – *ctd.*
 - Licensee shall reimburse government for “any claims brought against the government in respect of damage or loss arising out of activities carried on by him” (Sec. 10)
 - Insurance & liability now capped at € 60 million (further to Sec. 5)
 - Registration by Secretary of State (Sec. 7)

Belgium (1)

- ◆ 2005 Law on the activities of launching, flight operations or guidance of space objects
 - Authorization required for space activities (Art. 4)
 - Launching, flight operations & guidance of space objects
 - Authorization required for such activities if conducted from within jurisdiction Belgium (Art. 2)
 - & If provided for by international agreement: also by Belgian national regardless of where carried out

Belgium (2)

- ◆ 2005 Law on the activities of launching, flight operations or guidance of space objects – *ctd.*
 - Government entitled to reimbursement from authorized operator for international claims (Art. 15)
 - Reimbursement *may* be limited (Art. 15)
 - Insurance requirement *may* be imposed (Art. 5)
 - Registration by government (Art. 14)

Netherlands (1)

- ◆ 2007 Law incorporating rules concerning space activities
 - License required for space activities (Sec. 3)
 - Launch, flight operation or guidance space objects in outer space
 - License required for such activities if performed in the Netherlands / on Dutch ships / aircraft
 - & If performed not from within jurisdiction of state party to Outer Space Treaty by Dutch citizens elsewhere (Sec. 2)
 - *Not applicable to Dutch Antilles!*

Netherlands (2)

- ◆ 2007 Law incorporating rules concerning space activities – *ctd.*
 - Government entitled to redress by licensee of international claim (Sec. 12)
 - Insurance limited to “maximum possible cover”; limit also applicable to redress obligation (Secs. 3, 12)
 - Registration by government (Sec. 11)

France (1)

◆ 2008 Law on Space Operations

- Authorization required for launching space object from – or returning it to! – French jurisdiction (Art. 2(1))
- Authorization required for French operator launching or returning space object elsewhere (Art. 2(2))
- Authorization required for French operator procuring launch / commanding “an object during its journey in outer space” (Art. 2(3))

France (2)

- ◆ 2008 Law on Space Operations – *ctd.*
 - Third-party liability arranged per two tier-structure (Arts. 13-16)
 - 1st tier: government pays international claim & requires reimbursement by authorized entity up to amount determined by Finance Act – currently € 50–70 million
 - 2nd tier: government pays international claim & ... will not be reimbursed by authorized entity
 - Insurance required for 1st tier (Art. 6)

France (3)

- ◆ 2008 Law on Space Operations – *ctd.*
 - *Inter-party liability waived unless otherwise expressly stipulated (Art. 20)*
 - Registration by Centre National d'Etudes Spatiales (Art. 12)

Austria (1)

- ◆ 2011 Federal Law on the Authorization of Space Activities
 - Authorization required for all space activities (Sec. 3)
 - Launch, operation or control of a space object, & operation of a launch facility
 - Authorization required if such activities are carried out from Austria / vessels / airplanes registered in Austria / by Austrian nationals (Sec. 1)

Austria (2)

- ◆ 2011 Federal Law on the Authorization of Space Activities – *ctd.*
 - Insurance obligatory for authorization (Sec. 4)
 - Up to € 60 million
 - Government has right of recourse against operator for international claims up to insured amount (Sec. 11)
 - Registration by Minister for Transport, Innovation & Technology (Sec. 9)

The European Commission...? (1)

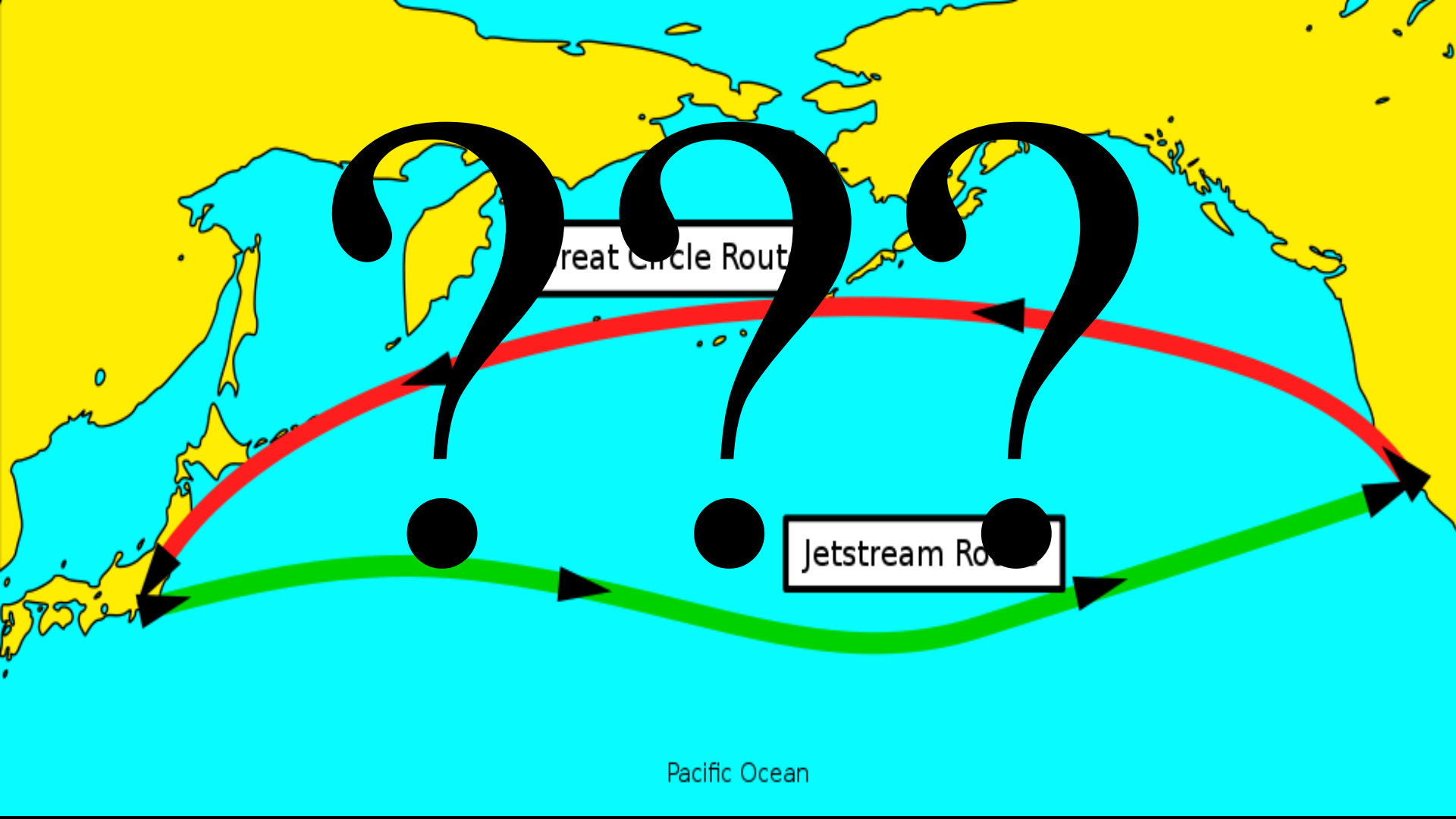
- ◆ National space laws including licensing of ‘space activities’ \leftrightarrow not much specificity on ‘private spaceflight’ such as in the US case ...?!
- ◆ ICAO investigations \rightarrow Working Paper 2005
 - Most vehicles involved in suborbital flight = aircraft
 - For the time being not opportune to develop Standards & Recommended Practices for suborbital vehicles
 - Only focus on safe integration spaceflight into aviation

The European Commission...? (2)

- ◆ EASA testing the waters...
 - Efforts to develop special certification regimes for suborbital vehicles on the basis of aircraft certification
 - To be followed in the further future with licensing & other safety issues
 - However, efforts put on hold around 2010
- Confusion reigns within Europe...
 - Cf. Sweden versus Curacao; & United Kingdom?

What changes if we move to ...





Great Circle Route

Jetstream Route

Pacific Ocean

***There is enough space out there
for space lawyers...***



Nebraska Law

University of Nebraska