

# European Defence Fund

**Boosting cross-border  
Defence R&D cooperation  
in the EU**

Speaker

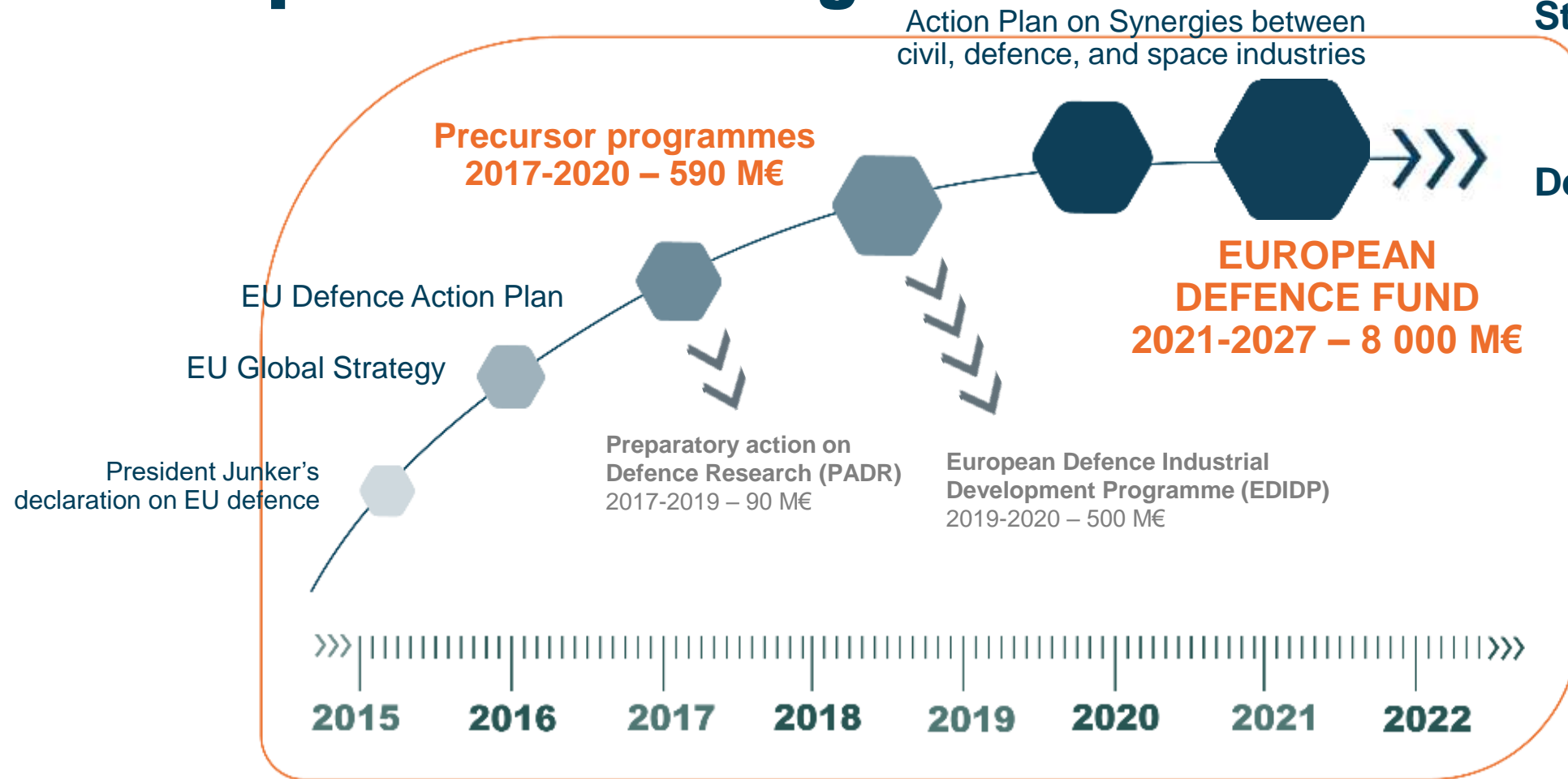
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Programming & SME support

**NEREUS** / **20  
22**  
17 November

# Ramping-up EU's ambition for a more collaborative approach to defence capabilities building



## Strategic compass

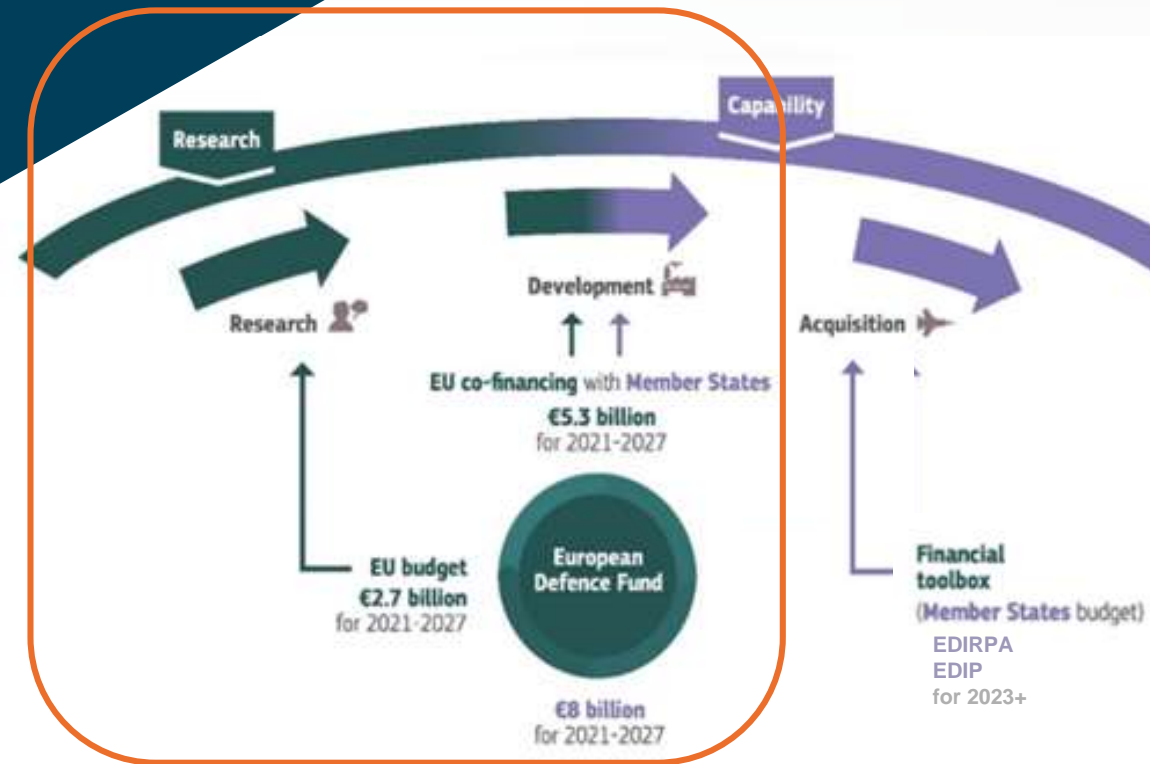
(spend more and better in Defence, strategic enablers, cutting edge capabilities and innovation)

## Defence Package

(joint procurement, critical technologies, defence innovation scheme...)

# European Defence Fund : The EU defence R&D programme

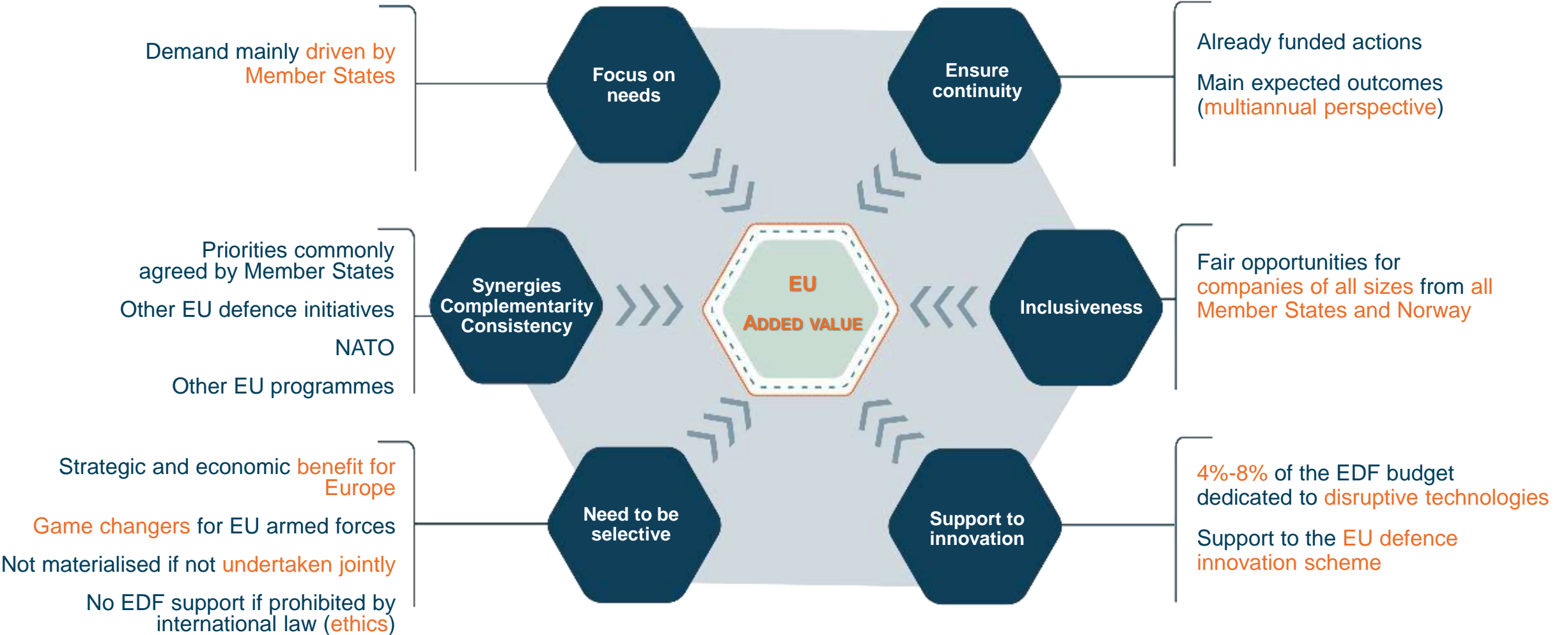
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- **EDF financial support mainly in the form of grants**
- **Open to EU Member States and Norway**
- **Security-based participation conditions for entities controlled by third-countries**

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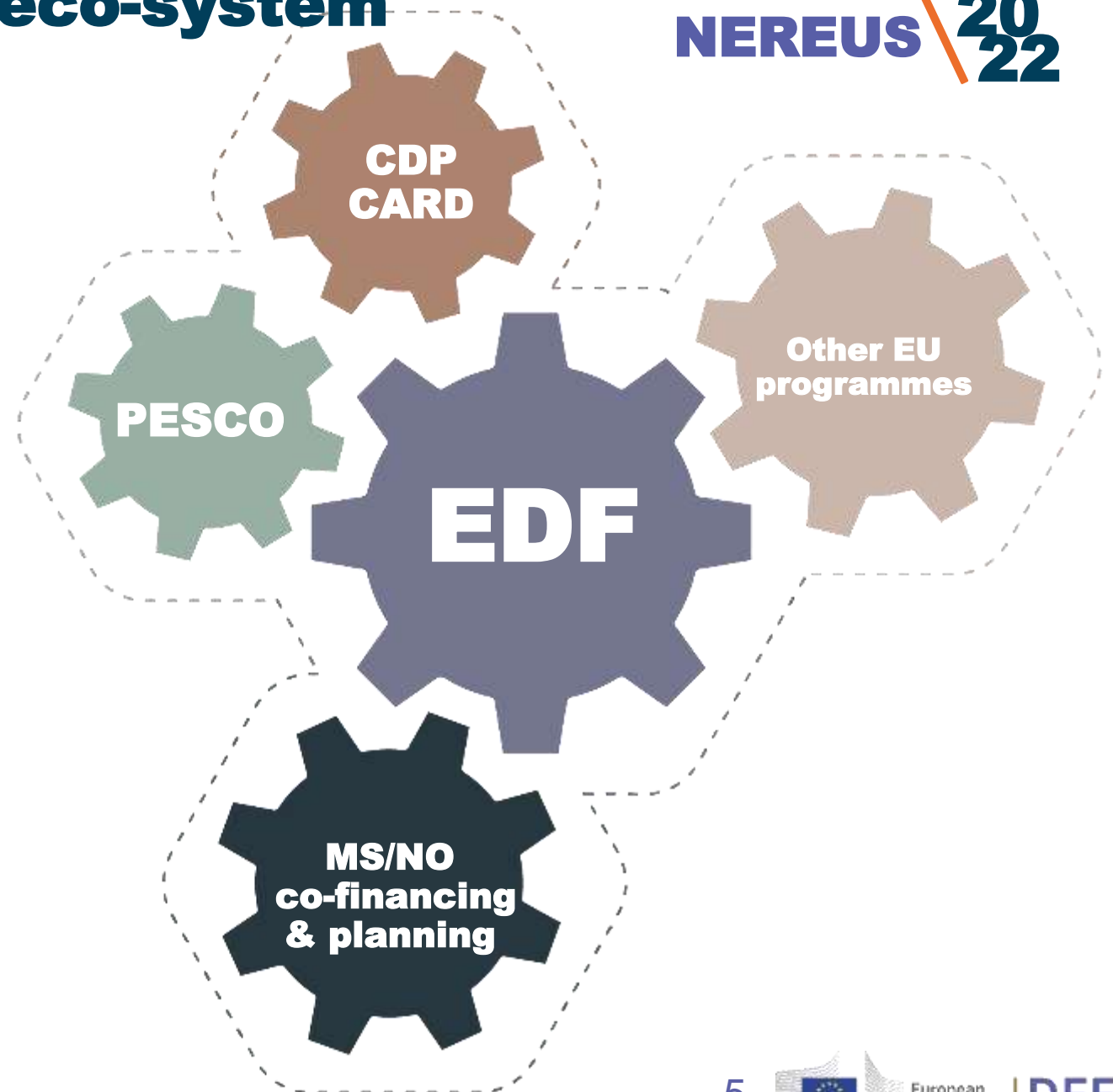
# EDF General Principles



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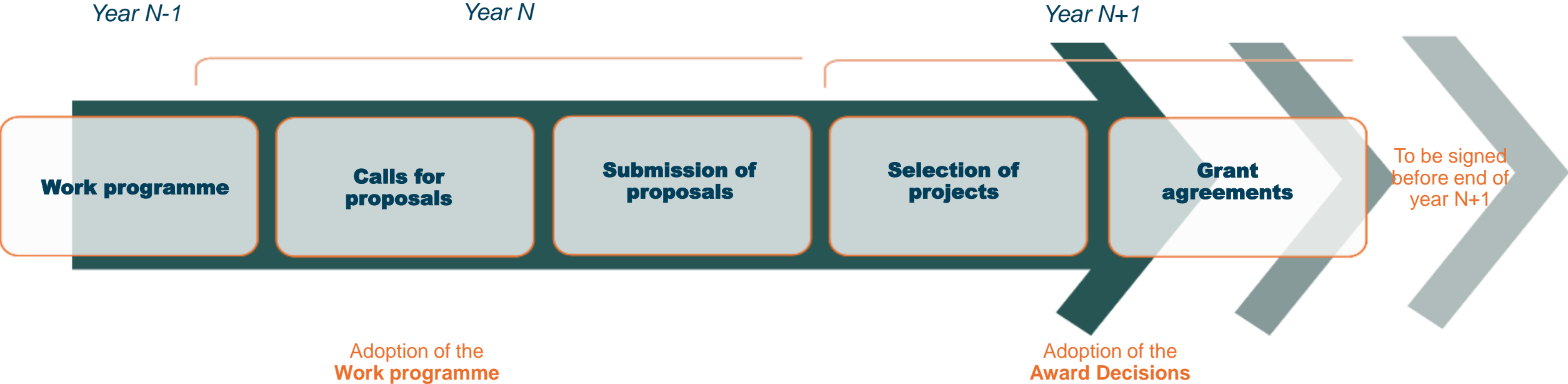
# EDF: an enabler in a larger eco-system

- EDF annual Work programmes **informed by:**
  - **Capability Development Plan (CDP)**: consistency with commonly agreed priorities
  - **Coordinated Annual Review on Defence (CARD)**: opportunities for collaborative R&D
  - **Permanent Structured Cooperation (PESCO)** projects
  - **Synergies and complementarity** with other EU programmes
- EDF multiannual perspective **informed by MS/NO co-financing & planning**



Annual work programmes and calls for proposals + indicative **multiannual perspective**

**Member States** (“EDF Programme Committee”) to validate the annual **work programme** (WP) and the **selection of projects** (awards) to be funded following the calls for proposals



# EDF CATEGORIES OF ACTIONS

## Addressed by annual work programmes & calls for proposals



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 **Medical response, CBRN & human factors**

 **Information superiority**

 **Sensors**

 **Cyber**

 **Space**

 **Digital transformation**

 **Energy resilience & environmental transition**

 **Materials and components**

 **Air combat**

 **Air and Missile defence**

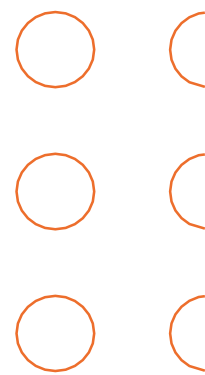
 **Ground combat**

 **Force protection and mobility**

 **Naval combat**

 **Underwater warfare**

 **Simulation and training**



**Horizontal categories**

 **Disruptive technologies**

 **Innovative defence technologies (SMEs)**

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# EDF Work Programme 2021

EUR 1 220 million











NEREUS / 2022

23 calls for proposals

37 topics

Calls closed on 9 December 2021

Results announced in July

 <b>Medical Response &amp; CBRN</b>	<ul style="list-style-type: none"> <li>Detection, identification and monitoring of CBRN threats <b>18,5 M€</b></li> <li>Development of defence medical countermeasures <b>50 M€</b></li> </ul>	 <b>Air combat</b>	<ul style="list-style-type: none"> <li>Next generation rotorcraft technologies <b>40 M€</b></li> <li>Enhanced pilot environment for air combat <b>150 M€</b></li> <li>European interoperability standard for collaborative air combat</li> </ul>
 <b>Information superiority</b>	<ul style="list-style-type: none"> <li>High-altitude platform systems <b>70 M€</b></li> <li>Robust defence multi-dimensional communications</li> </ul>	 <b>Air missile defence</b>	<ul style="list-style-type: none"> <li>Endo-atmospheric interceptor – concept phase <b>100 M€</b></li> </ul>
 <b>Sensors</b>	<ul style="list-style-type: none"> <li>Infrared detectors <b>38 M€</b></li> <li>Advanced radar technologies</li> </ul>	 <b>Ground combat</b>	<ul style="list-style-type: none"> <li>Improved warheads <b>10 M€</b></li> <li>Future modular ground vehicles and enabling technologies, including green technologies <b>150 M€</b></li> <li>Unmanned ground vehicle technologies</li> <li>BLOS collaborative close combat architecture</li> </ul>
 <b>Cyber</b>	<ul style="list-style-type: none"> <li>Improving cyber defence and incident management with artificial intelligence <b>13,5 M€</b></li> <li>Improved efficiency of cyber trainings and exercises <b>20 M€</b></li> </ul>	 <b>Protection &amp; Mobility</b>	<ul style="list-style-type: none"> <li>Development of full-size demonstrators for soldier systems <b>50 M€</b></li> <li>Development of a digital system for the secure and quick exchange of information related to military mobility</li> </ul>
 <b>Space</b> 50 M€	<ul style="list-style-type: none"> <li>Space and ground-based NAVWAR surveillance</li> <li>European protected waveform and accompanying technologies for resilient satellite communications against jamming <b>50 M€</b></li> </ul>	 <b>Naval combat</b>	<ul style="list-style-type: none"> <li>Digital ship and ship digital architecture <b>29 M€</b></li> <li>Ship Structural Health Monitoring <b>14,5 M€</b></li> <li>Modular and multirole patrol corvette <b>60 M€</b></li> </ul>
 <b>Digital transformation</b>	<ul style="list-style-type: none"> <li>Frugal learning for rapid adaptation of AI systems <b>18,5 M€</b></li> <li>Military multi-domain operations cloud</li> </ul>	 <b>Disruptive technologies</b>	<ul style="list-style-type: none"> <li>Quantum technologies <b>60 M€</b></li> <li>Non-line-of-sight optical sensors applications</li> <li>Over-the-horizon radars applications</li> <li>New materials and technologies for additive manufactured defence applications</li> <li>Non-thematic research <b>10 M€</b></li> </ul>
 <b>Energy &amp; Environment</b>	<ul style="list-style-type: none"> <li>Energy independent and efficient systems for military camps</li> <li>Next generation electrical energy storage for military forward operation bases <b>133 M€</b></li> <li>Alternative propulsion and energy systems for next generation air combat systems</li> </ul>	 <b>SMEs</b>	<ul style="list-style-type: none"> <li>Non-thematic research for SMEs and ROs <b>17,5 M€</b></li> <li>Non-thematic development for SMEs <b>36 M€</b></li> </ul>
 <b>Materials &amp; Components</b>	<ul style="list-style-type: none"> <li>Materials and structures for enhanced protection in hostile environments <b>40 M€</b></li> <li>Advanced RF components</li> </ul>	 <b>Others</b>	<ul style="list-style-type: none"> <li>External expertise, audits and IT systems <b>1,8 M€</b></li> <li>Business coaching for SMEs</li> </ul>

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Legend: Research Development

8



# EDF 2021: Selected projects related to Space\*

## Consortium

FDC S.A.R.L. (Coordinator)	France
AerospacelabSA	Belgium
Antwerp Space N.V.	Belgium
Diehl Defence GmbH & Co. KG	Germany
ElettronicaSPA	Italy
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.	Germany
GMV Aerospace and Defence SA	Spain
Hisdusat Servicios Estratégicos SA	Spain
Indra Sistemas SA	Spain
Industrieanlagenbetriebsgesellschaft MBH	Germany
Leonardo SpA	Italy
OHB Digital Solutions GmbH	Austria
OHB System AG	Germany
Qascom SRL	Italy
RUAG Space AB	Sweden
RUAG Space Germany GmbH	Germany
SAAB Dynamics Aktieföretag	Sweden
Safran Electronics & Defense	France
Spectracom SAS	France
Tecnobit SL	Spain
Telespazio SPA	Italy
Thales Alenia Space France SAS	France
Thales Alenia Space Italia SPA	Italy
Thales AVS France SAS	France
Thales SIX GTS France SAS	France
Totalförsvarets forskningsinstitut	Sweden

## Consortium

STE Engineering iDirectEurope (Coordinator)	Belgium
Airbus Defence and Space GmbH	Germany
Amphincyd.o.o.	Croatia
Antwerp Space N.V.	Belgium
ECOLE ROYALE MILITAIRE - KONINKLIJKE MILITAIRE SCHOOL	Belgium
Elitalisrl-Space & Defence	Italy
EUTELSAT	France
GISS Sp. z o.o.	Poland
Indra Sistemas, Sociedad Anónima	Spain
Lasting Software Srl.	Romania
Leonardo SpA	Italy
LuxGovSat S.A.	Luxembourg
Neosat GmbH	Germany
OHB Digital Connect GmbH	Germany
QuadSAT ApS	Denmark
Royal Netherlands Aerospace Centre --NLR	Netherlands
Thales Alenia Space Italia S.p.A	Italy
Thales SIX GTS France SAS	France
TTI Norte SL	Spain

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### Navguard

Advanced Galileo PRS resilience for EU Defence

**SELECTED PROJECTS EUROPEAN DEFENCE FUND (EDF) 2021**

CALL TITLE:	Resilient space-based PNT and SATCOM
TOPIC TITLE:	Space- and ground-based NAVWAR surveillance
DURATION OF THE PROJECT:	48 months
TYPE(S) OF ACTIVITIES:	Studies, Design, Prototyping, Testing
ESTIMATED TOTAL COST:	€ 56,228,502.77
MAXIMUM EU CONTRIBUTION:	€ 24,372,021.37

**SHORT DESCRIPTION OF THE PROJECT:**  
Navguard will strengthen the Galileo PRS resilience through new ground and space-based systems. The project "Advanced Galileo PRS resilience for EU Defence" (Navguard) will develop ground and space-based systems to detect illegitimate activities in GNSS frequency bands and geolocate the sources of malicious activities, including an in-orbit demonstration of a PRS space-based augmentation system. An information management subsystem will also be developed together with a user interface to establish a situational awareness picture.

Related PERCO project: European Radio Navigation Solution (EURANS)

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### EPW

European Protected Waveform

**SELECTED PROJECTS EUROPEAN DEFENCE FUND (EDF) 2021**

CALL TITLE:	Resilient space-based PNT and SATCOM
TOPIC TITLE:	European protected waveform and accompanying technologies for resilient satellite communications against jamming
DURATION OF THE PROJECT:	33 months
TYPE(S) OF ACTIVITIES:	Studies, Design
ESTIMATED TOTAL COST:	€ 26,815,861.00
MAXIMUM EU CONTRIBUTION:	€ 25,000,000.00

**SHORT DESCRIPTION OF THE PROJECT:**  
EPW will start the development of a secure waveform standard for future-proof satellite communications. The project "European Protected Waveform" (EPW) will study and design a multi-layered security and resiliency solution built around the cornerstone of efficient, secure, affordable and interoperable satellite, to embrace today's and future challenges related to increased throughput demand over satellite, dispersed operations, mobility and new security threats.

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**Other projects resulting from Disruptive and SME open calls:**  
IntSen2, Mini-bot, NAUCRATES, RFSHIELD, SPRING

# EDF Work Programme 2022

EUR 924 million



NEREUS / 2022

8 calls for proposals

33 topics

Opening of the calls: 21 June 2022

Deadline for submission: 24 November 2022

 <b>Medical Response &amp; CBRN</b>	<ul style="list-style-type: none"> <li>Diagnostics, treatment, transport and monitoring of highly contagious, injured and/or contaminated personnel 25 M€</li> <li>FPA on medical countermeasures n.a.</li> </ul>	 <b>Air combat</b>	<ul style="list-style-type: none"> <li>Airborne electronic warfare 40 M€</li> </ul>
 <b>Information superiority</b>	<ul style="list-style-type: none"> <li>SES interoperability 20 M€</li> <li>European command and control 30 M€</li> <li>Special operations command post 20 M€</li> </ul>	 <b>Ground combat</b>	<ul style="list-style-type: none"> <li>Collaborative ground combat 50 M€</li> </ul>
 <b>Sensors</b>	<ul style="list-style-type: none"> <li>Covert sensing 25 M€</li> <li>Advanced radar technologies 15 M€</li> </ul>	 <b>Protection &amp; Mobility</b>	<ul style="list-style-type: none"> <li>Medium size tactical cargo 30 M€</li> </ul>
 <b>Cyber</b>	<ul style="list-style-type: none"> <li>Adapting Cyber Situational Awareness 10 M€</li> <li>Cyber and information warfare toolbox 33 M€</li> <li>Cybersecurity and systems for improved resilience 27 M€</li> </ul>	 <b>Naval combat</b>	<ul style="list-style-type: none"> <li>Medium size semi-autonomous vessel 65 M€</li> <li>Naval collaborative surveillance 65 M€</li> </ul>
 <b>Space</b> 150 M€	<ul style="list-style-type: none"> <li>Responsive space system 20 M€</li> <li>Innovative space ISR capabilities 40 M€</li> <li>Space-based missile early warning 90 M€</li> </ul>	 <b>Underwater warfare</b>	<ul style="list-style-type: none"> <li>Underwater manned-unmanned teaming and swarms 25 M€</li> <li>Underwater ODAC 30 M€</li> </ul>
 <b>Digital transformation</b>	<ul style="list-style-type: none"> <li>Hidden threats detection (challenge, 2 topics) 25 M€</li> <li>Shared databases for image recognition 25 M€</li> </ul>	 <b>Simulation and training</b>	<ul style="list-style-type: none"> <li>Modelling, simulation and simulators integration 30 M€</li> </ul>
 <b>Energy &amp; Environment</b>	<ul style="list-style-type: none"> <li>Sustainable components for underwater applications 20 M€</li> </ul>	 <b>Disruptive technologies</b>	<ul style="list-style-type: none"> <li>Adaptive camouflage 15 M€</li> <li>Electromagnetic artillery demonstrator 15 M€</li> <li>Non-thematic research 10 M€</li> </ul>
 <b>Materials &amp; Components</b>	<ul style="list-style-type: none"> <li>Packaging technologies for critical components 25 M€</li> <li>Smart and multifunctional textiles 20 M€</li> </ul>	 <b>SMEs</b>	<ul style="list-style-type: none"> <li>Non-thematic research for SMEs and ROs 17.6 M€</li> <li>Non-thematic development for SMEs 36.5 M€</li> </ul>
		 <b>Others</b>	<ul style="list-style-type: none"> <li>CSA for national focal points 1,5 M€</li> <li>External expertise, audits and IT systems 3 M€</li> <li>Business coaching for SMEs</li> <li>Blending facility for equity funding for SMEs/Mid-Caps 20 M€</li> </ul>

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Legend: Research Development

# EDF-2022-RA: Space topic

Topic/Budget	Title	Scope*	Types of activities	Max. nb of projects
<b>EDF-2022-RA-SPACE-RSS</b> 20 M€	Responsive space system	Concept of operations, end-to-end system concept, and architectural alternatives of all components	Studies (+up/down)	1

# EDF-2022-DA: Space topics

Topic/Budget	Title	Scope*	Types of activities	Max. nb of projects
<b>EDF-2022-DA-SPACE-ISR</b> 40 M€	Innovative multi-sensor space-based Earth observation capabilities towards persistent and reactive ISR	Architectural study for a future small sat Earth Observation constellation for near-real time tactical use	Study, design (+up/down)	1
<b>EDF-2022-DA-SPACE-SBMEW</b> 90 M€	Space-based missile early warning	System architecture, CONOPS and critical technologies for an European EW and tracking system	Study, Design (+up/down)	1

# EDF Multiannual perspective

- Intends to facilitate **coordination in long-term EDF planning**
- Gives an overview of EDF **main expected outcomes** per category of action
- Provides **indicative targets** in terms of EDF financial contribution to meet the expected outcomes
- 1<sup>st</sup> version published in 2022. Will be updated on a yearly basis

## Main expected outcomes from EDF 2021-2027 support:

Without prejudice to the discussion on other potential R&D topics to be addressed in future annual work programmes, the EDF ambition in the *Space* category of actions should be to support the achievement of the following main expected outcomes:

- Joint procurement for integration of PRS (public regulated service) receivers into EU MSs military systems (autonomy/synergy Space/Defence)
- Joint procurement of SSA (space situational awareness) capabilities interfaced with EU SST (space surveillance and tracking)
- Space-based early warning prototype
- Space-based ISR (information, surveillance and reconnaissance) constellation prototype
- Potential synergies with the envisioned space connectivity constellation, subject to further analysis

Category of actions	Indicative EDF budget contribution during 21-27
1. Defence medical support, CBRN, biotech and human factors	
2. Information superiority	> 10 %
3. Advanced passive and active sensors	
4. Cyber	
5. Space <b>i.e. ~800M€ over 21-27 or 110M€/year</b>	> 10%
6. Digital transformation	
7. Energy resilience and environmental transition	> 5%
8. Materials and components	
9. Air combat	> 10%
10. Air and missile defence	> 5%
11. Ground combat	> 10%
12. Force protection and mobility	
13. Naval combat	> 10%
14. Underwater warfare	
15. Simulation and training	
16. Disruptive technologies	4% - 8%

# EDF Eligibility conditions

Consortia: at least 3 eligible entities from 3 different MS/Norway (2 for disruptive call)

Recipients & main subcontractors + Infrastructure, facilities, assets and resources for the action located in EU or Norway

Entities established in 3<sup>rd</sup> countries can be associated if security-specific conditions are met, but no EDF financial support

Recipients and main subcontractors not subject to control by 3<sup>rd</sup> country/entity

Derogation possible if approved security-specific guarantees can be provided

No restrictions nor control by 3<sup>rd</sup> country/entity on results

Compliance with international law and high ethics standards

## + specific to development actions

Co-financing where needed

Harmonised defence capability requirements jointly agreed by at least 2 MS/NO for design

Intention to procure & common technical specifications for system prototyping+ activities

# EDF: EU funding rates

## Research vs Development

### Research actions

Activity type	EU funding rate
Generating knowledge	100%
Integrating knowledge	100%
Studies	100%
Design	100%

### Development actions

Activity type	EU baseline funding rate	EU maximum funding rate
Integrating knowledge	65%	100%
Studies	90%	100%
Design	65%	100%
Prototyping	20%	55%
Testing	45%	80%
Qualification	70%	80%
Certification	70%	80%
Increasing efficiency	65%	100%

**Bonuses**



Funding rate mechanism to incentivise co-financing  
(leverage effect)

# EDF bonus system for development actions

Condition for application	Value of the bonus
<b>PESCO Bonus</b>	
Action developed in context of the Permanent Structured Cooperation (PESCO)	+10% for <b>all activities</b> in the action
<b>'Mid-cap' bonus</b>	
% eligible costs allocated to 'Midcaps' established in the EU (and NO) $\geq$ 15%	+10% <b>for the activity</b>
<b>SME Bonus</b>	
% eligible costs allocated to 'SMEs' established in the EU (and NO) $\geq$ 10%	% of eligible costs allocated to ' <b>non cross-border SMEs</b> ' established in the EU and NO (maximum 5%) + 2 x % of eligible costs allocated to ' <b>cross-border SMEs</b> ' established in the EU and NO

Bonus system to incentivise participation of SMEs and mid-caps

# Useful links

- General information on the EDF on DG DEFIS website  
(including EDF annual work programmes and multiannual perspective, and selected projects)
- EDF Calls for proposals on the *Funding and Tenders portal* (where to apply)
- EDF Reference documents on the *Funding and Tenders portal*  
(Regulation, conditions to apply, submission templates, model grant agreements, etc.)
- National Focal Points Network
- Remaining questions regarding application to EDF calls for proposals?  
→ [DEFIS-EDF-PROPOSALS@ec.europa.eu](mailto:DEFIS-EDF-PROPOSALS@ec.europa.eu)