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Europe, Space and Defence

Report presentation at the Institute for Foreign Affairs and Trade (IFAT)

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Introduction – Definitions

Space for Defence	Defence of Space
• 4 main applications: ➢ Intelligence, Surveillance and Reconnaissance (ISR) ➢ Satellite communications (SATCOM) ➢ Positioning, Navigation and Timing (PNT) ➢ Space surveillance	• Protection of space systems in: ➢ Space segment ➢ Ground segment ➢ Link segment

Introduction – Why this report?

- Evolution of the space environment due to two elements:

1) A capability-related element

➢ Growing development of ASAT systems of all kinds

	Physical destruction	Degradation, interruption	Denial, disruption, interference	Interception
Kinetic weapons (e.g. ASAT missile)	Yes	Yes	No	No
Directed-energy weapons (e.g. blinding lasers)	No	Yes	Yes	No
Electronic warfare (e.g. jamming, spoofing)	No	No	Yes	No
Cyber attacks (e.g. system compromise)	Possible	Possible	Possible	Possible

➢ Questions raised by dual-use systems (e.g. RPO technologies)

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Introduction – Why this report?

2) A political element

- Growing tensions between states + evolution of the balance of power which has consequences in space relations

- Evolution at three levels within non-European states:
  - Strategic level: space is a warfighting domain ➔ how to protect space assets?
  - Operational level: reorganisation of armed forces in several countries
  - Capability-development level: development of ASAT weapons and reflections on dual-use technologies

	Strategic evolution	Organisational evolution within the military	Capabilities development and major events
China	• Recognition of space as a military domain • The defence of space assets has become legally binding	• Creation of the Strategic Support Force (PLASSF) to deal with cyber, space and electronic warfare issues • Establishment of a Space Systems Department within the PLASSF	• Test of an ASAT missile in 2007 and other tests in the following years • Likely test of a laser in 2006 to blind a U.S. satellite • Several RPO experiments between 2010 and 2016
India	• Late use of space for military purposes • Publication of the "Defence Space Vision 2020", calling for more dual-use assets and the development of dedicated military satellites • Work on ASAT technologies to improve its deterrence capacities	• Creation of an Integrated Space Cell within the HQ of the Integrated Defence Staff • Creation of a Defence Space Agency • Reflections on a future Space Command	• Test of an ASAT missile in March 2019
Japan	• Had long defined "peaceful purposes" of space as "non-military" • Gradual change to enable armed forces to use space data • The last Basic Space Law paves the way to a greater use of space for military purposes	• In 2022, 100 people will be assigned to the Space Domain Mission Unit, which performs SSA missions (for instance to collect intelligence on foreign capabilities) and conduct satellite-based navigation and communications. A preliminary version will be set up in 2020.	• Not declared
Russia	• Militarisation of outer space recognised as a main external military danger • Recognition of the need to exploit the overreliance of other countries on space in case of conflict	• Creation of the Aerospace Forces through the merging of the Air Force and the Aerospace Defense Troops	• At least six tests of Nudol, an anti-satellite missile, between 2015 and 2018 (according to U.S. sources) • Deployment of the Peresvet laser cannon in military forces from the end of 2018 • Close approaches to the French-Italian satellite Athena-Fidus
United States	• Space is considered as a vital interest • Space dominance doctrine at the beginning of the 2000s, then "softened" in space control • Return of a more assertive stance by recognising space as a warfighting field, like land, air and sea • Development of a new defence space strategy	• Reactivation of the U.S. Space Command in August 2019 • Creation of the Space Development Agency • Creation of the Space Force in December 2019 • Willingness to form coalitions to activate if a conflict occurs in space • Development of initiatives to promote international cooperation in space operations (Olympic Defender, CSpO, Schriever Wargames…)	• Test of an ASAT missile in 2008 (among previous other tests) • Reflections on space-to-space weapons • Several test campaigns of the X37-B, a classified space plane programme

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Introduction – Why this report?

- Evolution of the international context in space creates major stakes for Europe

- As with most topics in Europe, three levels must be analysed:
  - National level
  - Intergovernmental level
  - Supranational level

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The national level

- The role of individual states remains predominant
- All major European space powers have recognised the importance of space systems for defence activities
- However, there are differences between countries:
  - In terms of involvement in the topic
  - In terms of perception of the urgency
  - In terms of governance

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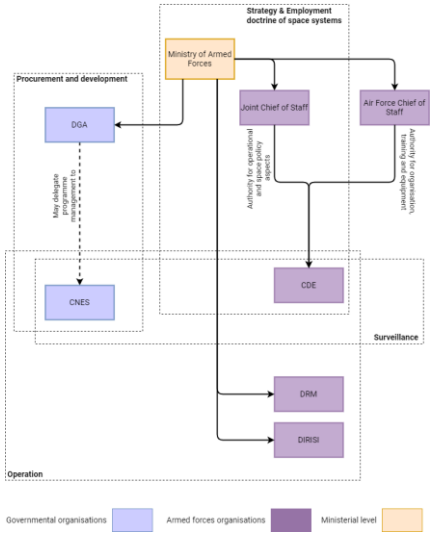
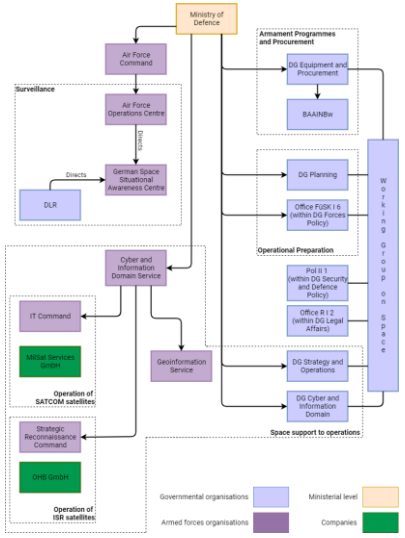
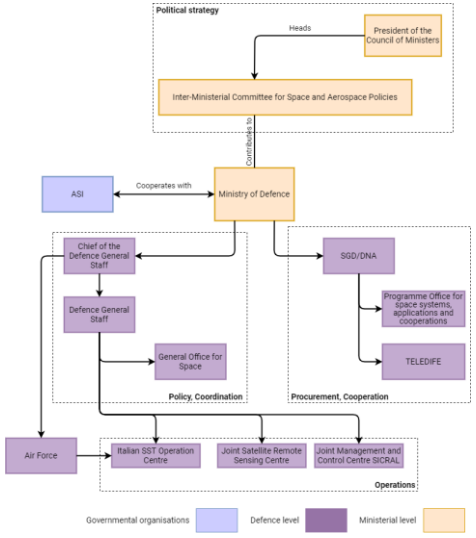
France



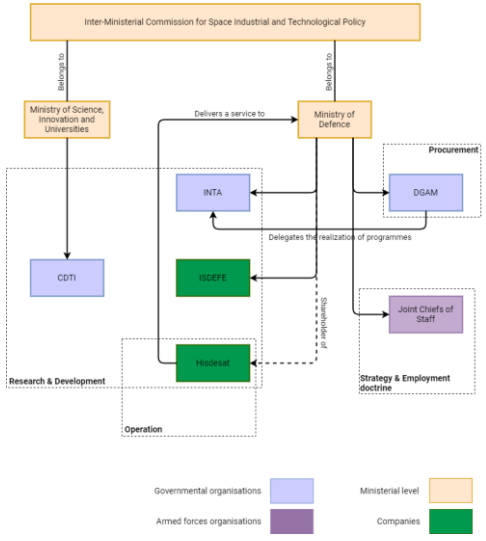
Germany



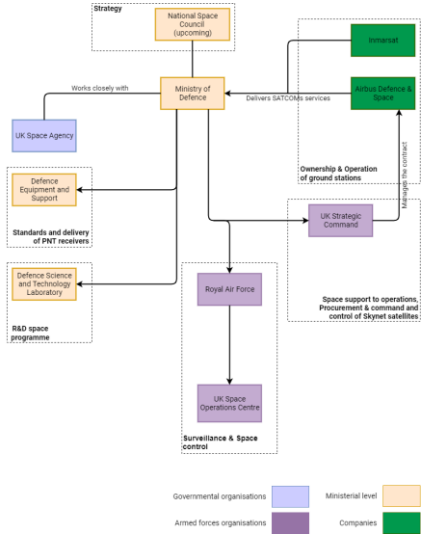
Italy



Spain



United Kingdom



The national level

- Beyond major space powers, smaller countries have also invested in military space
  - Denmark (e.g. GOMX-4A)
  - Luxembourg (e.g. GovSat-1, NAOS)
  - Poland (work on space situational awareness)

The intergovernmental level

Intergovernmental cooperation in Europe

- Three models:
  - **Exchange of capacities**: each country develops a system but has access to the data from the other's satellite
  - **Delegation**: one major country develops the system with the (financial) support of others, in exchange for their access to the capacity
  - **Partnership**: balanced cooperation where two countries have payloads on the same satellite

Intergovernmental cooperation raises questions about the protection of the systems: if a satellite is useful to several nations, what is the best way to protect it?

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The intergovernmental level

Intergovernmental cooperation in the frame of NATO

- NATO relies on national assets to access space-based services (establishment of specific programmes and reliance on the goodwill of states)
- NATO MS approved an overarching space policy and declared space an operational domain in 2019
- In 2020, announcement that a Space Defence Centre will be established in Rammstein

➔ NATO is a relevant forum for discussion on space defence issues but several questions remain to be addressed (e.g. related to Article 5)

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Link between national and intergovernmental endeavours

- Development of national capabilities can enable a state to fulfill its international commitments and *vice versa*

- Example: Luxembourg → contribution to NATO through GovSat-1
- Example: Czech Republic → construction of a space surveillance centre used by both NATO and Czech authorities

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The supranational level

- The European Union is increasingly involved in both defence and space domains (e.g. DG DEFIS)
- Synergies between both domains can be found in European projects

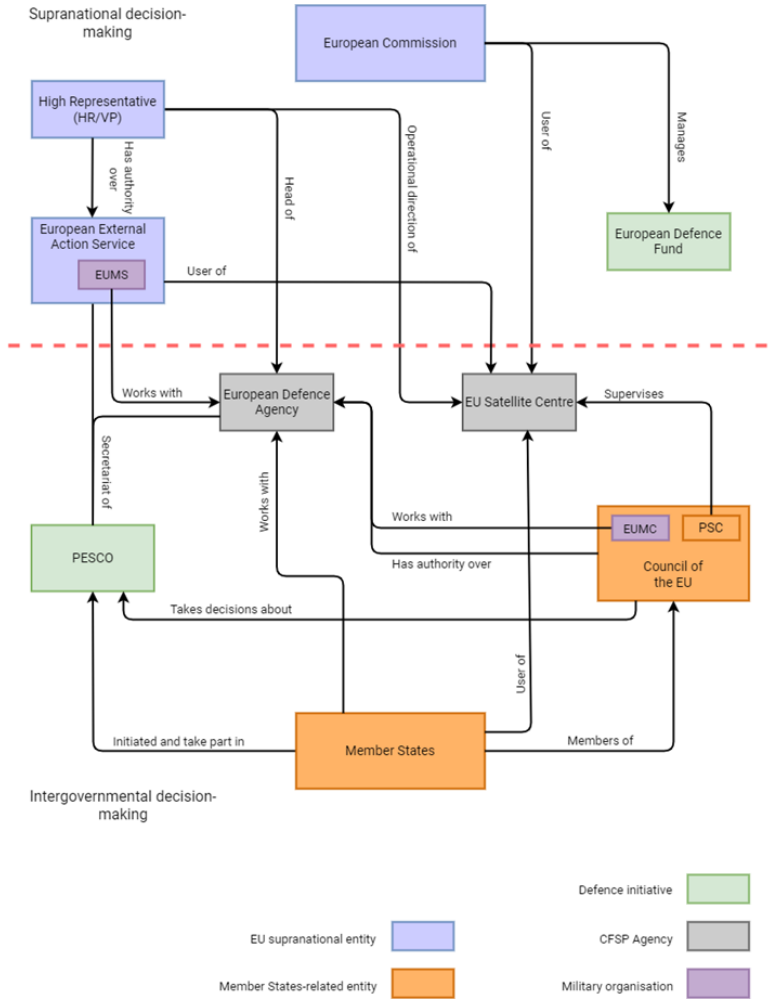
➔ The EU is a relevant forum for space defence issues as well

The supranational level

EU initiatives in Defence

- Major policies
  - Common Security and Defence Policy
  - EU Global Strategy
  - European Defence Action Plan

- Major mechanisms and initiatives throughout the “capability lifecycle”
  - Capability development
  - Capability funding
  - Capability use



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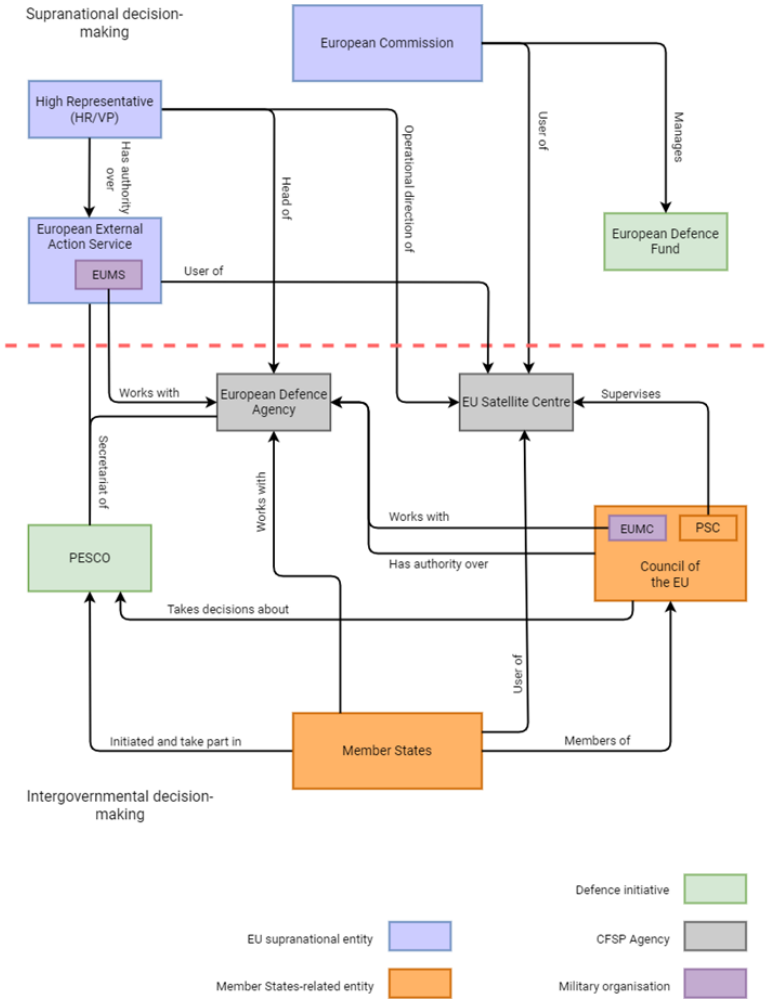
The supranational level

- Capability development
  - **Permanent Structured Cooperation (PESCO)**: 25 MS, 47 projects, to jointly plan, develop and invest in shared capability projects
  - **European Defence Agency (EDA)**: definition of military needs in specific capabilities, including related to space, to foster cooperation between MS in the development phase
- Capability funding
  - **European Defence Fund (EDF)**: funding of collaborative projects to save money and avoid unnecessary duplications
- Capability use
  - **EU Military Staff (EUMS)**: coordination of the military instrument of the EU
  - **EU Satellite Centre (SatCen)**: provision of geospatial analysis and products based on satellite imagery to European stakeholders

➔ A coherent framework has been set up in Europe



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The supranational level

EU initiatives in Space

- Major policies
  - Space Strategy for Europe
  - Regulation establishing the space programme of the Union and the European Union Agency for the Space Programme

- Main programmes (current and expected)
  - Galileo/EGNOS
  - Copernicus
  - GOVSATCOM
  - EU SST

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The supranational level

- Major space programmes of the EU are all dual-use
- **Galileo/EGNOS** (PNT)
  - PRS service
- **Copernicus** (useful for ISR)
  - Security service: Border surveillance, Maritime surveillance, Support to EU External Action
- **GOVSATCOM**
  - Pooling and sharing of national capacities to provide secure communications
- **EU SST**
  - Space surveillance: useful for the protection of space assets

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Expectations for the future

- Establishment of the EU Agency for the Space Programme, with extended responsibilities

- Reflections about the deployment of a European satcom constellation (in part to reinforce European strategic autonomy)

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The supranational level

Synergies between EU space and defence initiatives

- **At policy level**: space recognised as a major contributor to European security
- **At capability development and funding level**: space is often taken into account in identified projects/categories (e.g. in PESCO, in EDA work)
- **At user level**: in particular with the activities of SatCen, which works both in the security/defence and space domains

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Status of space defence in Europe – Wrap-up

- Strategic level
  - Shared acknowledgement of space as a strategic domain
  - Duality as a core element of EU endeavours
- Operational level
  - Contribution of European states to international organisations but questions about their representation
  - Mix of intergovernmental and supranational management in EU initiatives
  - Need for balanced cooperation and clear governance schemes
- Capability development
  - Different cooperative models to develop military space capabilities, while national concerns still play a role
  - Industrial issues must be considered → important to avoid unnecessary duplications

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The way forward

- There are stakes for Europe in space defence but some barriers to the management of this issue through a cooperative framework:
  - Sovereignty concerns
  - Lack of shared vision on the operational capabilities to be acquired
  - No consensus on the degree of European autonomy in this matter
  - Gap in industrial and technological capabilities among MS

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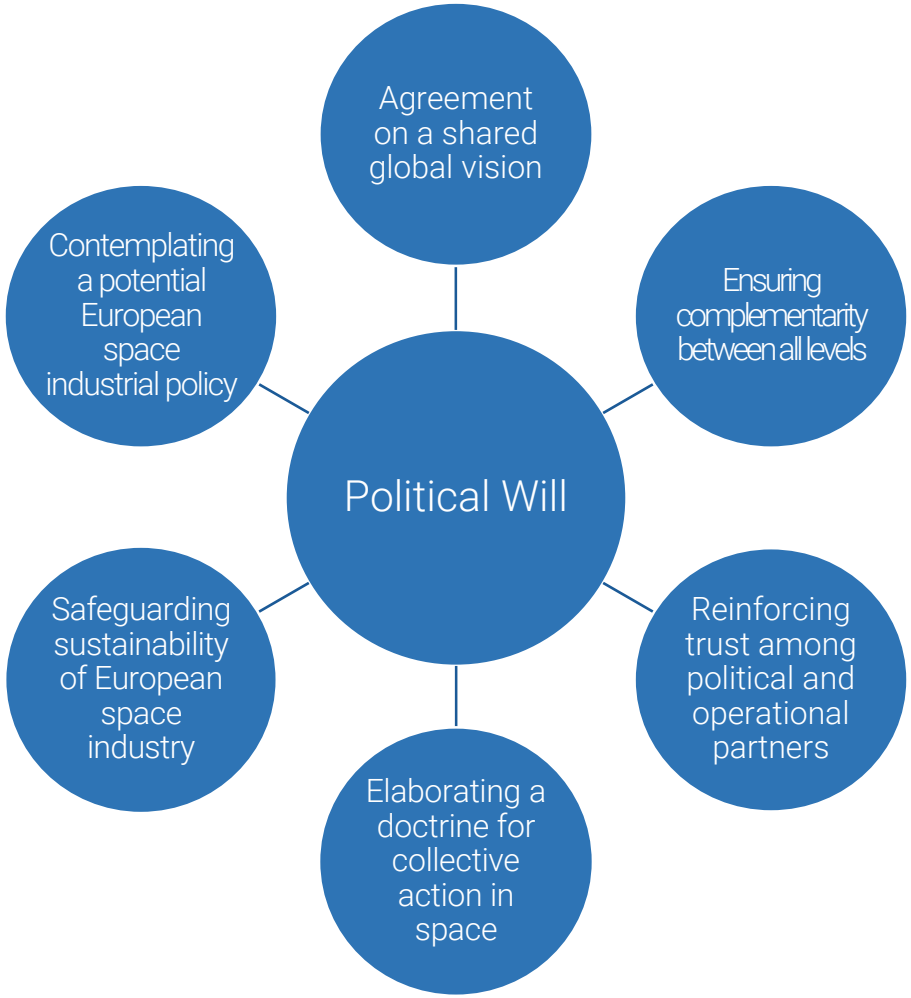
Seven elements for a European Space Security & Defence Policy



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Conclusion

- Drafting a European Space Security & Defence Policy will raise questions on:
  - The policy dimension
  - The systems operations dimension
  - The capability development dimension

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Thanks for your attention!

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https://espi.or.at/publications/espi-public-reports