esa
SPACE 4.0 SEMINAR IN FLANDERS
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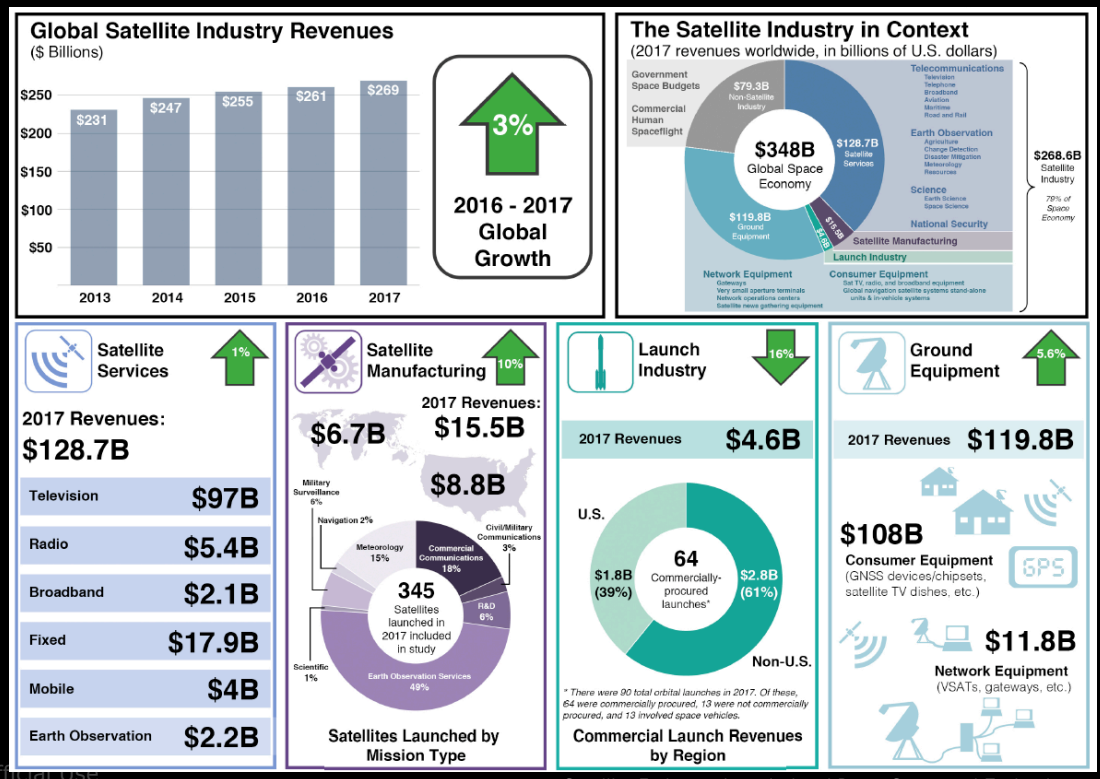
European Space Agency

OUTLINE

1. SPACE ECONOMY
2. EUROPEAN SPACE AGENCY AND SPACE 4.0
3. ESA INDUSTRIAL POLICY ACTIONS
4. BELGIAN STRATEGIC SPACE INVESTMENTS
5. WAYS FORWARD

SPACE ECONOMY

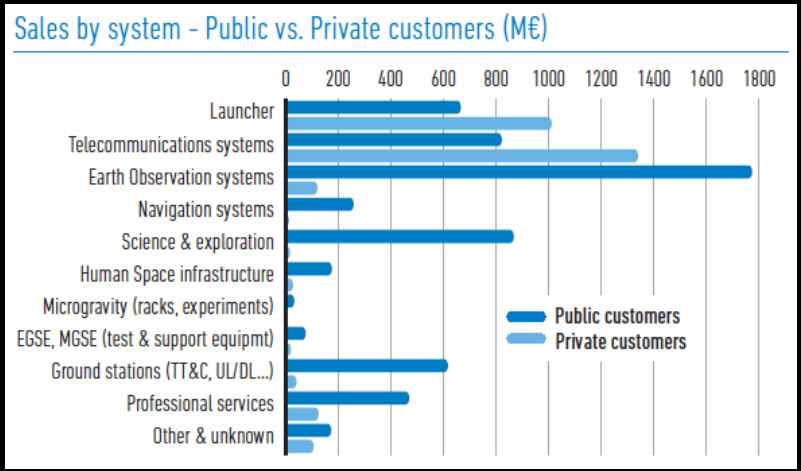
$ 348 BILLION REVENUES FOR WORLD-WIDE SATELLITE INDUSTRY (2017)

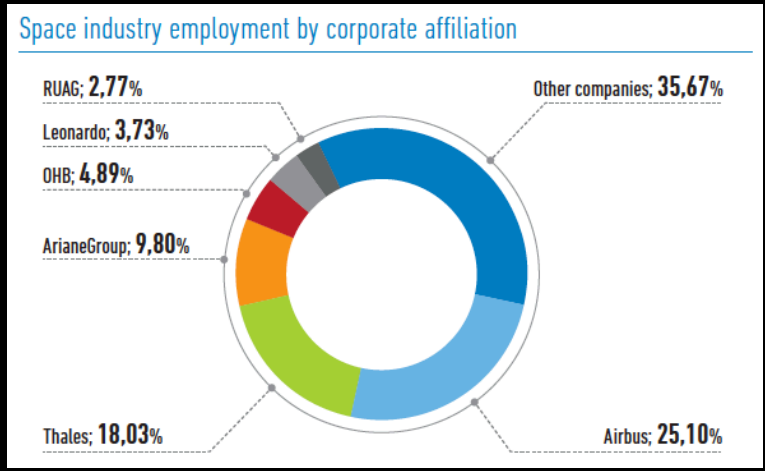


source: Satellite Industry Association / Bryce Space and Technology

SPACE ECONOMY

€ 8.8 BILLION OF SALES AND +45,000 EMPLOYED BY EUROPEAN SPACE MANUFACTURING INDUSTRY (2017)





source: ASD - EUROSPACE

SPACE ECONOMY

- 1860 refereed academic papers published on ESA led missions (2015)
- 34% of educational ESA kits for primary and secondary schools inspired by Astronauts and ISS missions
- 5800 teachers participatied to ESA Education Programme in 450 sessions, potentially reaching 174,000 European pupils (2015).

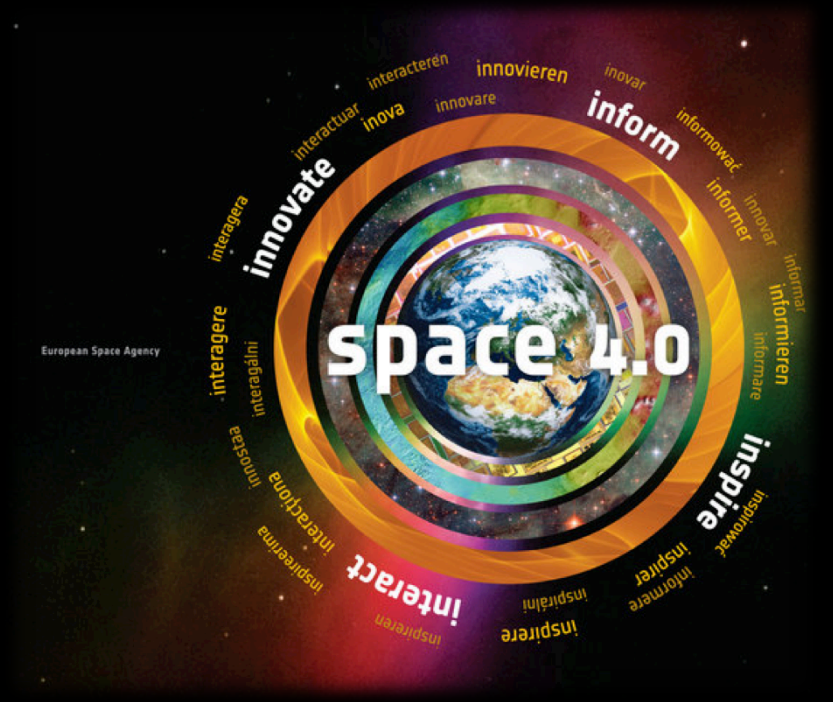
EUROPEAN SPACE AGENCY

New space actors

Emergence of private companies

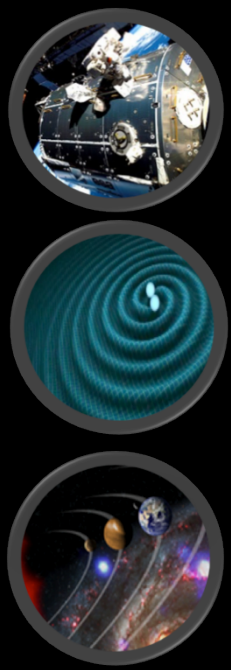
Digitalization and global interaction

Industrial revolution of manufacturing and services

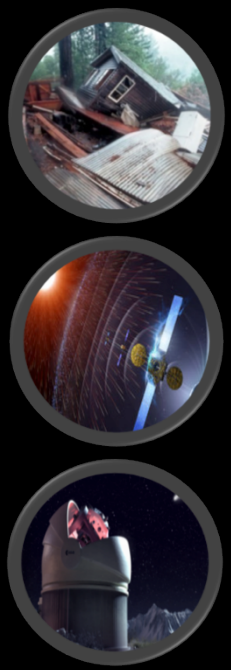


EUROPEAN SPACE AGENCY

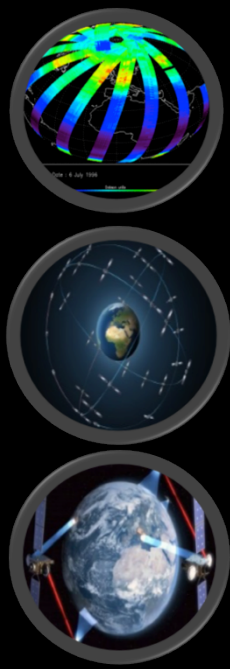
Science and Exploration



Safety and Security



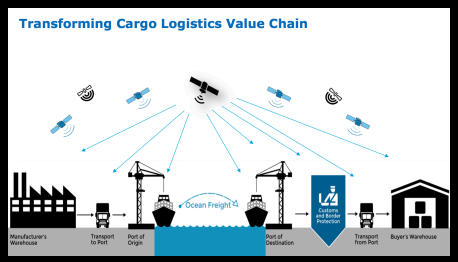
Applications



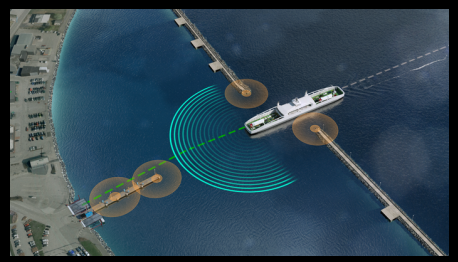
Enabling and Support

EUROPEAN SPACE AGENCY

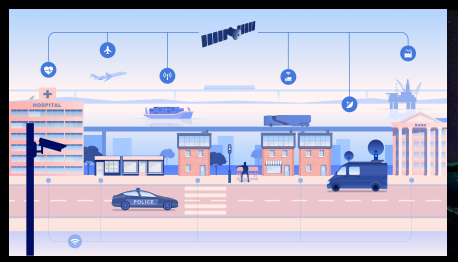
New innovative solutions and services enabled through space technologies and infrastructures



Digital logistics



Autonomous shipping

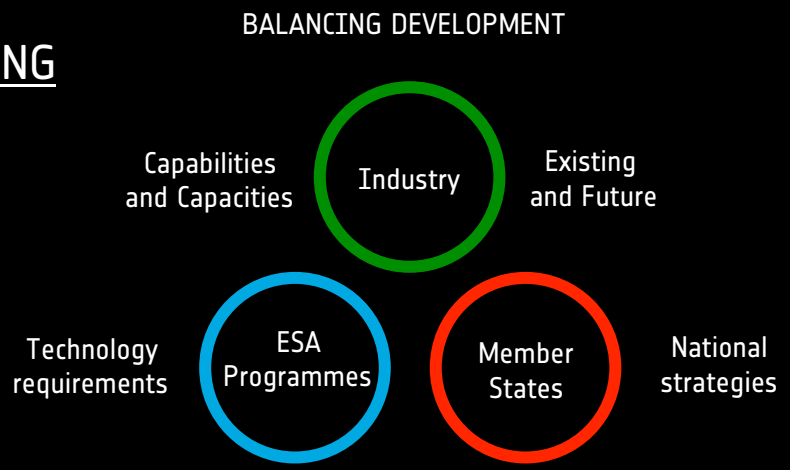


5G applications

Arctic Solutions

ESA INDUSTRIAL POLICY ACTIONS

- Ensure COST EFFECTIVENESS of space programmes
- Improve WORLD-WIDE COMPETITIVENESS of European industry
- Ensure EQUITABLE PARTICIPATION of all Member States
- Grant preference to EUROPEAN INDUSTRY
- Exploit advantages of FREE COMPETITIVE BIDDING



BELGIAN STRATEGIC SPACE INVESTMENTS

- Belgian investments in space are focused on launchers, microgravity, exploration and human spaceflight, telecommunications and navigation, and technology.
- Contribution to ESA, is about 200 Meuro/year
- About 10.000 jobs in Belgium are directly supported by the space sector (out of which 1600 FTE in the Belgian manufacturing space sector direct employment, and 8400 FTE in the downstream services and applications sector)
- Each year about 100 Belgian companies receive a contract with ESA. Through their contracts with ESA, Belgian companies develop competences of high value added.

BELGIAN STRATEGIC SPACE INVESTMENTS

- Belgium is among top MS in terms of ESA contribution (5.5%) vs GNP (2.7%).
- Belgium has made the strategic choice not to develop a national programme and to use ESA as its agency

OPTIONAL PROG.	GNP Ratio	Annual Contribution M€
Luxembourg	15.3	25 M€
Belgium	7.3	179 M€
France	5.9	822 M€
Switzerland	4.7	115 M€
Germany	4.3	746 M€
Italy	4.2	380 M€
Czech Republic	3.2	25 M€
Spain	2.5	146 M€
Sweden	2.2	50 M€
Norway	1.9	42 M€
Austria	1.6	29 M€
United Kingdom	1.6	205 M€
Netherlands	1.4	53 M€
Denmark	1.1	17 M€
Portugal	1.0	9 M€
Ireland	1.0	9 M€
Finland	0.8	9 M€
Greece	0.1	1 M€

BELGIAN STRATEGIC SPACE INVESTMENTS

- Belgium has a return coefficient superior to 1 in all domains of ESA activities and programmes
- This is a clear indicator of the competitiveness of Belgian companies in the space sector.
- Top 5 space companies in Belgium are Thales ETCA, Qinetiq Space, Newtec company, SABCA and Centre Spatial de Liège.
- The Belgian space sector is diverse, representing a good mix between large system integrators (subsidiaries of primes), medium and small enterprises fostering agility and innovation, and universities and research centres providing their scientific competence.

BELGIAN STRATEGIC SPACE INVESTMENTS

SMALL AND MEDIUM SIZED ENTERPRISES

- 16 % SME share of Belgium industrial implementation 2015-2018
- ~ 120 M€ to SMEs in 2015-2018
- Examples for comparison:

RO: 11%	RO: 11%
FI: 16%	FI: 16%
PT: 41%	PT: 41%

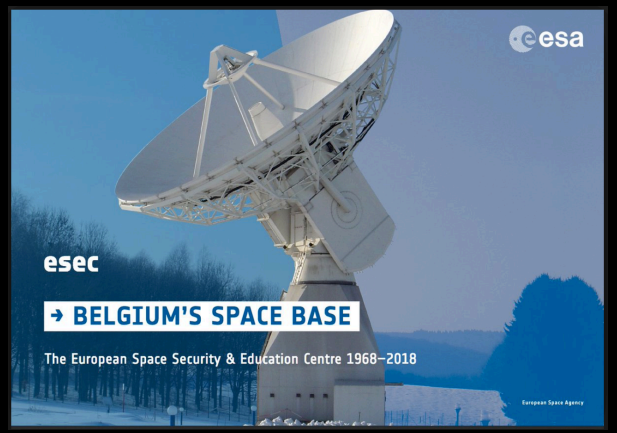
BELGIAN STRATEGIC SPACE INVESTMENTS

European space Security and Education Centre – ESEC

- Hosting and operating high security requirements programmes
- European space cybersecurity training range
- The centre hosting small missions operations like PROBA and Micro Sats/CubeSats
- ESA Centre hosting teachers and university students' training activities

-> More than 50 antennas operational

-> More than 70 staff and contractors on site



BELGIAN STRATEGIC SPACE INVESTMENTS

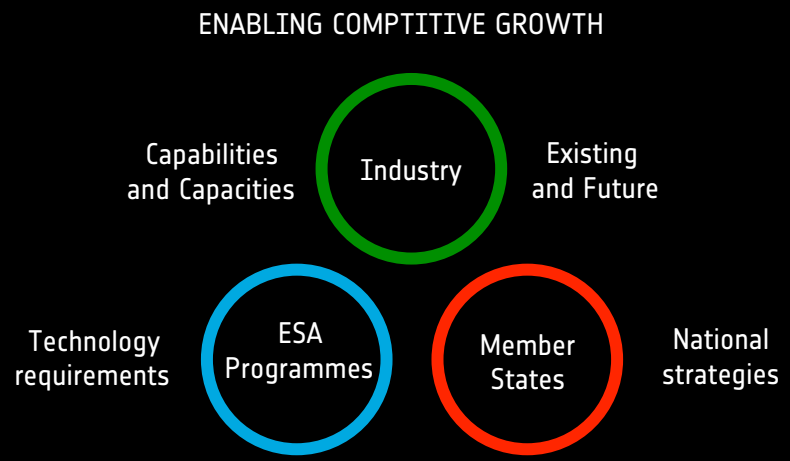
ESA Business Incubation Centres in Flanders and Wallonie

CONCLUSIONS – Observations

- Driving growth in Belgium space associated industrial activities would benefit of closer link to commercial opportunities (NewSpace) increasingly within long value-added chains / large projects such as satellite constellations (OneWeb) and in integrated applications (digital logistics)
- This drive needs to be supported by clear national priorities and strategies for financing and risk sharing in development of new technologies and solutions, upstream and downstream
- ESA provides an evolving platform to support this, with a cross-European industrial and governmental coordination and collaboration, from technology development to space components and integrated multidisciplinary application, in some cases geared for creation of new markets.

CONCLUSIONS – Components for the way forwards

Elaborate integrated priority national objectives and targets

Map industrial and commercial perspectives and ambitions

Lead definition of required collaboration framework through ESA