Welcome at the PESCO MAS MCM Research & industry Day

Brussels, Wednesday 21 November

the Royal Military Academy

Objectives:

- Present the PESCO MAS MCM project to potential partners
- Inform and discuss with EU industry & research on the upcoming 2019 scoping study tender on shortfalls and industrial landscaping

The Agenda

timing	item	speaker
13.30 – 14.00	Registration of participants	Conference centre hall
14.00 – 14.10	Welcome Objectives of our project	Captain (N) Jan DE BEURME Chief of Staff BEL Navy
14.10 – 15.00	Project description High Level Objectives (HLO) and PoW	Captain (N) L. De Maesschalck
15.00 – 15.30	Coffee break	
15.35 – 16.35	The financial framework in PESCO Eligibility for cooperation	Colonel B. Van Opstal, MSc Dep National Armament Director
16.35 – 16.50	Presentation of the MAS MCM 2019 landscaping study call	Captain (N) L. De Maesschalck
16.50 – 17.20	Sharing ideas for the project development	Open discussion
17.20 – 17.30	Summary of the conference closing remarks	BEL Project coordinator
17.30 – 19.30	Networking drinks in Horeca building (VIP1 room)	Reps from member states, research centers and industry

EU Permanent Structured Cooperation

MAS MCM

The Maritime (semi-) Autonomous Systems

for Mine Countermeasures

Opening address

Captain (BE Navy) Jan DE BEURME, M.A.

Chief of staff

Belgian Navy Staff

MAS MCM

Maritime (semi-) Autonomous Systems for Mine Countermeasures

The answer from a PESCO perspective

Captain(BE N) Luc DE MAESSCHALCK
Project leader

Brussels, November 21st 2018

Content

- Project description
- Environment
- objectives
- Program of work
- Challenges
- Q & A

Project description

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

Permanent Structured Cooperation

Lisbon Treaty in Dec 2007 & start up 11 Dec 2017

Batch 1 & 2 will be 34 projects in total

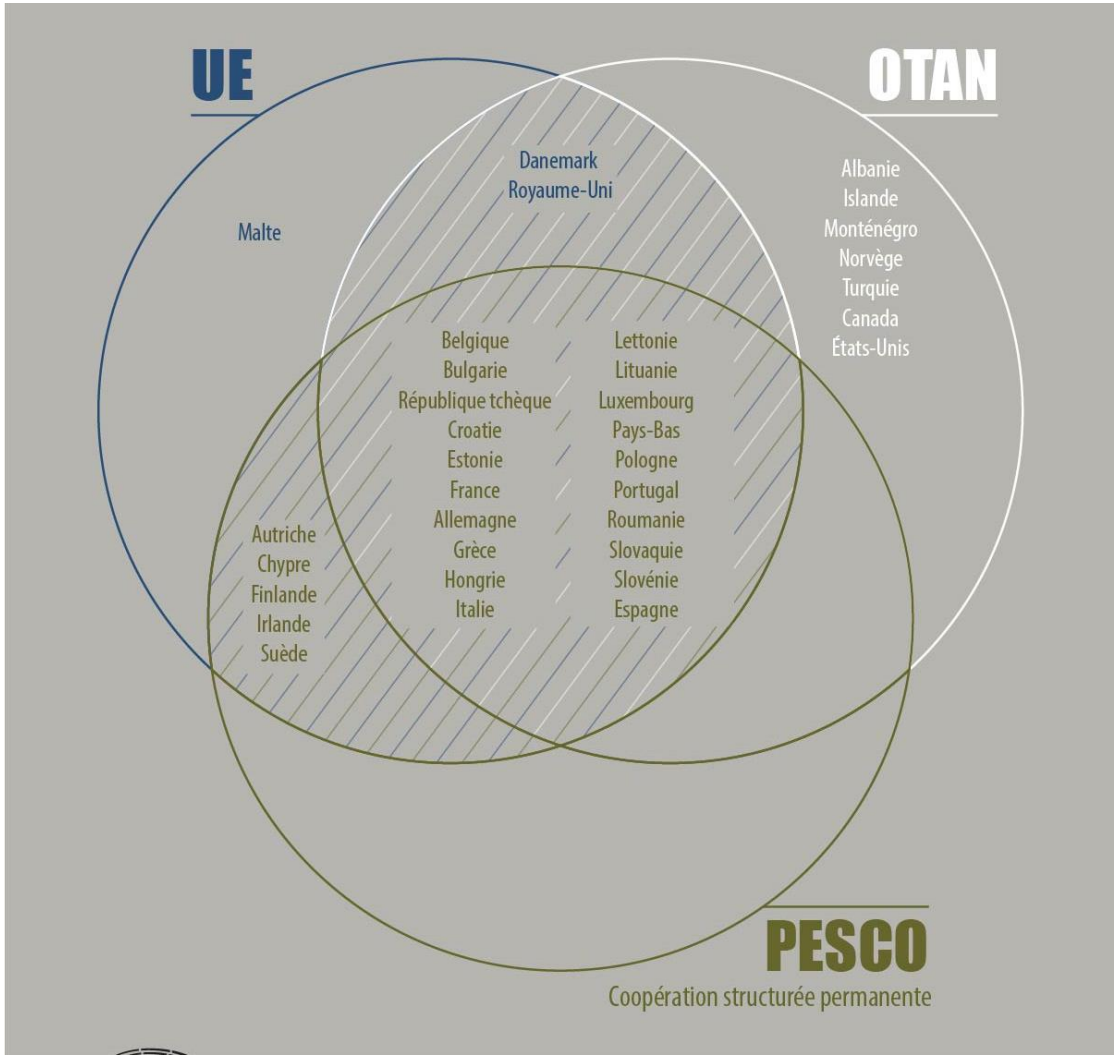
- **More security for the EU and its citizens**
- **Deepening defence cooperation**
- **Increase defence expenditures**
- **Creating joint military capabilities**
- **Strengthening defence industry**
- **Part of a comprehensive defence package - CARD**

spend together, invest together, buy together, act together

4 Maritime Projects in PESCO

- **Batch 1 – 17 projects**
  - **Harbour and Maritime Surveillance and protection** (HARMSPRO)
    - ✓ project is lead by Italy;
  - **Maritime Surveillance** (MARSURV)
    - ✓ project is lead by Greece;
- **Batch 2 – 17 proposals (approval 20 Nov 18)**
  - **Deployable Modular Underwater intervention Capability**
    - ✓ Project is lead by Bulgaria

Project members



PESCO MAS MCM

Members:

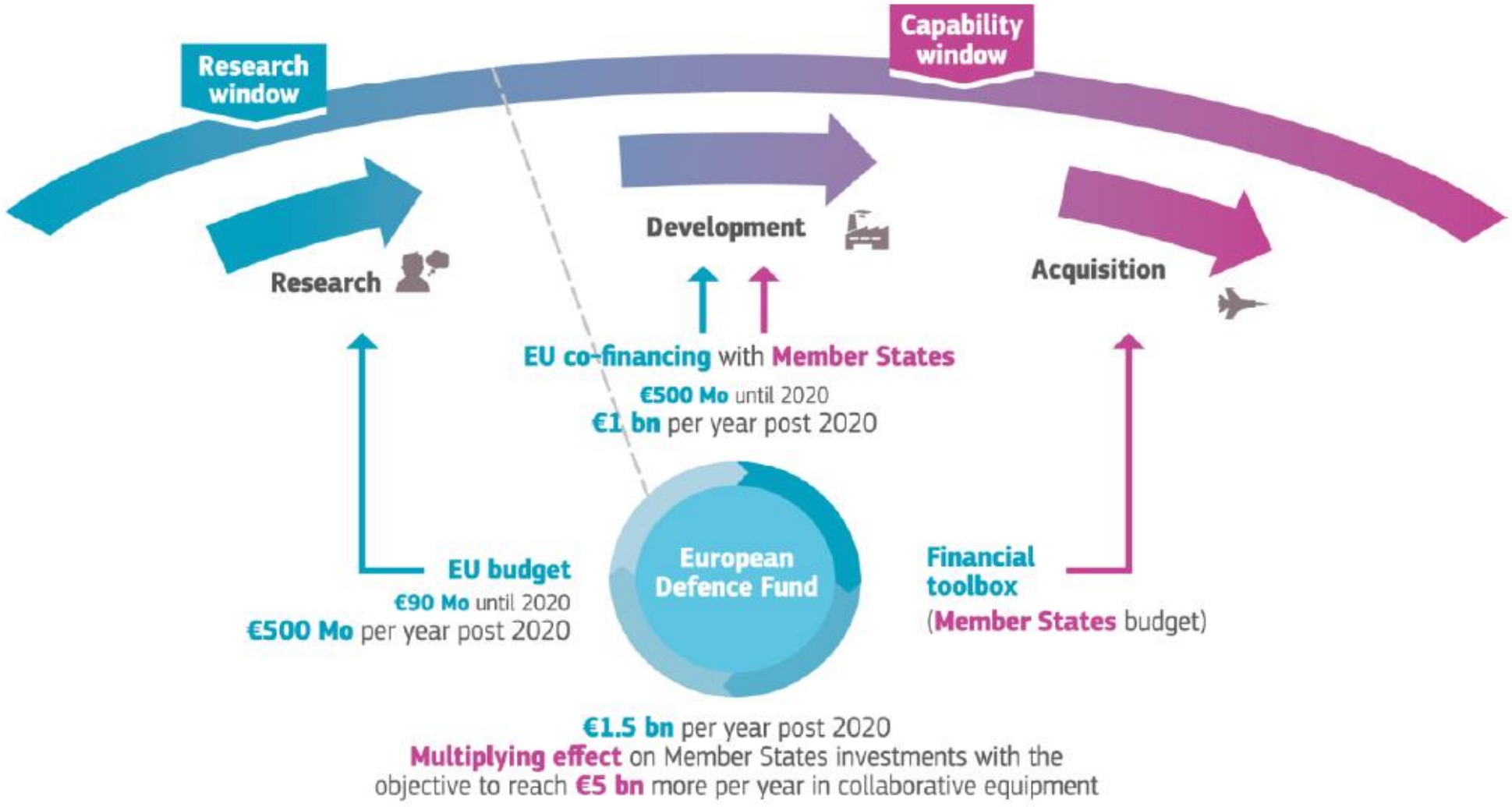
Belgium
Greece
Latvia
The Netherlands
Poland
Portugal
Romania

Observers:

Estonia
Finland
France
Ireland
Spain

PESCO

Financial aspects



environment

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

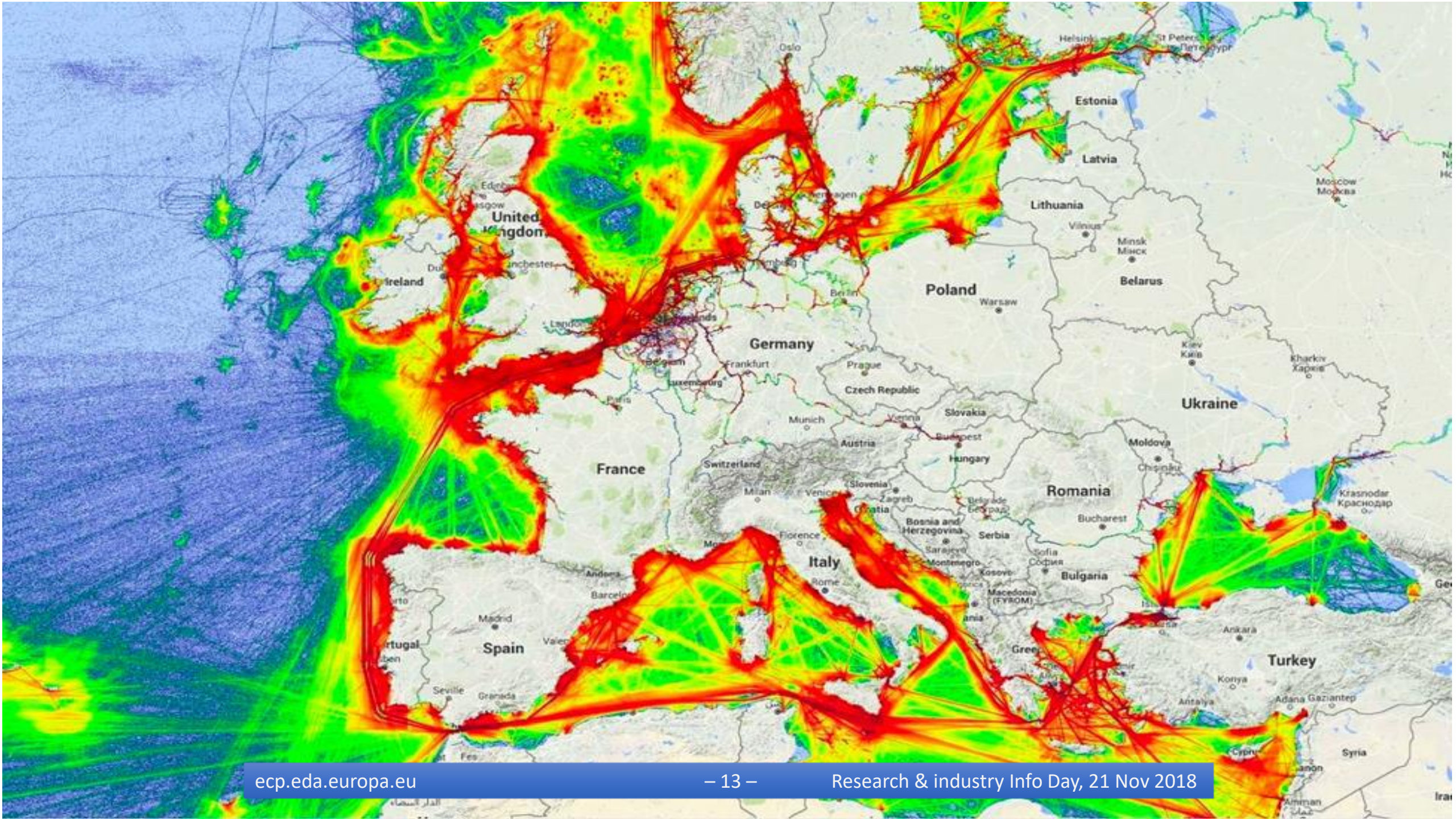
PESCO MAS MCM

Our environment

Threats
- geopolitical
- Mines & IED's
- Terrorism
- Cyber
- Fake news

vulnerabilities
- SLOC's
- Harbours
- Off shore infrastructure
- Power projection

Impact
- Economic
- energy
- Resilience
- Trust
- Democracy


Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Ukraine
France
Spain
Italy
Romania
Bulgaria
Turkey
Czech Republic
Slovakia
Hungary
Austria
Switzerland
Moldova
Serbia
Bosnia and Herzegovina
Slovenia
Ireland
Syria
Oslo
Helsinki
Moscow
Minsk
Warsaw
Prague
Munich
Frankfurt
Vienna
Budapest
Kiev
Kharkiv
Chisinau
Bucharest
Sofia
Ankara
Konya
Antalya
Adana
Gaziantep
Krasnodar
Madrid
Seville
Granada
Rome
Milan
Florence
Venice
Zagreb
Sarajevo
Belgrade
Amman

What we need

- Common standard
- interoperable
- Enhanced C4I
- deployable
- Improved (underwater) connectivity
- Tackle shortfalls

Linked to:

- CSDP:
  - Surveillance in the Global Maritime Domain
  - Maritime Protection (SLOC's and critical infrastructure)
- EU Capability Development:
  - Dedicated Unmanned systems to improve Maritime Mine warfare
    A 2018 revised CDP priority "Underwater Control contributing to resilience at sea"
- Added value:
  - Creation of a system of systems based on exportable EU standards & technology
  - Exchange with civilian applications
  - Link/ convergence with other ongoing projects (NATO, EDA, OCCAR, national)

What we want

flexible

Modular

Cutting-edge technology

Stand off

Open architecture

Artificial intelligence

Taking national requirements into account

objectives

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

Project objective

The Maritime (semi-) Autonomous Systems for Mine Countermeasures (MAS MCM) will deliver a world-class mix of (semi-) autonomous underwater, surface and aerial technologies and capabilities for maritime mine countermeasures for future acquisition.

MAS MCM toolbox – deliverables & performance objectives

- State-of-the-art technology
- Open architecture – plug & play in all project phases
- Modular / deployable / scalable / innovative
- An accessible interface leading to a common standard
- Communications (data transfer – cyber – under/above water)
- Real time data processing – Artificial intelligence
- Environmental impact

Program of work

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

Project Roadmap

2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

Contract BE/NL rMCM

M1 IOC

Delivery of 11 platforms & UxV toolboxes

FOC

Phase 1 2018 – 23

- Develop shortfalls list
- Research Future UxV toolbox
- Research future mine threats
- CSR – CTS toolbox 2.0

Phase 2 2021 - 2028

- Prototype toolbox 2.0
- OT&E toolbox 2.0
- Develop enhanced C2
- Develop/test common standard
- Common exercise participation

Phase 3 2025 – 2030 +

- CDR toolbox 2.0
- prototype toolbox 3.0
- Develop rolling toolbox
- Common Ops participation

timeline

phase I

Phase 1 : 2018 – 2023

2018

- Bilateral meetings and approve reference document
- Plenary meetings
- Comprehensive list of shortfalls development
- Research & industry Info Day
- Prepare PoW 2019

2019

- **Scoping study on industrial landscaping and technological building blocks**
- Define CSR and CTS of mix or part of UxV
- Link with EU research and industry
- Prepare PoW 2020

next

- Feasibility study on future capabilities
- Testing period in MCM Exercise Sandy Coast 2020
- Follow on objectives phase 2
- Additional work TBD by the pMS

Phase 1 : 2018 till 2023 – milestones

WG governance

Ref Document → PoW 2019 → PoW 2020 → Further PoW & PoW Ph 2

WG production

Agree on Prioritized shortfalls list → identify Open window for cooperation → Define CSR and CTS including RFI → determine Additional milestones

External actions

Research & industry Day(s) → Scoping study tender 1 (current MFF) → MCM trails Ev. in MN Exercise → Research tender 2 (next MFF)

Phase 2 : 2021 – 2028

202X

- Acquisition of a prototype toolbox 2.0
- Collect and integrate OT&E results to develop a future mission management system
- Develop and test enhanced C2
- Develop and test a common standard
- Common Staff Requirements on pooling toolbox

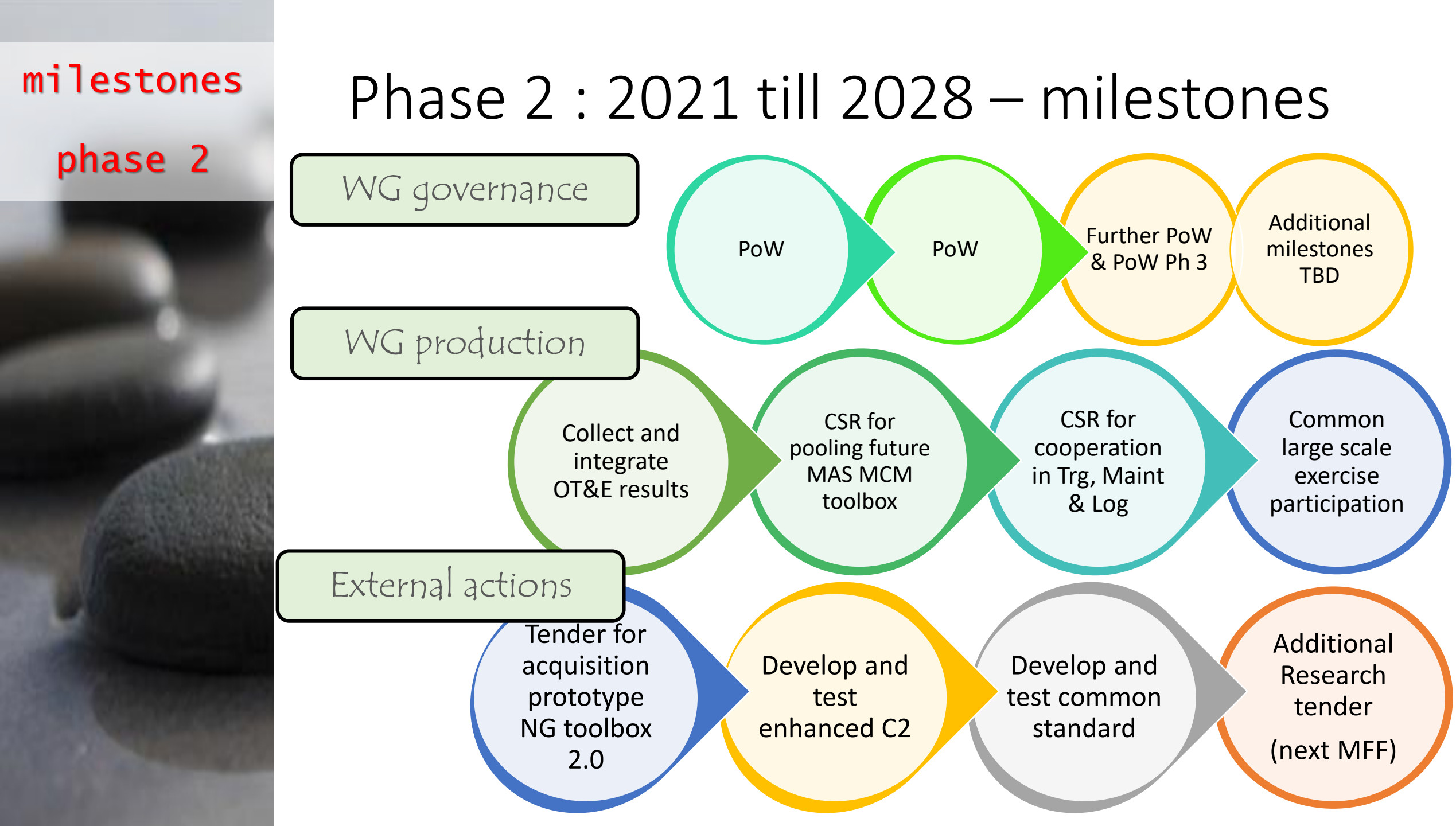
next

- OT&E of the prototype toolbox 2.0
- Cooperation in training, maintenance and logistics
- Common participation with MAS MCM in a large scale exercise
- Follow on objectives for phase 3
- Additional work TBD by the pMS

milestones

phase 2

Phase 2 : 2021 till 2028 – milestones



timeline

phase III

Phase 3 : 2025 – 2030 and beyond

20XX

- Critical design review of toolbox 2.0
- Acquisition of prototype toolbox 3.0
- Develop a rolling toolbox

next

- Common participation with MAS MCM in a CSDP operation
- Additional work TBD by the pMS

milestones

phase 3

Phase 3 : 2025-’30 and beyond – milestones

WG governance

PoW → PoW → Additional milestones TBD

WG production

Critical design review NG toolbox 2.0 → Enhanced cooperation in Trg, Maint & Log → Common CSDP operation participation

External actions

Tender for acquisition prototype Future toolbox 3.0 → Develop rolling toolbox 3.0 … → Additional Research tender (next MFF)

Challenges

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

Innovative MAS MCM Capability roadmap

Capability iteration

PESCO MAS MCM

MAS MCM ROLLING TOOLBOX
- Incremental toolbox improvement
- Multiple Maritime Autonomous Systems
- Fully interoperable

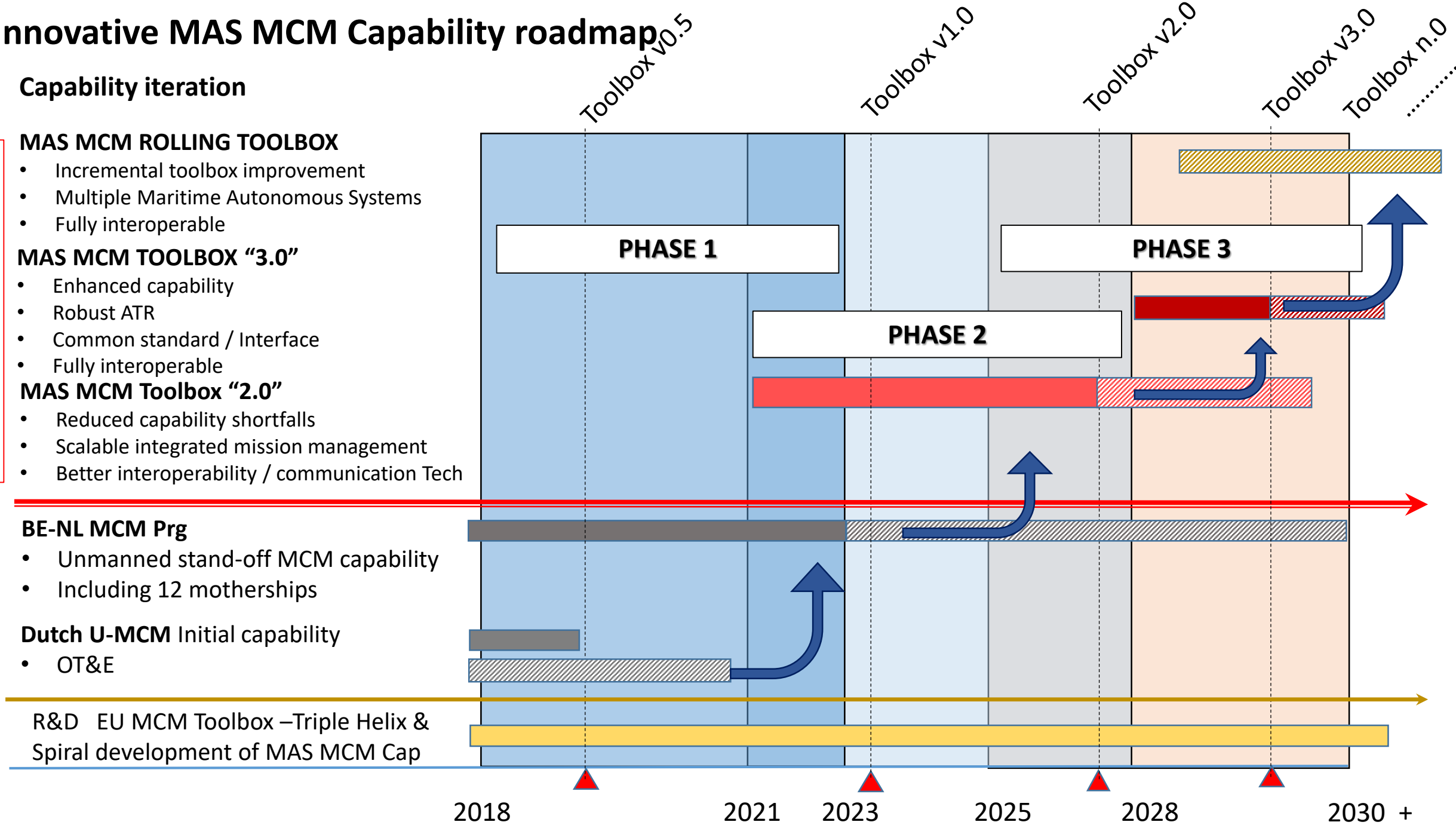
MAS MCM TOOLBOX "3.0"
- Enhanced capability
- Robust ATR
- Common standard / Interface
- Fully interoperable

MAS MCM Toolbox "2.0"
- Reduced capability shortfalls
- Scalable integrated mission management
- Better interoperability / communication Tech

BE-NL MCM Prg
- Unmanned stand-off MCM capability
- Including 12 motherships

Dutch U-MCM Initial capability
- OT&E

R&D EU MCM Toolbox –Triple Helix & Spiral development of MAS MCM Cap



What are the capability enhancement objectives ?

- Reduction of capability shortfalls
  - Buried mines
  - Floating/drifting mines
  - UxV counter-countermeasures
  - Scalable integrated mission management architecture
  - Resilient and secure (UW) network communication technology
  - Operability brackets for launch and recovery for UxV (if disruptive innovation)
- Speeding-up the MCM process
- Human work load reduction
- Interoperability and integration with NATO forces
- Capability enhancement in general through innovation

Project

LOE

Our 6 lines of effect to innovate

1. Create a common scalable MCM toolbox capability
2. Promote the MAS MCM project – make it known
3. Enlarge the number of participating states
4. Propagate a common standard (plug & play interface)
5. Converge with wide range of unmanned initiatives (partnerships)
6. **Involve EU research centres & Implicate EU defence industry**

Project challenges

- **Reality check together with research & industry**
- **Resistance to change**
- **PESCO growing pains and ‘artificiality’**
- **Constraints and restraints**
- **Keep our roadmap on track towards Ops capabilities**
- **Fully incorporate all partners**

Have a dream, believe in it
But above all

Work for it!!

Questions

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

PESCO project n° IX
MAS MCM

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

Brussels , 21st of November 2018

MAS MCM

Maritime (semi-) Autonomous Systems for Mine Countermeasures

The financial framework in PESCO Eligibility for cooperation

Colonel GS Bert VAN OPSTAL, MSc
Deputy National Armament Director

Brussels, November 21st 2018

European Defence Fund (EDF)
21 November 2018

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PESCO : funding

The PESCO MAS MCM project will be funded through :

- **financial contributions by the participating nations**
- **in-kind contributions by the participating nations**
- **complemented by (partial) EDF funding.**

EDAP : Background

European Union Global Strategy on Foreign and Security Policy (Jun 2016)

Wide array of policies and instruments

Strategic autonomy of the European Union

A sustainable, innovative and competitive European defence industry is essential for Europe's strategic autonomy and for a credible CSDP

Contribution of the European Commission : European Defence Action Plan

(30 Nov 2016)

EDAP : Maintain and enhance an Industrial Base able to support the mid- to long term strategic needs of Europe

EDAP : 3 pillars

EDAP : Maintain and enhance an Industrial Base able to support the mid- to long term strategic needs of Europe

- ✓European Defence Fund
- ✓Fostering Investments in the defence Supply chains
- ✓Strengthening the single market for defence
- ➢Maximising civil/military synergies across EU policies

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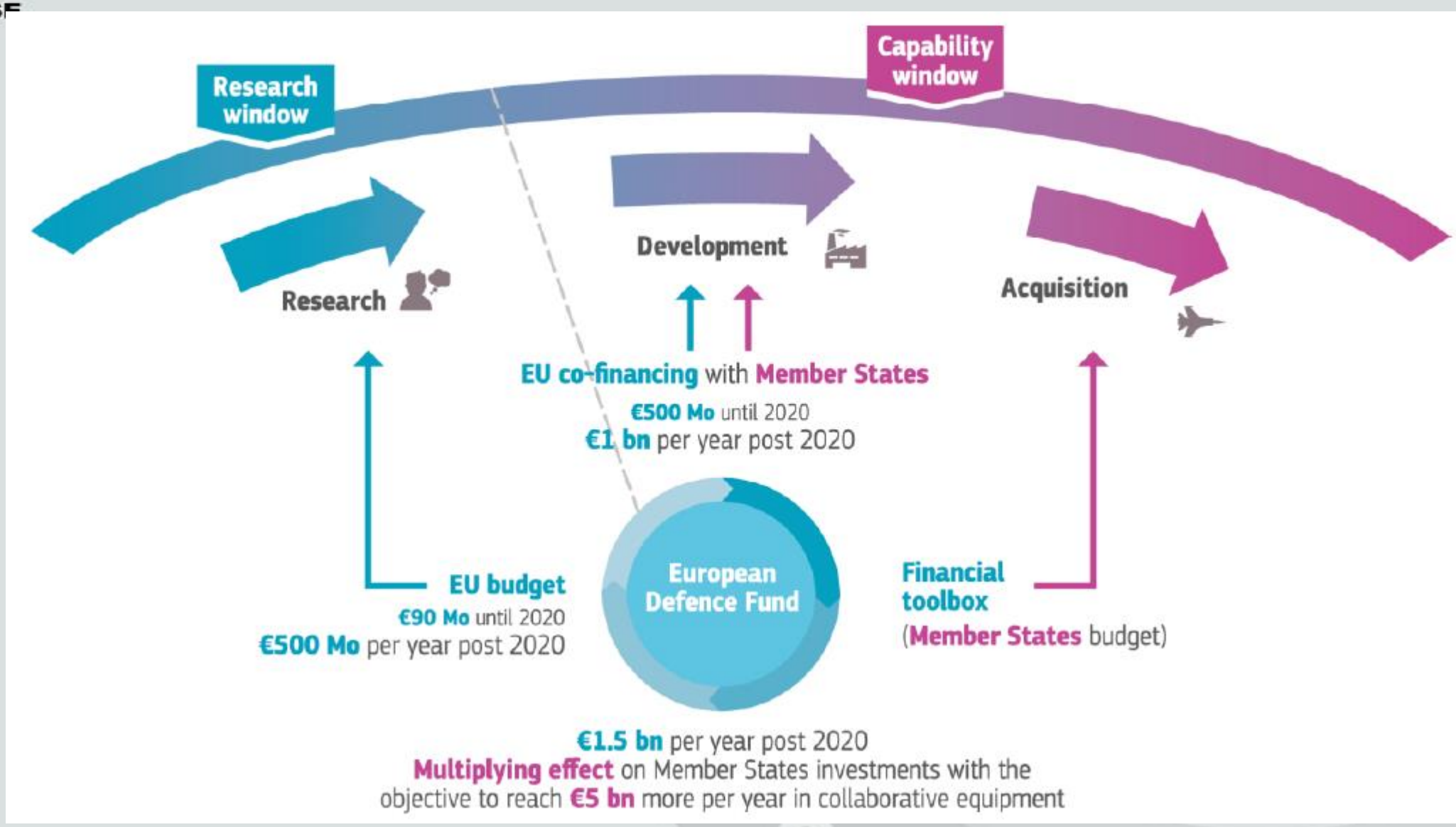
European Defence Fund



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European Defence Fund

Research Window

European Defence Research Programme (EDRP) : 2021-2027 : 4,1 Bn €

Preparatory Action (PA) : 2017-2020 : 90 Mio €

- ✓ ***100% Funded from the EU budget mainly through non-refundable grants.***
- ✓ ***Collaborative research programmes requiring the participation of research institutes and/or companies from several Member States;***
- ✓ ***Encourage participation of SMEs, including civilian SMEs working on dual-use innovation.***
- ✓ ***No duplication, no substitution with national or intergovernmental/ multinational research programmes between EU Member States; consistency and complementarity with these programmes.***
- ✓ ***Delegation Agreement between the Commission and EDA***

European Defence Fund

Capability Window

Capability Window : 2021-2027 : 8,9 Bn €

(leverage effect ; (+)1 Bn € / year funded by EU
→ 5 Bn € / year complemented by nations)

Financing the joint development of defence capabilities

- ✓ ***Objective : further development of results from Research Window***
- ✓ ***Contributions from the EU Budget : support Development phase of Collaborative Development Programs :***
  European Defence Industrial Development Program (EDIDP)
- ✓ ***"Incentive" for the Member States :***
  - ❖ *MS 100% owner of the capabilities*
  - ❖ *Financial contribution from Commission (EU-budget)*

EDF Capability Window
European Defence Industrial Development Programme (EDIDP)

- Test phase 2019-2020 : 500 Mio €
- Regulation on an EDIDP : Commission Proposal 07 Jun 2017 > Council position 08 Dec 2017 > European Parliament position Mar 2018 > agreed Regulation in Jun 2018 > Publication expected in Oct 2018
- Regulation 2018/1092 of 18th July 2018
- Establishment of Work Program by Program Committee (Member States) "Informal Program Committee" meetings ongoing since Jan 2018
- Call for Proposals early 2019 and 2020
- Industry to submit proposals (in a "category of programs")
- Award decision by Program Committee
- Grant Agreement between Commission and Industry
- ***Work Program : pragmatic approach***

EDIDP Regulation

Article 6

Eligible actions

1. The Programme shall provide support for actions by beneficiaries in the development phase covering both new products and technologies and the upgrade of existing products and technologies-provided that the use of pre-existing information needed to perform the action for the upgrade is not subject to restriction by third countries or third country entities, directly or indirectly through one or more intermediary undertakings. An eligible action shall relate to one or more of the following items:

(a) studies such as feasibility studies and other accompanying measures;

(b) the design of a defence product, tangible or intangible component or technology as well as the technical specifications on which such design has been developed which may include partial tests for risk reduction in an industrial or representative environment;

(c) the system prototyping of a defence product, tangible or intangible component or technology ;

(d) the testing of a defence product, tangible or intangible component or technology;

(e) the qualification of a defence product, tangible or intangible component or technology;

(f) the certification of a defence product, tangible or intangible component or technology ;

(g) the development of technologies or assets increasing efficiency across the life cycle of defence products and technologies.

EDIDP Regulation

2. The action shall be undertaken in a cooperation of undertakings within a consortium of at least three eligible entities which are established in at least three different Member States. At least three of these eligible entities established in at least two different Member States shall not be effectively controlled, directly or indirectly, by the same entity or shall not control each other.

3. Consortia shall offer proof of viability by demonstrating that the costs of the action that are not covered by Union support will be covered by other means of financing such as Member States' contributions.

4. For actions referred to in points (c) to (g) of paragraph 1, consortia shall prove their contribution to the competitiveness of the European defence industry by demonstrating that at least two Member States intend to procure the final product or to use the technology in a coordinated way, including through joint procurement where applicable.

EDIDP Regulation

Article 11

Funding rates

1. The financial assistance of the Union provided under the Programme shall not exceed 20% of the total eligible cost of the action referred to Article 6(1) (c) *(System prototyping)*. In all the other cases, the assistance may cover up to the total eligible cost of the action.

2. An action, as referred to in Article 6(1), that is developed in the context of Permanent Structured Cooperation may benefit from a funding rate increased by an additional 10 percentage points.

3. An action, as referred to in Article 6(1), may benefit from an increased funding rate, as referred to in subparagraphs 2 and 3, where at least 10% of the total eligible cost of the action is allocated to SMEs established in the Union.

4. An action, as referred to in Article 6(1), may benefit from a funding rate increased by an additional 10 percentage points where at least 15% of the total eligible cost of the action is allocated to Mid-caps established in the Union.

5. Indirect eligible costs shall be determined by applying a flat rate of 25% of the total direct eligible costs, excluding direct eligible costs for subcontracting.

6. The overall increase in the funding rate of an action following the application of paragraphs 2, 3 and 4 shall not exceed 35 percentage points.

7. The financial assistance of the Union provided under the Programme, including increased funding rates, shall not cover more than 100% of the eligible cost of the action.

EDIDP Regulation

Article 12

Ownership and Intellectual Property Rights

1. The Union shall not own the products or technologies resulting from the action nor shall it have any intellectual property rights claim pertaining to the action.

2. The results of actions which receive funding under the Programme shall not be subject to control or restriction by third countries or by third country entities, directly or indirectly through one or more intermediate undertakings, including in terms of technology transfer.

3. This Regulation shall not affect the discretion of Member States as regards policy on the export of defence-related products.

5. If Union assistance is provided in the form of public procurement of a study, all Member States shall have the right, free of charge, to a non-exclusive license for the use of the study upon their written request.

EDIDP Regulation

Article 14

Work programme

1. The Commission, by means of an implementing act, shall adopt a two-year work programme. This implementing act shall be adopted in accordance with the examination procedure referred to in Article 13(2). This work programme shall be in line with the objectives set out in Article 3.

2. The work programme shall set out in detail the categories of projects to be funded under the Programme. Those categories shall be in line with the defence capability priorities referred to in Article 3(b).

   These categories shall cover capabilities regarding innovative products and technologies in the fields of:

   – preparation, protection, deployment and sustainability;

   – information management and superiority and command, control, communication, computers, intelligence, surveillance and reconnaissance (C4ISR), cyberdefence and cybersecurity; and

   – engagement and effectors.

   The work programme shall also include a category of projects specifically dedicated to SMEs.

3. The work programme shall ensure that at least 10% of the overall budget will benefit the cross-border participation of SMEs.

MAS-MCM in EDIDP/EDF

- Scoping Study for PESCO MAS MCM :
  Proposal for 2019 Call
- Short term proposal for EDIDP 2019-2020 from BEL side :

  MCM-project :
  Selection process concluded
  Specifications handed over to selected July 2018
  "Provisions for EDIDP support"

  Negotiations ongoing
  Contract expected early 2019
  Proposal for 2020 Call
- EDF in Next Multiannual Financial Framework of the EU (2021-2027)
  - Research proposals
  - Capability proposals

MAS-MCM in EDIDP

- **Short term proposal for EDIDP 2019 by MAS-MCM PESCO Nations :**
  Scoping study (industrial & technol. landscaping ; Common Staff Reqs)

- **4.4.3. Sub-category for SMEs – Innovative and future-oriented defence solutions (calls for proposals – 2019 and 2020)**
- The development of innovative and future-oriented defence products and technologies relies on the innovation capacity of SMEs.
- Proposals are invited against the following topic(s): Innovative defence products and technologies, including those that can create a disruptive effect, for example in terms of operations, equipment, basing, energy solutions. **Actions that prepare the ground for highly innovative solutions, such as feasibility or scoping studies**.
- **The indicative budget for this action is EUR 16 000 000 (EUR 6 000 000 in 2019, EUR 10 000 000 in 2020).**

Building a Proposal on a Scoping Study in EDIDP

- **Who?**

Industrial consortium, assisted by Nations

- **What?**

Scoping Study : requirements on content, format, milestones, deliverables to be provided by Nations

- **How?**

Guideline = Award criteria :

- Excellence : advantages over existing products
- Innovation : novel concepts and approaches, nzew technological improvements
- Autonomy of EU industry : in line with Capability Development Plan
- Proportion of budget to be allocated to SMEs
- Based on common requirement of PESCO Nations for Scoping study
- Increasing efficiency across the life cycle of defence products and technologies

Building a Proposal on a Scoping Study in EDIDP

- **Why?** Common requirement of PESCO Nations for Scoping study
- **How Much?** x00 k€
- **Where?** In the template for Proposals, to be provided by Commission
- **When?** ASAP
  Call early 2019
  Deadline for Submission : March 2019

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MAS MCM

Maritime (semi-) Autonomous Systems for Mine Countermeasures

Presentation of the 2019 landscaping study call

Captain(BE N) Luc DE MAESSCHALCK
Project leader

Brussels, November 21st 2018

Content

- Introduction
- Outline
- Deliverables
- Timeline
- Sharing ideas / Q & A

Introduction

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

Our objective

- Delineating the (future) technological landscape
- Provide answers to current shortfalls
- Defining the future capability set (rolling toolbox)
- Start cooperation with EU research and industry
- Results will guide future MAS MCM actions

Enhancing future stand-off MCM capabilities

- Reduction of capability shortfalls
  - Buried mines
  - Floating/drifting mines
  - UxV counter-countermeasures
  - Scalable integrated mission management architecture
  - Resilient and secure (UW) network communication technology
  - Operability brackets for launch and recovery for UxV (if disruptive innovation)
- Speeding-up the MCM process
- Human work load reduction
- Interoperability and integration with other NATO forces
- Capability enhancement in general through innovation

Outline

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

We are looking for

- The overall objective is delineating an architecture, modules and system solutions based on the MAS MCM concept
- Requirements:
  - Modularity / interoperability /upgradeability
  - An open architecture that will provide flexibility
  - “system of systems” – approach, offering all MS a range of suitable alternatives
- Study is scheduled for approx. 12 months (to be discussed)

results

Address limitations, guide research and provide viable solutions and answers

- So we can:
  - Innovate further together
  - Plan future PESCO MAS MCM actions including follow-on research
  - Define the common staff requirements
  - Draft technical specifications of the building blocks of the next generation MCM toolboxes

deliverables

- Description of the study approach
- Industrial landscaping and technological potential
- Expected future mine threats
- Financial feasibility – minimum acquisition numbers of (sub)systems
- EU market readiness and research opportunities
- Minimal organisational steps necessary to implement future MAS MCM in EU navies
- Identification of initial steps to build a common interoperable standard
- ….

Timeline

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

Expected EU Commission milestones

Jan 2019	• Call for proposal
March 2019	• Submission deadline
Summer 2019	• (expected) Commission selection and Program Committee approval
Fall 2019	• Info exchange with consortium Point of Contact / Coordinator
NLT end 2019	• Grant agreement

How we propose to proceed together

Initial info exchange

- confirmation of participation interest
- by e-mail to Project Leader

- Kick-off meeting of Scoping study Consortium
- Designate Consortium Coordinator
- Present partners' activities, strengths, ..
- Determine program of work towards submission

Submission of study proposal

21 Nov 18
MAS MCM R & I Day

NLT 14 Dec 18
Interest confirmation

Wed 10 Jan 19
1st consortium meeting

End March 2019
Study proposal Submission

MAS MCM

Maritime (semi-) Autonomous Systems for Mine Countermeasures PESCO project n° 9

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Project leader

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Ideas
&
Questions

The Maritime (semi-) Autonomous Systems for Mine Countermeasures

PESCO MAS MCM

PESCO project n° IX
MAS MCM

Brussels, 21 November 2018