

Legal and regulatory framework

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Legal and regulatory framework

23-09-2009

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Roadmap



1. Primary systems & augmentation
2. EGNOS & Galileo
3. General legal & regulatory framework
4. Governance
5. Frequencies
6. Liability
7. From upstream to downstream

Legal and regulatory framework

Introduction



- Primary systems (**GPS & GLONASS**)
 - Dependency military 1 (2) state(s)
 - ➔ No guarantees of service
 - Insufficient accuracy, continuity & availability
 - No integrity ('trustworthiness') (of info)
- ➔ Augmentation
 - Enhancing accuracy
 - Monitoring integrity & providing integrity info
 - ↔ Europe: augmentation systems *still* depend on primary

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EGNOS (1)



- **Eur Geostat Nav Overlay System**
 - Developed by European Tripartite Group
 - ◆ European Commission; ESA; Eurocontrol
 - 3 satellites in GEO ('SBAS')
 - ◆ 2 x Inmarsat; ARTEMIS dedicated ESA satellite
 - 44 ground stations
 - ◆ Coverage: Europe+; N Africa; M East
 - Enhancing GNSS for aviation in 1st place
 - ◆ But other usage – e.g. precision agriculture!
 - 2005: system operations started
 - ◆ Entrusted to Eur Sat Services Provider (ESSP)

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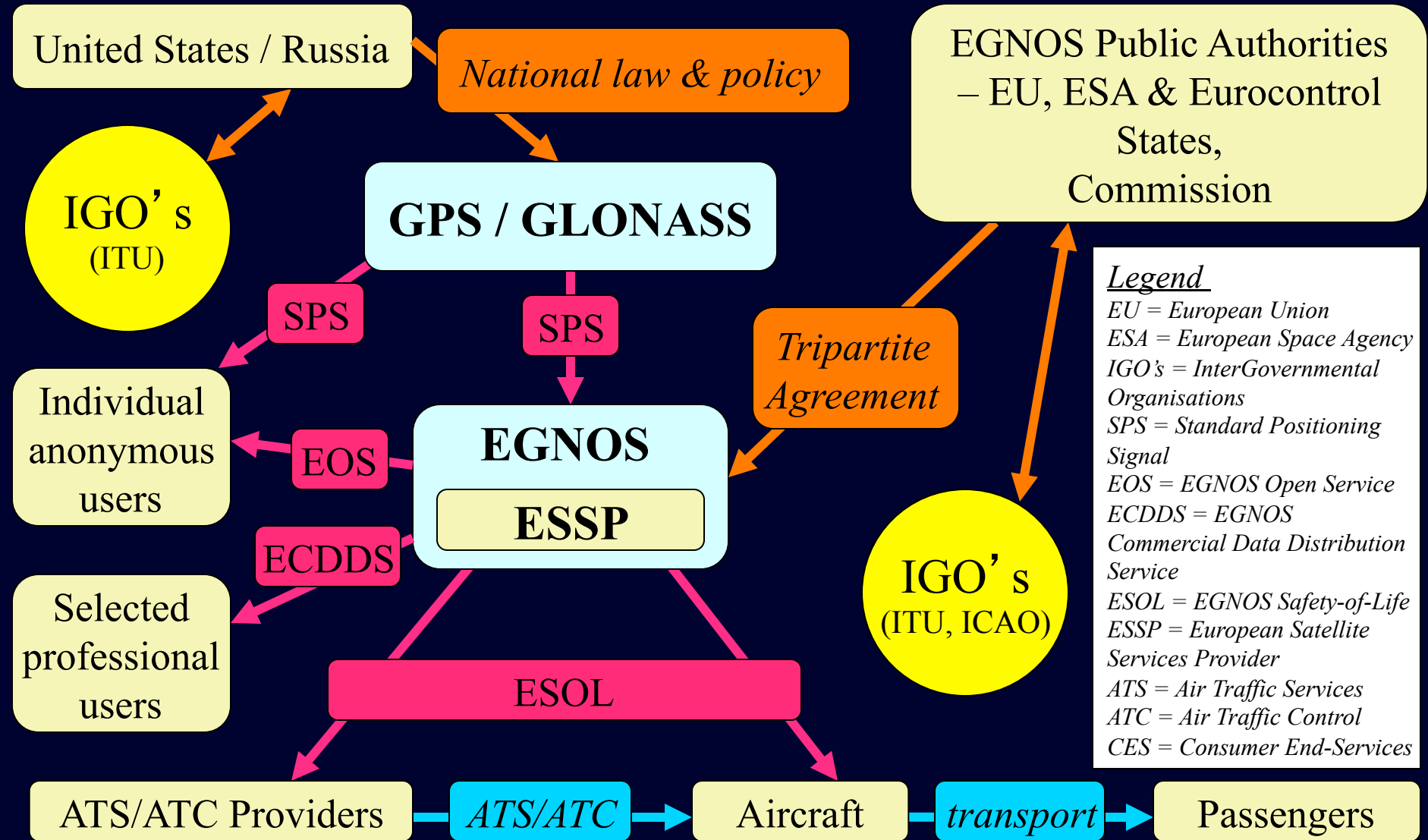
EGNOS (2)



- Services (to be) offered
 1. Open Service
 - ◆ With GPS: 1-3 m horizontal; 2-4 vertical
 - ◆ Available 2006 – for free, to individual users
 2. Commercial Data Distribution Service (CDDS)
 - ◆ Controlled access & enhanced performance
 - ◆ Integrity information
 - ◆ For selected professional users
 3. Safety-of-Life service (SOL)
 - ◆ Integrity & service guarantees – aviation-oriented
 - ◆ 2010 to be certified for SOL applications

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GPS / GLONASS + EGNOS Legal / Functional Model



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EGNOS → Galileo



- EGNOS prepares ground for Galileo
 - Hardware & software development
 - Technical & operational experience
 - Making general public familiar with GNSS
 - ◆ Developing standardisation & certification
 - Try-out possibilities for services / applications
 - ◆ EGNOS OS → Galileo OS
 - ◆ EGNOS CDDS → Galileo CS
 - ◆ EGNOS SOL → Galileo SOL
 - ➔ Transition arrangements ESSP → Galileo operator

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Galileo (1)



- **Galileo** key premises & parameters:
 - Internationally-operated system
 - ◆ Driven by European Commission, also ESA
 - Controlled by civilians (even if military & security issues will be taken into account)
 - ◆ EU & ESA limited competence in military areas
 - 30 satellites in MEO ($\pm 23,200$ km)
 - Augmented world-wide
 - ◆ Possibly also augmenting GPS, GLONASS, etc ...
 - For multi-modal usage & non-transport applications

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Galileo (2)



- **Timeline:**
 - Development phase 2002-5
 - ◆ Cost shared EU & ESA
 - ◆ 2002: Galileo Joint Undertaking (GJU)
 - Deployment phase 2006-12
 - ◆ 2004: European GNSS Supervisory Authority (GSA)
 - ◆ Launch 2 test satellites
 - GIOVE-A: SST (XII/2005)
 - GIOVE-B: Galileo Industries (IV/2008)
 - Operational phase as of 2013
 - ◆ Original idea: Public-Private Partnership ...

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Galileo (3)



■ Global reach

➤ GSA

- ◆ Coordinate on frequency issues – ITU
- ◆ Ensure certification system & security accreditation
- ◆ Ensure compliance international security rules
- ◆ Own all tangible & intangible assets

➤ GJU open to international participation

- ◆ PR China, Israel, Ukraine, India, South Korea
- ➔ GSA: ≈ also open to international participation
- & International agreements with 3rd states
 - Ground infrastructure
 - Market access

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Galileo services

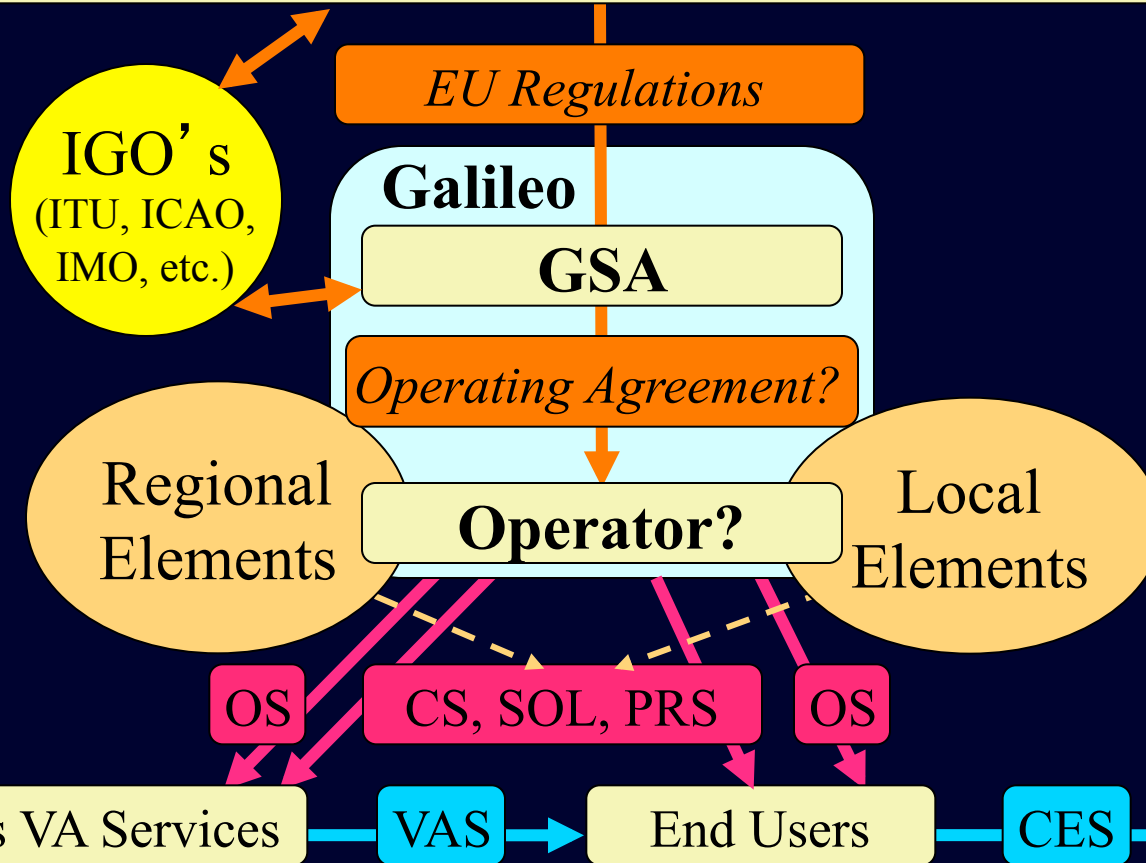


1. Open Service (OS)
 - Free; accuracy GPS SPS; no guarantees
2. Commercial Service (CS)
 - Better accuracy; added comms; guarantees
3. Public Regulated Service (PRS)
 - Encrypted; \approx GPS PPS – but broader access!
4. Safety-of-Life Service (SOL)
 - With integrity; compliant with ICAO Cat. III
5. Search-and-Rescue support service

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Galileo Legal / Functional Model

Galileo Public Authorities – EU & ESA States, Commission, Others?



Legend

EU = European Union
ESA = European Space Agency
IGO's = InterGovernmental Organisations
GSA = European GNSS Supervisory Authority
OS = Open Service
CS = Commercial Service
SOL = Safety-Of-Life Service
PRS = Public-Regulated Service
VA = Value-Added
VAS = Value-Added Services
CES = Consumer End-Services

Non-Galileo Public Authorities (Third States)

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Legal framework (1)



- Governance structure
 - Effectively ‘internal’ matter – for Galileo: EU
- General aspects frameworks
 - ‘External’ to EU
 - Mind novelty GNSS / Galileo:
 - ◆ Much relevant existing law, but as yet little GNSS-dedicated
 - ◆ International & national law – and EC law for EU
 - ◆ General (multi-modal) & sector-specific law
 - Space & telecoms *versus* users & applications
 - Frequencies & liability as examples

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Legal framework (2)



- Security-related parameters
 - Dual-use sensitive export regulations
 - ◆ US ITAR's & EU Regulation 1334/2000 ff.
- Standardisation & certification
- Trade, competition & market access
 - WTO ↔ GNSS receivers & services?
- Financing & securities
- Intellectual property rights
 - Patents / copyrights ↔ GNSS technology

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Governance (1)



- Regulation 683/2008
 - Further implementation EGNOS & Galileo
 - Financing structure
 - ◆ Development & validation: EC + ESA → deployment: EC (+ m/s? + 3rd states / IGO' s?) → exploitation ... ?
 - Public governance
 - ◆ Commission responsible for management → subsidiary roles GSA & ESA
 - ESA delegation from EU implementation Galileo
 - ◆ Management includes security-related issues (!) – subject to Council Joint Action 2004/552/CFSP, which ensures EU m/s have ultimate control

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Governance (2)



- Regulation 683/2008 – *ctd.*
 - Procurement principles
 - ◆ Open access, fair competition & transparency, with due regard for security interests & regime
 - ↔ Esp.: “taking advantage public sector investments, lessons learned, industrial experience & competence, incl. that acquired earlier on”
 - ➔ Four main principles for tendering deployment
 - Procurement infrastructure: 6 main work packages
 - Competitive tendering – prime contractor max. 2
 - At least 40% of value for non-primers
 - Dual sourcing recommended

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Frequencies (1)



- Also GNSS satellites & their downstream operations need frequencies (& orbits)
- ITU at international level
 1. Minimising unwanted (& unintended) overspill
 2. Harmonising & co-ordinating *int'l* telecoms
 3. Efforts in technical areas
 - Further to #2:
 - ◆ Co-ordination of frequency usage
 - *Note: not just for space communications!*

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Frequencies (2)



- Three-step process for Galileo
 - As well as for any private user!
 - ➔ Needs 'sponsoring' state – EU does not qualify
 - 1. Actual 'decisions' regarding use frequency spectrum by types of services taken – **allocation**
 - 2. States can then request specific reservations of frequencies for specific systems – **allotment**
 - ◆ Guarantee of interference-free usage on int'l level
 - 3. Such frequencies then 'handed over' to intergovernmental / private users – **assignment**
 - ◆ *Per state* ➔ access to markets *per state*

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Liability



- Liability as a ‘case study’
- Liability very frequently used concept
- Liability is:

“the accountability of a person or legal entity to compensate damage caused to another person or legal entity, as determined by specific legal rules and principles and based upon specified sources of law”

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Elements definition



- Type of liability
 - Contractual; third party; product damage
- Fault *versus* absolute liability
- Accountable entities *versus* claimants
 - States only? IGO's? Private parties?
- Damage
 - Only direct? Also indirect / loss of revenues?
- Compensation
 - Limited or unlimited

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Liability & GNSS



- No GNSS-dedicated legal regime ...
 - ↔ Many partially applicable legal regimes
 - E.g. space law liability; aviation liability; telecom liability (?) – international & national
- Nature of damage to be focused on
 - ‘Indirect’ – e.g. aviation accidents
- ➔ Largely matter of non-contractual liability

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Liability & GPS



- Discussions in ICAO
 1. Lack of liability acceptance US
 - No contract, no guarantees, no fees
 2. US acceptance of civil liability
 - Liability under national US law
 - ◆ Federal Tort Claims Act; Admiralty Act
 - ◆ Sovereignty-issues foreign user states
 - ◆ Practical problems with US cases
 - No 'international' liability acceptance

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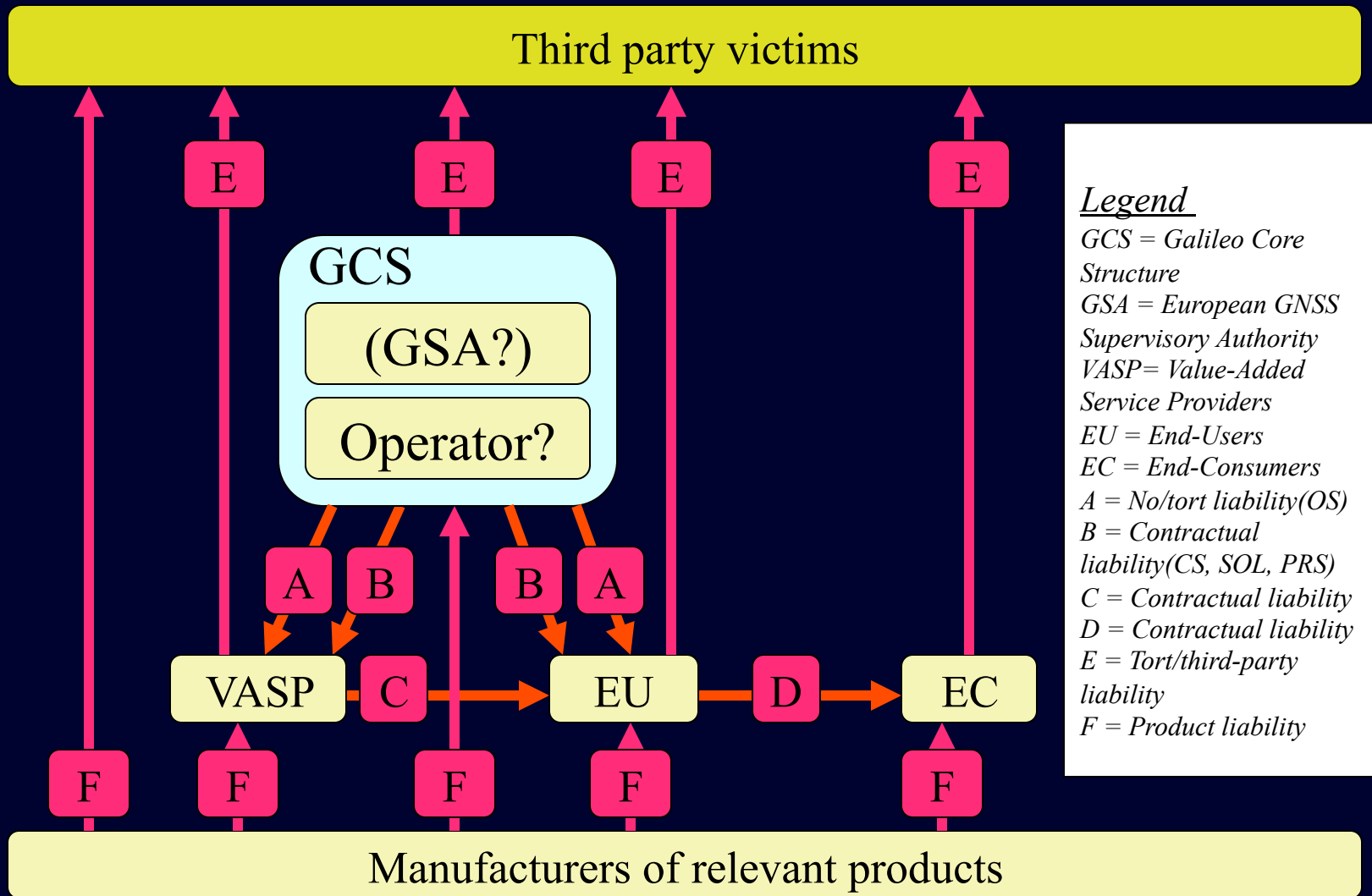
Liability & Galileo



- International civil system
 - Commercial, with key private participation
- Towards liability acceptance
 - No product liability as such
 - Non-contractual liability
 - ◆ Not for 'Galileo' itself to change, outside EU
 - ➔ Deal with it through contracts!
 - ➔ Provide for black box-like monitoring
 - ➔ Role contractual liability:
To allow appropriate derogation of liability ...

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Galileo Legal / Functional Model and liability



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Downstream ...



- Legal & regulatory framework upstream one determining factor for downstream usage GNSS services
- Sometimes also independently / directly applicable downstream
- In addition, generally much more domestic law & regulation applicable, esp. if within (e.g.) Estonia only, even within EC-law context