



# Space 4.0 and Space 19+

## Poland@ESA

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Workshop – Ministry of entrepreneurship and technology  
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European Space Agency

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Short Introduction to ESA

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# A facts and figures



Over 50 years of experience

22 Member States

Eight sites/facilities in Europe,  
about 2300 staff

5.6 billion Euro budget (2018)

Over 80 satellites successfully  
designed, tested and operated in  
flight



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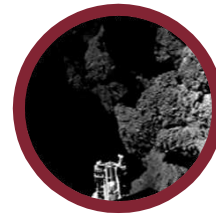
European Spac

# Activities



ESA is one of the few space agencies in the world to combine responsibility in nearly all areas of space activity.

Space science is a Mandatory programme, all Member States contribute according to GNP. All other programmes are Optional, funded 'a la carte' by Participating States.



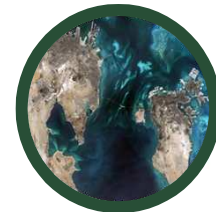
space science



human spaceflight



exploration



earth observation



space transportation



navigation



operations



technology



telecommunications

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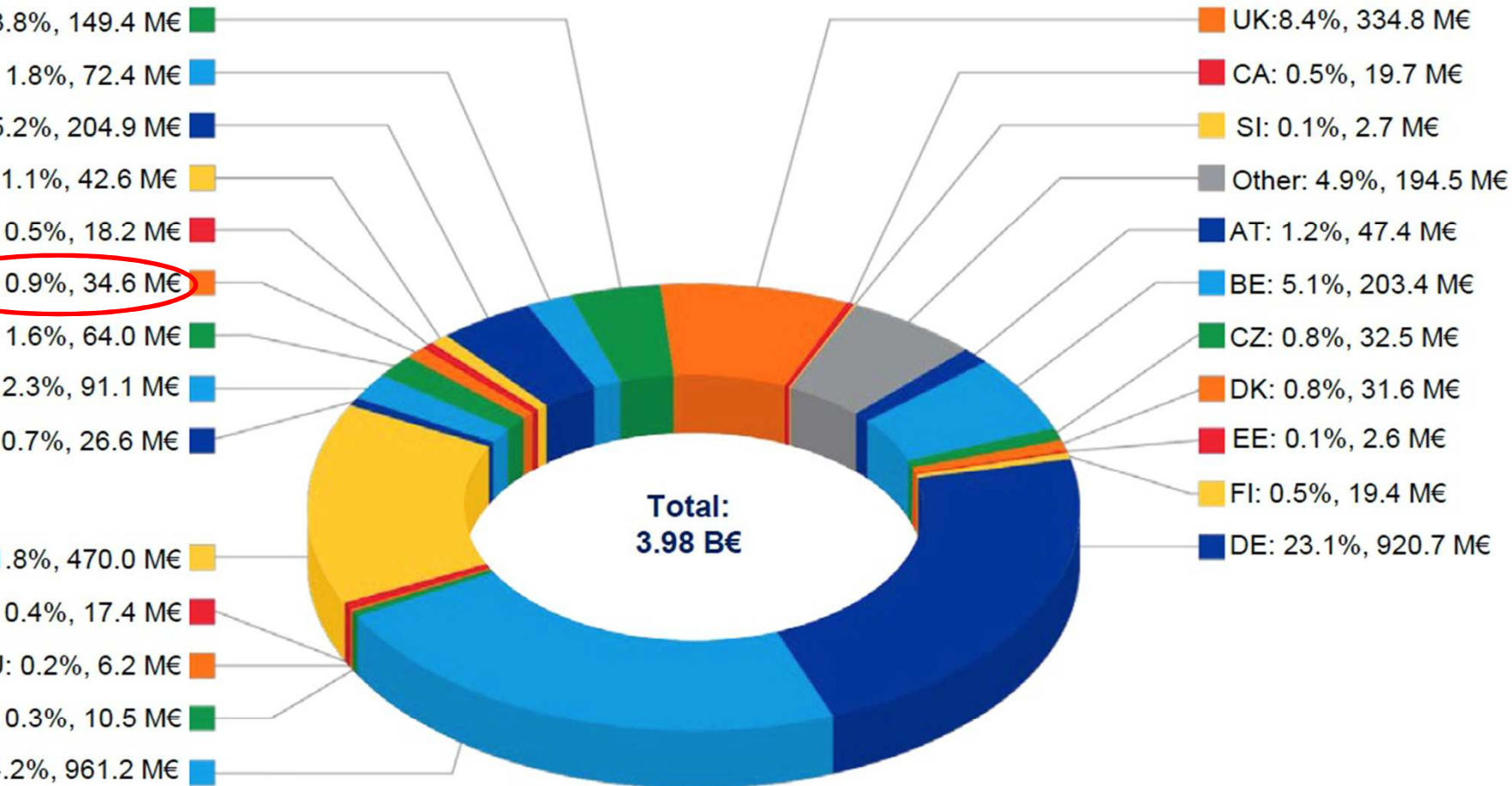
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# ESA budget for 2018: 5.60 B€

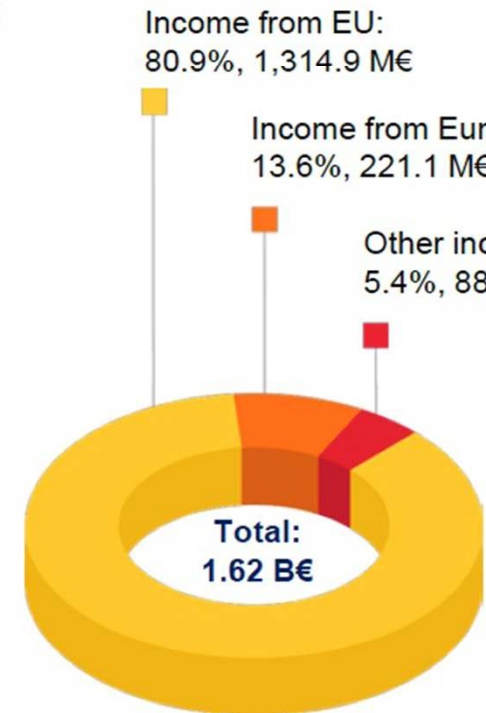


Source: [https://www.esa.int/About\\_Us/Welcome\\_to\\_ESA/Funding](https://www.esa.int/About_Us/Welcome_to_ESA/Funding)

## Activities and Programmes



## Programmes implemented for other institutional partners



B€: Billion Euro M€: Million Euro



# ESA's industrial policy: a gateway to develop international space industry?



**About 85% of ESA's budget is spent on contracts with European industry.**

## **ESA's industrial policy:**

- Ensures that Member States get a **fair return** on their investment;
- Ensures programmes are implemented in a **cost effective** manner
- Improves world-wide **competitiveness** of European industry;
- Maintains and develops space technology

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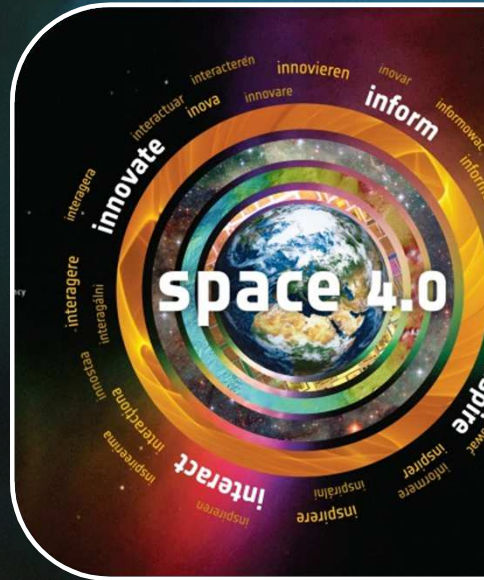
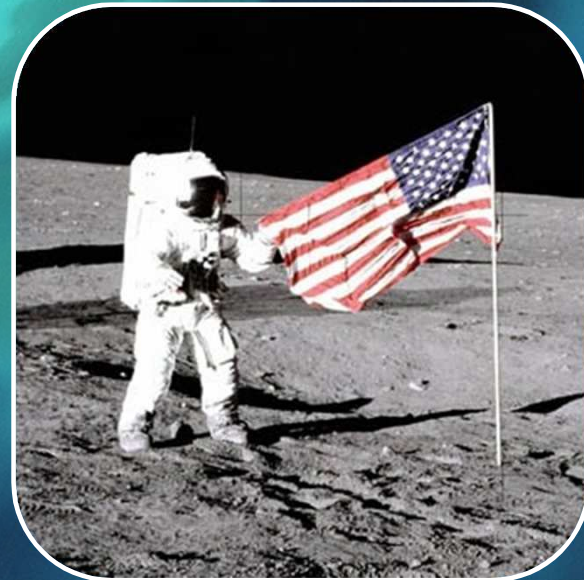
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# SPACE 4.0 AND SPACE19+

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# The Space 4.0 Era



**Space 1.0**  
Astronomy  
Since millennia

**Space 2.0**  
Space Race  
Since 1958

**Space 3.0**  
Int. Cooperation  
Since Fall of the Wall

**Space 4.0**  
Space for Society  
Now





## Shift of Paradigm!

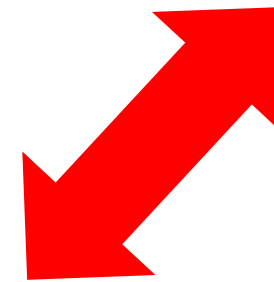
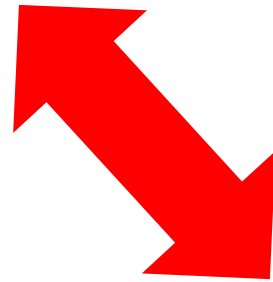
- Change of Motivations
- Actors
- Contents
- Roles
- Instruments



- "New Space"
- spin in / spin off
- Participation/ cooperation
- Diversity
- Cooperation/ *partnerships with Member States*
- Jobs & growth
- Digitalisation

**society**

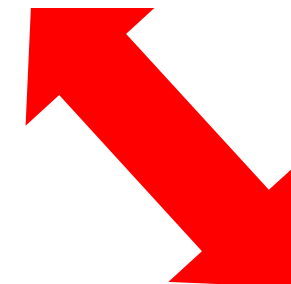
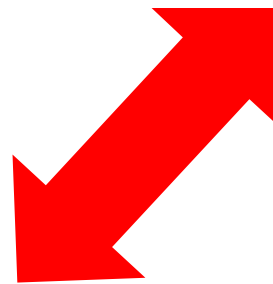
**politics**



**SPACE 4.0**



**esa**



**science**

**industry**

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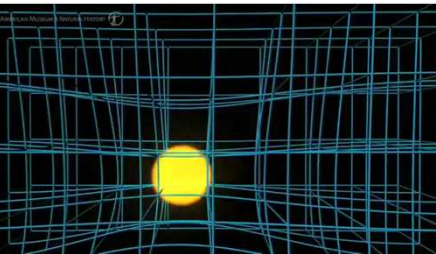


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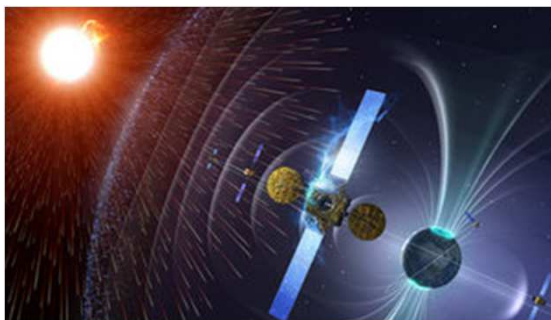
# Main Programmatic Pillars: towards Space 19+



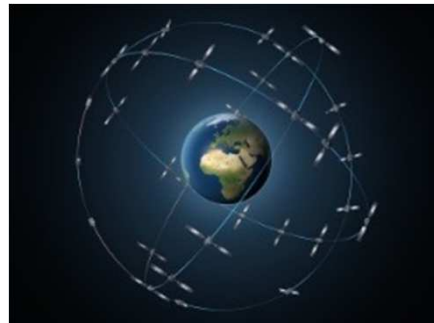
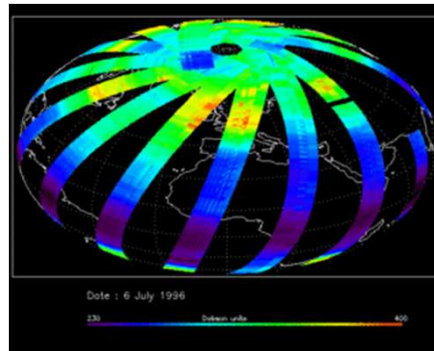
Science and  
Exploration



Safety and  
Security



Applications



Enabling and Support  
(transp., tech, & ops)



# Space Safety and Security

*exclusively peaceful purposes*



**in Space**

Debris

SWE

Collision avoidance autonomy

planetary defence

**Space Safety**  
– a single programme

**from Space**

Maritime

Disaster Management

Food

QKD

**Safety and Security Applications**  
– several programmes



**Cyber safety/security of all activities**



# POLAND AT ESA: THE POLISH SUCCESS STORY

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## land at ESA

land started cooperating with ESA in 2007 through a “European Operating State” agreement and became an ESA Member State in 2012.

From 2012 to 2019, the so-called “**Polish Industrial Incentive Scheme**” has been running, allowing a **smooth integration** of Poland at ESA and the preparation of Polish industry to be fully able to compete successfully for ESA contracts.

# Developing new capabilities

## Polish 2019 Budget in ESA

Mandatory Contribution, including Science programme: 23.3M€  
Optional Programmes: 11.3M€

- Earth Observation: 2.69M€
- Space Transportation: 0.8M€
- Human Spaceflight and Exploration: 1.3M€
- Telecommunications and applications: 2.1M€
- Navigation: 0.1M€
- Technology: 1.6M€
- SSA: 1.1M€
- Prodex (Science): 1.5M€

**Polish Geo-return was 1.02 at end of 2018**

# Polish Space Sector Today



More than **350 Polish companies** operating in **space area**

About **50 companies exclusively** focused on the **space sector**

More than 200 full-time employees working exclusively in activities related to the space sector

The longest **seniority in the sector**, 40 years - Space research Centre of Polish Academy of Sciences,

Significant **foreign investors**: 1. Airbus Defence & Space(EU)  
Thales / Alenia (FR / IT) 3. Sener (ES) 4. GMV (ES)





# Polish Space industry Strengths and Opportunities



## Strengths

**Strong technology areas** (mechanisms, software, ground segment, structures, harness) across many Polish industrials

**Strong technical knowledge** (in academia)

**Strong interest of the Primes to be present** and develop supply chain; **TAI and Airbus well engaged**, harnesses and structures will provide a sustained return to the country

## Opportunities

Clear interest and commitment of primes and tier 1 suppliers.

Green propulsion technologies

Structures and harness for next Science missions

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Poland's integration at ESA is a **success story**, in all sectors  
science, applications, industrial participation.

2019 will see the **end of Polish Transition Measures**

... and hopefully the **successful Space19+** where **Poland will  
be able to contribute** in order to sustain and extend its  
successes at ESA