Preparatory Action on Defence Research

2018 Calls for proposals
and
General Annexes

(based on European Commission Decision C(2018)1383)

Version 1.0

15 March 2018

Table of contents

Introduction

Investment in future-oriented European defence research programmes today is a crucial step to maintain freedom of action and the ability to develop the capabilities that will be required tomorrow. Yet up to now, EU funding could only be used to fund research activities with an exclusive focus to civil applications.

The Preparatory Action on Defence Research (PADR) is a first essential step, limited in time and in budget, to test the added value of the EU budget supporting defence research. It will pave the way to a substantial defence research programme within the context of the next multiannual financial framework post 2020.

The main objective of the PADR is to test mechanisms that can prepare, organise and deliver a variety of EU-funded cooperative defence research and technology development (R&T) activities to improve the competitiveness and innovation in the European defence industry and to stimulate cooperation amongst R&T actors in all Member States.

The focus of the PADR is on defence research rather than dual-use research; nevertheless it will be complementary with existing EU programmes such as the 7th Framework Programme for Research and Technological Development and Horizon 2020 as well as R&T activities in the Member States and in the European Defence Agency (EDA).

The core of the PADR is a research programme that is implemented through annual calls for proposals from 2017 onwards for 3 years[1]. The calls are based on annual work programmes defined in close cooperation with Member States and adopted by the Commission. The work programme contains a detailed description of the actions (research projects) that will be funded through the award of grants to consortia after the publication of calls of proposals. While the overall responsibility for the management of the Preparatory Action lies with the Commission, EDA will implement the annual work programmes, organise the calls, evaluate the project proposals submitted and manage the research projects funded.

This document contains the 2018 PADR call texts together with budgetary information and General Annexes with relevant information for applicants and the modalities which EDA will use to evaluate the proposals.

In 2018 there will be three calls for proposals. The main focus of the first call (PADR-EDT-02-2018) lies on the launch of one project to develop European high-performance, trustable (re)configurable system-on-a-chip or system-in-package components for defence applications.

[1] Commission Decision of 9 March 2018 on the adoption of the work programme for 2018 and on the financing of the 'Preparatory action on Defence research', and authorising the use of unit costs under the preparatory action, C(2018)1383.

Within the context of research in technologies and products related to effects, a second call (PADR-EF-02-2018) will result in funding of one project to contribute to the development of a high power laser effector.

These calls are capability-driven and focus on critical defence technologies.

Thirdly, a call for one coordination and support action (PADR-STF-02-2018) is published to start the strategic technology foresight.

This document contains furthermore an action to give an additional contribution to the funding of the single project which was retained after evaluating the proposals submitted to the 2017 call (PADR-US-01-2017) in the area of enhanced situational awareness in a naval environment.

Finally, a financial contribution for the call for tender for independent experts for the evaluation of proposals submitted to the calls described above is foreseen.

Key websites

All information relating to the present calls for proposals can be accessed from the RTD participant portal website:

http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/pppa/index.html#c,calls=hasForthcomingTopics/t/true/1/1/0/default-group&hasOpenTopics/t/true/1/1/0/default-group&allClosedTopics/t/true/1/1/0/default-group&+PublicationDateLong/asc

Information on the Preparatory Action, is available at the following website: https://ec.europa.eu/growth/content/preparatory-action-defence-research-description-2018-topics_en

EU Budget 2018 – Section III - Item 02 04 77 03 — Preparatory action on Defence Research: http://eur-lex.europa.eu/budget/data/LBL/2018/en/SEC03.pdf

Call – Electronic Design Technologies for Defence Applications

PADR-EDT-2018

Modern defence capabilities are increasingly depending on complex electronic technologies. With few EU-based suppliers, urgent action needs to be taken to ensure strategic autonomy and security of supply of such critical defence technologies. Setting up a European supply chain for specific, critical electronic design technologies will contribute to lift these limitations. (Re-)gaining leadership in these domains will moreover enable to capture business opportunities to Europe.

Proposals are invited against the following topic:

PADR-EDT-02-2018: European high-performance, trustable (re)configurable system-on-a-chip or system-in-package for defence applications

Specific Challenge:

High-resolution and high-speed data acquisition impose ever stronger real-time requirements on data processing components on which an increasing number of defence applications critically depend upon in areas such as communications, electronic warfare, encryption, digital imaging, as well as radar and secure positioning, navigation and timing (PNT). General purpose processors show too low performance levels for critical processes in such defence applications.

Hence the need for defence-specific hard- and software approaches. These functionalities can be embedded in high-density electronic components that can be configured or even reconfigured[2] (such as Field Programmable Gate Arrays amongst others), are combined on a single System-on-Chip (SoC) or distributed over a Multi-Chip-Module (or other System-in-Package (SiP) solutions). The selection of the preferred technological solution should strike a balance between the requirements of the defence application(s) (in terms of, e.g., bandwidth, latency, flexibility, cryptologic restrictions, spatial requirements, power consumption), and economic drivers (such as the number of units expected to be produced, time to enter into service, the upfront costs (e.g., to non-recurring engineering), maintenance needs).

Performant (re)configurable SoC/SiPs are commercially available for a wide variety of applications in civil domains including medical and consumer electronics, automotive, and high performance computing. Using (re)configurable SoC/SiPs in (aero)space and defence applications adds stringent requirements for operation under harsh conditions. Moreover, military users need to be sure that these components can be trusted for use, e.g., in security systems, communication equipment and encryption algorithms available without restrictions.

[2] (Re)configurable components include but are not limited to (re)programmable components.

For these technologies which are critical for a number of defence applications, the EU is currently fully dependent on suppliers established in non-EU countries, which implies risks of supply chains and vulnerabilities in terms of security. Furthermore, a number of regulations of non-EU nations can impose end-user restrictions on the use of the technologies (e.g., the US International Traffic in Arms and Export Administration Regulations (ITAR and EAR)). Setting up a EU-based supply chain for high-performance, trustable (re)configurable SoC/SiP for defence applications would contribute to remove these important limitations, as well as creating business opportunities in other highly demanding sectors beyond the defence sector.

Scope:

Proposals should design and validate a SoC/SiP and as such make a substantial contribution towards the development and manufacturing of European high-performance, trustable (re)configurable SoC/SiP suitable for multiple defence applications[3].

Design considerations and engineering decisions on the architecture of the SoC/SiP should thereby be driven by the state-of-the-art requirements of the selected defence applications. In particular long-term operation under harsh conditions, such as severe temperature variations, intense vibrations, and elevated radiation levels, as well as specific power requirements, should be adequately taken into account.

The design has to take into account that the manufacturing needs of the SoC/SiP should match the production capabilities of ideally more than one trustable fab or foundry established in the EU. In parallel to the proposed advances at the hardware level, advancing innovative development and debugging tools should be explored. They should enable to work at a high level of abstraction to design, simulate, integrate, synthesise, and test systems on the target device. Enhanced performance and shorter development times should be demonstrated by removing the debugging barrier between the processor and the (re)configurable component of the SoC/SiP.

Proposals should pay particular attention to security protection of the proposed hardware and software solutions.

The SoC/SiP architecture should be protected from intrusion or attacks, e.g., by secure boot mechanisms, embedding encryption engines, anti-tamper (which can be based on emerging technologies such as Physical Unclonable Functions (PUF)), anti-reverse engineering techniques and TEMPEST protection ideally allowing unclassified handling of information. The design and manufacturing process should be highly controlled to exclude that weaknesses, back doors or Trojan horses are implemented in the hardware and software components and systems. Flexible packaging options should be offered for the SoC/SiP device. When requested known good dies (KGD) should be supplied as well. The proposed security measures should be in line with the recommendations issued by the relevant national crypto approval authorities (CAA) of at least two Member States or Norway to handle information up to the national

[3] Work on Application Specific Integrated Circuits (ASICs) is outside the scope of this call.

equivalents of SECRET UE/EU SECRET provided under Council Decision 2013/488/EU[4] and Commission Decision (EU, Euratom) 2015/444 [5].

Hardware and software products developed in the context of this topic should not be subject to non-EU export control regulations.

Proposals should include a size, weight, power and cost (SWaP-C) analysis to support the proposed (re)configurable SoC/SiP technology as well as a high-level description of the key performance indicators (KPIs) for state-of-the-art performance of the envisaged functionalities, and the methodologies on how to measure them. A report with a detailed description of these KPIs and methodologies should be delivered within 6 months after the start of the project.

In order to meet future capacity and performance requirements, the components should be implemented in a technology node (minimum transistor feature size) of 28 nm or smaller.

If the proposed architecture includes a FPGA, the SoC/SiP should include at least the following features:

- 200k Look-Up Table (LUTs);
- Internal non-volatile memory;
- Digital Signal Processing hard-macros;
- Flexible interconnections between the DSP processing core, general processing cores and on- and off chip bridges and interfaces;
- Encryption module and anti-tamper and TEMPEST protection (as set out above);
- At least 10 Gb/s high-speed links / interfaces.

Deviations from the set of features listed above should be duly justified in view of the multiple defence applications envisaged.

The potential of the proposed solutions, in particular in the security and space domain[6], should be thoroughly explored.

When relevant, results publicly available from EDA and NATO activities and studies should be taken into account for the proposed work. The activities included in the proposals should clearly differentiate from or go beyond work already covered under relevant themes of the EU Research and Innovation Framework Programmes.

The implementation of this topic is intended to start at TRL 2 to 3 and target TRL 5.

The Commission considers that proposal requesting a contribution from the EU between EUR 8 000 000 and 12 000 000 would allow this specific challenge to be addressed appropriately.

[4] Council Decision 2013/488/EU of 23 September 2013 on the security rules for protecting EU classified information, OJ L274, 15.10.2013, p. 1.

[5] Commission Decision (EU, Euratom) 2015/444 of 13 March 2015 on the security rules for protecting EU classified information, OJ L72, 17.3.2015, p. 53.

[6] Applicants are invited to consult the Work programme 2018-2020 "5.iii. Leadership in Enabling and Industrial Technologies – Space", and in particular the technical guidance documents listed in the Work programme.

Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

No more than one action will be funded.

Expected Impact:

- Convincing demonstration of the potential of EU-funded research in support of EU critical defence technologies, in particular in the domain of (re)configurable SoC/SiPs;
- Ensure secure and autonomous availability of high performance and trustable (re)configurable SoC/SiPs to military end-users;
- Contribute to strengthening the European microelectronics industry and help improve its global position through the implementation of innovative technologies along a new European manufacturing value chain;
- Improved competitiveness of the end-user industry in and beyond the defence sector.

Type of Action: Research action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

Conditions for the Call – Electronic Design Technologies

Opening date(s), deadline(s), indicative budget(s):[7]

Topics (Type of Action)	Budgets (EUR million)	Deadlines
	2018	
Opening: 15 March 2018		
PADR-EDT-02-2018 (RA)	Up to 12.0[8]	28 June 2018 (Single stage)
Overall indicative budget	Up to 12.0[8]	

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 6 months from the final date for submission; and
- Indicative date for the signing of grant agreements: Maximum 3 months from the date of informing successful applicants.

Eligibility and admissibility conditions: The conditions are described in General Annexes B and C of the work programme.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in General Annex F of the work programme.

Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in General Annex F of the work programme.

The full evaluation procedure is described in the relevant guide published on the Participant Portal.

[7] The authorising officer by delegation responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
All deadlines are at 17:00:00 Brussels local time.
The authorising officer by delegation responsible may delay the deadline(s) by up to two months.
The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority.
[8] The Commission intends to increase this budget up to a maximum of EUR 12 million subject to availability of unused funds in other Calls.

Special report: a special report is requested to be submitted according to the template included in General Annex I of the work programme.

Consortium agreement: Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.

Call – Effects

PADR-EF-2018

There is a critical need to invest in novel defence technologies that can deliver precise effects on conventional and unconventional threats. Such technologies are designed to engage in precise, graduated and environmental-responsible ways. Activities clearly aim to develop a strategic orientation to bring such innovative technologies closer to end-user uptake in the medium term. The Preparatory Action on Defence Research thereby provides the scope for research and technological development actions based on assessments of the current and future research and development needs. Several of these technologies are considered to be critical for EU Member States in terms of strategic autonomy and/or security of supply. The proposed programmatic approach should ensure that such important limitations can be lifted.

Proposals are invited against the following topic:

PADR-EF-02-2018: Towards a European high power laser effector

Specific Challenge:

Directed energy systems, and in particular laser systems, are potential game changers in future military activities[9]. They are capable to engage rapidly and precisely with agile targets at a low operational cost per shot and with a reduced risk to certain types of collateral damage. This makes them particularly attractive to counter a variety of threats, ranging from asymmetric threats such as incoming, low cost unmanned vehicles to Rocket, Artillery, Mortar (RAM) or missiles which conventionally would require expensive countermeasures such as guided missiles. Laser systems also face a number of limitations, in particular their sensitivity to absorption and scattering which lead to decreased beam quality under adverse atmospheric conditions and hence reduce the circumstances in which the system can effectively be used.

In essence, the thermal interaction between the laser beam and the target ultimately leads to irreversible damage if the temperature of the target material can be raised sufficiently high. Therefore the laser output power should be as high as possible while maintaining a high beam quality to focus and lock the laser beam to a small spot size on the target. This allows reaching sufficiently high power densities to reduce the exposure time needed to induce critical failure of the target material.

Different designs based on different laser technologies have been developed to deliver output powers ranging from the kW-level up to several MW. The lower power levels are sufficient to

[9] Directed energy systems emit energy towards a target without using a ballistic projectile. A laser system is a directed energy system which relies on electromagnetic waves that engage the target at the speed of light. It consists of a laser effector (consisting of the laser source(s) and the beam forming and delivery optics) and the warning and tracking systems.

affect soft, unmanned aerial vehicles (UAV) at short ranges (several hundreds of meters up to the kilometre range) while airborne MW-laser systems demonstrated to be able to counter ballistic missiles from a distance of hundreds of kilometres.

Current research and development (R&D) efforts aim to develop laser systems that combine several or many high output powers with a compact design to enable integration in mobile platforms, such as ships, trucks or helicopters. The required laser output power is directly linked to the target(s) and their associated scenario(s), the laser system architecture and performance. As a first estimate, high quality laser beams with output powers higher than 100 kW would enable to address the full target spectrum from tactical unmanned aerial vehicles (UAVs) up to certain types of missiles. Non-European countries have already demonstrated compact laser effectors generating up to 100 kW, and roadmaps are proposed to scale the powers well above the 100 kW level in the coming years. Over the last decade, the increase in the laser effector power in non-European countries relies merely on studies of new architectures, including incoherent, coherent and spectral beam combining.

In Europe, development programmes for single high power laser effectors do not go beyond power levels of 30 kW. Current European high power laser effectors rely mainly on non-European technology and are based on architectures that combine incoherent beams on the target.

The EU thus risks becoming fully dependent on suppliers established in non-EU countries for this critical defence technology. This not only limits the strategic autonomy of the Member States but also generates security-of-supply risks. End-user restrictions imposed by non-EU nations (e.g., the US International Traffic in Arms and Export Administration Regulations (ITAR and EAR)) already endanger the security-of-supply of essential components of such high power laser systems.

To remove such important limitations, a research and technological development (R&T) programme, later on followed by a development phase, needs to be initialised to design and build a European high power laser effector, to become available for defence applications within the next decade.

Scope:

European high power effectors should deliver an output power of well beyond 100 kW (in continuous mode) and operate at a high duty cycle. The output wavelength, the beam quality and the optical systems (including at least fast steering mirrors, and adaptive optics if deemed necessary) should be able to cope with variable atmospheric conditions, ranges which can be expected in specific scenarios and environmental safety constraints (to limit collateral damage, e.g., when used in densely populated urban areas). Graduated responses by varying the output power at the level of the source without beam quality degradation should be explored. The effector(s) could be integrated in current and future compact laser systems to be mounted on mobile (sea, land or air) platforms. Therefore, appropriate attention should be paid to reduced energy consumption and lower cooling requirements in accordance with the expected volume

and power available for each platform. Solutions to lower the weight while keeping the design sufficiently rugged should be explored. Wall plug vs. optical efficiency of the laser effector must be clearly estimated. The duty cycle can be optimised for each type of platform due to integration constraints. Damage and lifetime predictions of the components of the effectors should be covered as well as simulations and modelling capacities.

Proposals need to include (a) a **R&D assessment, including a technology roadmap**, (b) a **criticality mapping** and deliver (c) **R&T activities** based on this assessment and mapping exercise.

(a) R&D assessment

A small part of the proposed budget should be dedicated to develop a R&D assessment, including a technology roadmap, describing the elements, timing and value chains needed for a joint EU development programme for laser effector(s) for defence applications to reach TRL 8 by 2027. The roadmap should address at least the following typical scenarios:

- Countering RAM;
- Countering missiles;
- Countering rapid, small boats;
- Countering tactical manned and unmanned aerial vehicles.

The assessment should furthermore identify specific measurement aspects related to high power laser beams, such as beam divergence and diameter, wavefront aberration, power density, light – matter interaction, amongst others. A synthesis of national and international legal and safety regulations applicable to the use of high power laser systems should be included.

Specific requirements related to the laser technologies for the further development of a complete laser system and its integration into the sensor and weapon systems of current and future platforms should be identified and evaluated within the context of defining or refining concepts of employment and use.

A realistic breakdown of the development cost of the laser effector(s) should be presented.

An outline of the roadmap should be included in the proposals.

(b) Criticality mapping

The materials, components and technologies that need foremost priority support because of technological or economic bottlenecks need to be thoroughly assessed. Insufficient R&D capacity in the EU at the early stages of the development as well as lack of industrial capacity (including skills) towards the pre-manufacturing stages of the laser effector should be mapped. End-user restrictions imposed by non-EU countries should be identified.

Depending on the scenarios selected for the R&D assessment, the mapping should at least investigate the critical components or technologies that hamper technological progress in the following challenges:

- **Single-beam** high power laser technology;
- Laser **architectures capable to deliver graduated responses** for integration in different platforms, including novel beam combining technologies, like coherent beam combining, should be investigated;
- Technologies for the **wavefront management of the laser beam** (including innovative adaptive optics) to correct in real time aberrations induced by atmospheric conditions;
- Technologies and solutions for **focusing and tracking the laser beam on the target**,

thereby keeping in mind that those components or technologies should satisfy platform-integration constraints related to size, weight, volume and power. An initial version of the assessment and the critical materials/components/technologies mapping needs to be provided in the early stages of the project, to be updated by the end of the project.

A first identification of the main critical technological aspects should be included in the proposals

Both the assessment, including the roadmap and the criticality mapping will form an integral part of the Special Report[10].

(c) R&T activities

Most of the proposed research efforts and the budget should be dedicated to initiate R&T activities in line with the proposed roadmap.

The consortium should therefore select to address one or more materials, components, laser design or technologies pertaining to the main critical technological aspects. The proposal should clearly demonstrate that R&T activities will generate by the end of the project results that can be taken up in the early stages of the development of the laser effector(s). To this end, at least one demonstrator is required in order to prove that the specific technology gap is filled and/or to prove the potential of the technology for future power increase (scalable laser power capability).

Involving European end-users in order to obtain realistic specifications for the envisaged scenarios would be considered an asset. Proposals should include a high-level description of key performance indicators (KPIs) for the envisaged functionalities and the methodologies on

[10] See Annex I of the 2018 Calls for Proposals and General Annexes.

how to measure them. A report with a detailed description of these KPIs and methodologies should be delivered within 6 months after the start of the project.

When relevant, results publicly available from EDA and NATO activities and studies should be taken into account for the proposed work. The activities included in the proposals should clearly differentiate from or go beyond work already covered under relevant themes of the EU Research and Innovation Framework Programmes[11].

The implementation of this topic is intended to target TRL 5.

The Commission considers that proposals requesting a contribution from the EU between EUR 4 000 000 and 5 400 000 would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

No more than one action will be funded.

Expected Impact:

- Convincing demonstration of the potential of EU-funded research in support of EU critical defence technologies, in particular in the domain of high power laser effectors;
- Establish a R&D assessment including a technology roadmap towards an EU High Power Laser Effector by 2027 with milestones and estimated budget needs:
- Ensure secure and autonomous availability of high power laser effectors to military end-users by 2027;
- Contribute to strengthening the European industry and help improve its global position through the implementation of innovative technologies along a new European manufacturing value chain.

Type of Action: Research action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

[11] Applicants are in particular invited to consult the Work programme 2018-2020 "5.iii. Leadership in Enabling and Industrial Technologies – Space", and in particular the technical guidance documents listed in the Work programme.

Conditions for the Call – Effects

Opening date(s), deadline(s), indicative budget(s):[12]

Topics (Type of Action)	Budgets (EUR million)	Deadlines
	2018	
Opening: 15 March 2018		
PADR-EF-02-2018 (RA)	Up to 5.40[13]	28 June 2018 (Single stage)
Overall indicative budget	Up to 5.40	

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 6 months from the final date for submission; and
- Indicative date for the signing of grant agreements: Maximum 3 months from the date of informing successful applicants.

Eligibility and admissibility conditions: The conditions are described in General Annexes B and C of the work programme.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in General Annex F of the work programme.

Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in General Annex F of the work programme.

The full evaluation procedure is described in the relevant guide published on the Participant Portal.

[12] The authorising officer by delegation responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
All deadlines are at 17:00:00 Brussels local time.
The authorising officer by delegation responsible may delay the deadline(s) by up to two months.
The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority.

[13] The Commission intends to increase this budget up to a maximum of EUR 5.4 million subject to availability of unused funds in other Calls.

Special report: a special report is requested to be submitted according to the template included in General Annex I of the work programme.

Consortium agreement: Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.

Call – Strategic Technology Foresight

PADR-STF-2018

Future defence capabilities rely on emerging key enabling and cutting edge technologies, which today often are of "dual-use". Securing the supply of these technologies has become a challenge, both for industry as for national defence administrations. The requirement of non-limited access and availability makes some of these technologies defence-critical, leading to a need for joint/ coordinated action at national and European level. Rapidly evolving technological innovation calls for a mechanism to identify key trends and developments. The Preparatory Action will therefore include actions to develop a sustainable strategic technology foresight methodology. In view of the reform of the International Traffic in Arms Regulations (ITAR), an important part in this area would be to launch a stocktaking exercise on critical defence technologies components and materials, with focus on ITAR related components in Europe's armament systems, including in future technologies.

In the context of the development of the future EU-funded defence research programme, these analyses should suggest potential roadmaps, themes, and business models, to be implemented and funded at national, multilateral or EU level, as appropriate.

Proposals are invited against the following topic:

PADR-STF-02-2018: The European Defence Research Runway – part II

Specific Challenge:

Technology non-dependence is an essential parameter of the strategic autonomy and freedom of action of the EU Member States. Uninterrupted supply from trusted sources of key materials, including raw materials, components and technologies for critical armament systems is fundamental for the reliable use of military capabilities when and where needed. Trusted supply without limitations from non-EU countries regarding the use or export is also essential for the competitiveness of the EU defence industry, allowing competing in global markets with technological solutions that do not have to respect third parties conditions.

In the short and medium term, technologies subject to the US International Traffic in Arms Regulations and Export Administration Regulations (ITAR and EAR) are as a consequence a challenge for Member States and defence industry as they limit freedom of action and export. Furthermore also currently freely available components may become ITAR-related once they are used in US weapon systems. Technologies and materials from other non-EU sources may also be procured with restriction of use and components are often not trustable for sensitive functions. Moreover supply may even be denied in some particular cases with potentially highly detrimental impact on systems and operations. To support Europe's strategic autonomy availability of selected ITAR-restricted and other foreign-sourced components and materials in Europe would be as beneficial for Member States as for Europe's defence industry.

Avoiding long term critical defence technology dependencies is equally important for the future strategic autonomy of the EU. Identifying critical technology building blocks for future defence systems and disruptive capabilities and preparing the necessary steps to have them available on time, is indispensable in order to avoid staying behind from the global competitors, prevent future technology dependencies and ensure the independent development of cutting edge capabilities.

To gain an overview about the technology dependence challenge, a stocktaking of ITAR and other non EU sourced components used in Europe's armament systems would be the first step to tackle this issue. A methodology consulting Member States and defence industry would need to assess the sourcing risk and criticality in order to identify and prioritize components and materials desirable to be available in Europe in the future. For selected technologies, roadmaps and business models can be produced to provide proposals for research topics for a follow on defence research program.

Scope:

This action should aim to provide an effective way for tackling the issue of the critical defence technological dependencies for the EU regarding current and future systems and capabilities. The action needs to address at least the following activities:

a) Mapping of the ITAR and other non-EU sourced components and materials in the systems developed by the EU industry and used and to be used by the EU armed forces. The mapping should cover the dependencies in the full spectrum of the value chain, possibly down to the raw material sourcing;
b) Identify critical technology building blocks and possibly components for future systems and disruptive capabilities for which European technology non-dependence will be crucial. The activity should be based on the results of the European Defence Technology Runway Part I on future trends and aim to identify the major technical challenges in these critical areas for which non-dependence will be crucial;
c) Develop a methodology to assess the supply risk of technologies and components of point a) and b) and their criticality for armed forces and the defence industry. Such methodology should be established in consultation with ministries of defence and the defence industry;
d) Prepare technology roadmaps, ideally including cost substantiated predictions, and suggest business models for selected technologies, taking into account supply risk and criticality. An assessment of the scientific, technological and manufacturing readiness of the European ecosystem should be included. This activity should also propose actions in line with the technology roadmaps and suggested business models.

The activities should benefit and when appropriate complement or incorporate existing works, and in particular:

- the European Defence Technology Runway Part I, for identifying technologies and sharing methodology as appropriate;

- the study "Study on the dual-use potential of dual-use potential of Key Enabling Technologies (KETs)"[14];
- the study "Raw materials in the European defence industry"[15] and relevant activities of the Joint Research Centre;
- relevant work of the European Defence Agency, the "Leadership in Enabling and Industrial Technologies - Space" research programme under Horizon 2020 and the European Space Agency (ESA), and in particular the Critical Space Technologies non-dependence actions for identified in the frame of the Commission-ESA-EDA Joint Task Force[16].

Proposals should include elements to ensure continued monitoring and updating beyond the action's lifetime.
The European Commission considers that proposals requesting a contribution from the EU in the range of EUR 1 500 000 to 2 000 000 would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

This topic is complementary with topic *"PADR-STF-01-2017: The European Defence Research Runway – part I"*. Grant agreements under this topic will therefore include the options for 'complementary grants', (including, in particular additional access rights to background and results for the purposes of the complementary grant).

No more than one action will be funded.

Expected Impact:

The action should allow

- the EU and the Member States to understand the dependencies for defence technologies and the ways to prioritise and address them;
- to underpin coordination of defence research activities at the European and national level and improve synergies with space and other civil technology research activities addressing non-dependence needs;
- to provide input for the long term agenda for defence research in the EU in the area of critical defence technologies;
- to explore themes for a future European Defence Research Programme;

Type of Action: Coordination and support action

[14] https://publications.europa.eu/en/publication-detail/-/publication/c092b731-f415-11e6-8a35-01aa75ed71a1
[15] https://publications.europa.eu/en/publication-detail/-/publication/5d0ca1b4-aaff-11e6-aab7-01aa75ed71a1/language-en/format-PDF/source-50416951
[16] The relevant document entitled "Critical Space Technologies for European Strategic Non-Dependence Action List 2018-2020" can be made available by EDA upon request.

The conditions related to this topic are provided at the end of this call and in the General Annexes.

Conditions for the Call – Strategic Technology Foresight

Opening date(s), deadline(s), indicative budget(s):[17]

Topics (Type of Action)	Budgets (EUR million)	Deadlines
	2018	
Opening: 15 March 2018		
PADR-STF-02-2018 (CSA)	1.90	28 June 2018 (Single stage)
Overall indicative budget	1.90	

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 6 months from the final date for submission; and
- Indicative date for the signing of grant agreements: Maximum 3 months from the date of informing successful applicants.

Eligibility and admissibility conditions: The conditions are described in General Annexes B and C of the work programme.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in General Annex F of the work programme.

Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in General Annex F of the work programme.

The full evaluation procedure is described in the relevant guide published on the Participant Portal.

Special report: no special report is requested.

[17] The authorising officer by delegation responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
All deadlines are at 17:00:00 Brussels local time.
The authorising officer by delegation responsible may delay the deadline(s) by up to two months.
The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority.

All the results of the action will be made available to the Union for the duly justified purpose of developing, implementing and monitoring Union policies or programmes and to the Member States and countries associated to the Preparatory Action on Defence Research for purposes related to the use by or for their armed forces, or security or intelligence forces, including within the framework of their cooperative programmes. Such utilisation shall include, but be not limited to, the study, evaluation, assessment, research, design, development, manufacture, improvement, modification, maintenance, repair, refurbishment, and product acceptance and certification, operation, training, disposal and other post design services and product deployment, as well as the assessment and drafting of technical requirements for procurement.

Consortium agreement: Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.

Other actions[18]

1. Contribution to call PADR-US-01-2017

The Work Programme for the Preparatory Action on Defence Research for the year 2017[19] included the funding of no more than one action upon evaluation of full proposals submitted to the call *"PADR-US-01-2017: Technological demonstrator for enhanced situational awareness in a naval environment"*.

Full proposals included the description of (i) a core part which would need a EU contribution between EUR 14 and 16 million from the 2017 budget, and (ii) up to 4 additional research modules with a EU contribution of up to EUR 5 million each that would extend the core project to cover the topic more substantially.

The proposals, including the total indicative budget of the core part and all additional modules were evaluated in their entirety during a single-stage evaluation procedure.

This action provides funding for 4 research modules of the project which was retained for funding as described above.

Type of Action: Research action

Indicative budget: maximum EUR 20 million from the 2018 budget[20]

2. External Expertise

This action will support the use of appointed independent experts for the evaluation of proposals.

Type of Action: Expert Contracts

Indicative budget: EUR 0.1 million from the 2018 budget

[18] The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority or, if the budget is not adopted, as provided for in the system of provisional twelfths.

[19] Commission Decision of 11.4.2017 on the financing of the 'Preparatory action on Defence research' and the use of unit costs for the year 2017.

[20] This amount can be lower subject to the availability of unused budget from the 2017 budget.

Budget[21,22]

	Budget line(s)	2018 Budget (EUR million)
Calls		
PADR-EDT-02-2018		Up to 12.00[8]
	from 02.04 77 03	*Up to 12.00*
PADR-EF-02-2018		Up to 5.40[13]
	from 02.04 77 03	*Up to 5.50*
PADR-STF-02-2018		1.90
	from 02.04 77 03	*1.90*
Other Actions		
Contribution to call PADR-US-01-2017		Up to 20.00[20]
	from 02.04 77 03	*Up to 20.00*
Expert Contracts		0.10
	from 02.04 77 03	*0.10*
Estimated total budget		37.50

[21] The budget figures given in this table are rounded to two decimal places.

The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority.

[22] The budget does not include administrative expenditures for the management of the Preparatory Action on Defence Research.

General Annexes

A. List of countries and entities eligible for participation and funding

Legal entities established in the following countries and territories for the whole duration of the grant agreement will be eligible to receive funding through PADR grants:

- The Member States (MS) of the European Union (EU), including their overseas departments;
- The Overseas Countries and Territories (OCT) linked to the Member States[23]:

  Anguilla, Aruba, Bermuda, Bonaire, British Indian Ocean Territory, British Virgin Islands, Cayman Islands, Curaçao, Falkland Islands, French Polynesia, French Southern and Antarctic Territories, Greenland, Montserrat, New Caledonia, Pitcairn Islands, Saba, Saint Barthélémy, Saint Helena, Saint Pierre and Miquelon, Sint Eustatius, Sint Maarten, South Georgia and the South Sandwich Islands , Turks and Caicos Islands, Wallis and Futuna.

- Norway;

⚠ For British applicants: Please be aware that eligibility criteria must be complied with for the entire duration of the grant. If the United Kingdom withdraws from the EU during the grant period without concluding an agreement with the EU ensuring in particular that British applicants continue to be eligible, you will cease to receive EU funding (while continuing, where possible, to participate) or be required to leave the project on the basis of article 50.3.1(b) of the Grant Agreement.

⚠ For Norwegian applicants: Please be aware that all eligibility criteria related to the calls published on the basis of Commission Decision (2018) 1383 must be complied with at least on the 31 December 2018. If the participation of the Kingdom of Norway in the research programme of the Preparatory Action is not confirmed at that date, Norwegian participants will cease to receive EU funding (while continuing, where possible, to participate) or be required to leave the consortia on the basis of art. 50.3.1(b) of the Grant Agreement.

International European interest organisations[24] will be eligible to receive funding through PADR grants.

The call conditions may exclude entities unable to provide satisfactory security guarantees, including as regards personnel security clearance if justified by security reasons.

[23] Entities from Overseas Countries and Territories (OCT) are eligible for funding under the same conditions as entities from the Member States to which the OCT in question is linked.
[24] An international European interest organisation is an international organisation, the majority of whose members are Member States or Norway, and whose principal objective is to promote scientific and technological cooperation in Europe.

B. Standard admissibility conditions and related requirements

1. Proposals must comply with the admissibility conditions set out in this Annex, unless they are supplemented or modified in the call conditions.

To be considered **admissible**, a proposal must be:

(a) submitted in the electronic submission system before the deadline given in the call conditions[25];

(b) readable, accessible and printable.

2. **Incomplete** proposals may be considered inadmissible. This includes the requested administrative data, the proposal description, and any supporting documents specified in the call.

3. The following supporting documents will be required to determine the operational capacity for grant proposals, unless otherwise specified in the call:

- A curriculum vitae or description of the profile of the persons who will be primarily responsible for carrying out the proposed research and/or innovation activities;
- A list of up to five relevant publications, and/or products, services (including widely-used datasets or software), or other achievements relevant to the call content;
- A list of up to five relevant previous projects or activities, connected to the subject of this proposal;
- A description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work;
- A description of any third parties that are not represented as project partners, but who will nonetheless be contributing towards the work (e.g., providing facilities, computing resources).

4. The following supporting documents will be required to determine the financial capacity for grant proposals:

- The balance sheet for the last financial year for which the accounts were closed;
- The profit and loss account for the last financial year for which the accounts were closed.

The financial year data cannot be older than 2 years. Public entities and international organisations are exempted from the financial capacity assessment.

[25] Submission of classified information is excluded from the obligation to be submitted in the electronic submission system.

If a satisfactory financial capacity cannot be established on the basis of such documents, the financial capacity of each member of the consortium will be assessed on the basis of other documents considered as relevant and requested on a case by case basis.

5. Grant proposals must include a draft plan for the exploitation and dissemination of the results, unless otherwise specified in the call conditions.

6. In addition, to the above admissibility conditions, the following related requirements apply.

Page limits will apply to proposals/applications. Unless stated otherwise in the call conditions, the limit for a full proposal is 70 pages, except for coordination and support actions, where the limit is 50 pages.

The page limits and sections subject to limits will be clearly shown in the proposal templates in the Participant Portal electronic submission system.

If a proposal/application exceeds the limits, the applicant will receive an automatic warning, and will be advised to re-submit a version that conforms.

After the call deadline, excess pages (in over-long proposals/applications) will be automatically overprinted with a “watermark”.

Evaluators will be instructed to disregard these excess pages.

Proposals must be written in a legible font, further guidance on the use of fonts, margins and other page formatting will be included in the proposal templates.

The structure of proposals must correspond to the requirements specified under each section of the proposal template.

C. Standard eligibility conditions

1. Proposals must comply with the **eligibility conditions** set out in this Annex, unless they are supplemented or modified in the call conditions.

A proposal will only be considered **eligible** if:

(1) its content corresponds, wholly or in part, to the topic description for which it is submitted

(2) it complies with the eligibility conditions for participation set out in the table below, depending on the type of action:

	Eligibility conditions for participation[26]
Research actions (RA)	At least three legal entities. Each of the three must be established in a different EU Member State or Norway[27]. All three legal entities must be independent of each other.
Coordination & support actions (CSA)	At least one legal entity established in an EU Member State or Norway[27].

Two legal entities are considered as independent of each other where neither is under the direct or indirect control of the other or under the same direct or indirect control as the other.

Control may, in particular, take either of the following forms:

(a) the direct or indirect holding of more than 50 % of the nominal value of the issued share capital in the legal entity concerned, or of a majority of the voting rights of the shareholders or associates of that entity;

(b) the direct or indirect holding, in fact or in law, of decision-making powers in the legal entity concerned.

The following relationships between legal entities are not in themselves be deemed to constitute controlling relationships:

(a) the same public investment corporation, institutional investor or venture-capital company has a direct or indirect holding of more than 50 % of the nominal value of

[26] Natural or legal persons, groups or non-State entities covered by the Council sanctions in force are not eligible to participate in Preparatory Action on Defence Research. Please see the consolidated list of persons, groups and entities subject to EU financial sanctions, available at http://eeas.europa.eu/cfsp/sanctions/consol-list_en.htm.
[27] Legal entities established in Norway shall be eligible for funding provided that Protocol 31 to the EEA agreement authorises the participation and the financial contribution of the Kingdom of Norway in the PADR. The PADR annual work programme and the Decision of the EEA Joint Committee shall be adopted in the same year.

the issued share capital or a majority of voting rights of the shareholders or associates;

(b) the legal entities concerned are owned or supervised by the same public body.

If one of the applicants is the JRC, or an international European interest organisation (IOEI) or an entity created under Union law, it is considered to be established in a Member State or Norway other than any Member State or Norway in which another applicant in the same action is established.

All the infrastructure, facilities, assets and resources used by the applicants, including subcontractors and other third parties, in actions funded under the Preparatory Action on Defence Research should not be located on the territory of non-Member States or non-associated countries. The use of such infrastructure, facilities, assets and resources shall not be subject to control or restriction by third countries. Applicants shall identify before the signature of the grant agreement all relevant elements and infrastructure to be used in the action.

Where appropriate and duly justified, the call conditions may provide for additional conditions according to specific policy requirements or to the nature and objectives of the action, including inter alia conditions regarding the number of beneficiaries, the type of beneficiary and the place of establishment.

D. Types of action: specific provisions and funding rates[28]

Research actions (RA)

Description: Action primarily consisting of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. Depending on the topic, they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment or rather have their focus on activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include large-scale prototyping, testing, demonstrating, or piloting.

Funding rate: 100% of the eligible costs.

Coordination and support actions (CSA)

Description: Actions consisting primarily of accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies, including design studies for new infrastructure and may also include complementary activities of strategic planning, networking and coordination between programmes in different countries.

Funding rate: 100% of the eligible costs.

Indirect costs are eligible if they are declared on the basis of a flat-rate of 25% of the eligible direct costs, excluding eligible direct costs for subcontracting.

[28] Participants may ask for a lower rate.

E. Technology readiness levels (TRL)

Where a topic description refers to a TRL, the following definitions apply, unless otherwise specified:

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment
- TRL 6 – technology demonstrated in relevant environment
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

F. Evaluation rules

1. Selection and award criteria

Selection Criteria

1. *Financial capacity:* The financial capacity of the coordinators and the applicants shall be verified in accordance with the provisions of the Financial Regulation.

2. *Operational capacity*: As a distinct operation, carried out during the evaluation of the award criterion 'Quality and efficiency of the implementation', the evaluators will indicate whether the applicants have sufficient operational capacity to carry out the proposed work, based on the competence and experience of the individual applicant(s).

Award criteria, scores and weighting

1. Grant proposals will be evaluated according to Article 133 of Regulation (EU, Euratom) No 966/2012 and Article 204 of Commission Delegated Regulation (EU) No 1268/2012.

The proposals will be evaluated on the basis of the following award criteria: (a) excellence (b) impact and (c) quality and efficiency of the implementation.

The aspects to be considered in each case depend on the types of action as set out in the table below, unless stated otherwise in the call conditions:

	Award criteria		
	Excellence *The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the calls text:*	**Impact** *The following aspects will be taken into account:*	**Quality and efficiency of the implementation** *The following aspects will be taken into account**:*
All types of action	Clarity and pertinence of the objectives; Soundness of the concept, and credibility of the proposed methodology;	The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the call under the relevant topic;	Quality and effectiveness of the work plan, including extent to which the resources assigned to work packages are in line with their objectives and deliverables; Appropriateness of the management structures

			and procedures, including risk and innovation management; Complementarity of the applicants and extent to which the consortium as whole brings together the necessary expertise; Appropriateness of the allocation of tasks, ensuring that all applicants have a valid role and adequate resources in the project to fulfil that role.
Research actions (RA)	Extent that the proposed work is beyond the state of the art, and demonstrates innovation potential (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models) Appropriate consideration of interdisciplinary approaches and, where relevant, use of stakeholder knowledge.	Any substantial impacts not mentioned in the call, that would enhance innovation capacity, create new market opportunities, strengthen competitiveness and growth of companies, address – in the context of a defence-oriented research programme – issues related to climate change or the environment, or bring other important benefits for society; Quality of the proposed measures to: • Exploit and disseminate the project results (including management of IPR), and to manage research data where relevant. • Communicate the project activities to different target audiences	
Coordination & support actions (CSA)	Quality of the proposed coordination and/or support measures.	Quality of the proposed measures to: • Exploit and disseminate the project results (including management of	

		IPR), and to manage research data where relevant. • Communicate the project activities to different target audiences	

* not all aspects are relevant to proposals involving just one beneficiary

2. Scoring and weighting:

Unless otherwise specified in the call conditions, evaluation scores will be awarded for the criteria, and not for the different aspects listed in the above table. For full proposals, each criterion will be scored out of 5. The threshold for individual criteria will be 3. The overall threshold, applying to the sum of the three individual scores, will be 10.

3. Priority order for proposals with the same score:

Unless the call conditions indicate otherwise, the following method will be applied.

If necessary, the panel will determine a priority order for proposals which have been awarded the same score within a ranked list. Whether or not such a prioritisation is carried out will depend on the available budget or other conditions set out in the call text. The following approach will be applied successively for every group of ex aequo proposals requiring prioritisation, starting with the highest scored group, and continuing in descending order:

a) Proposals that address topics, or sub-topics, not otherwise covered by more highly-ranked proposals, will be considered to have the highest priority.

b) The proposals identified under (a), if any, will themselves be prioritised according to the scores they have been awarded for the criterion excellence. When these scores are equal, priority will be based on scores for the criterion impact. In the case that the call gives increased weight to impact, this prioritisation will be done first on the basis of the score for impact, and then on that for excellence.

c) If necessary, any further prioritisation will be based on the following factors, in order: size of EU budget allocated to SMEs; gender balance among the personnel named in the proposal who will be primarily responsible for carrying out the research activities.

d) If a distinction still cannot be made, the panel may decide to further prioritise by considering how to enhance the quality of the project portfolio through synergies between projects, or other factors related to the objectives of the call or to the Preparatory Action on Defence Research in general. These factors will be documented in the report of the Panel.

e) The method described in (a), (b), (c) and (d) will then be applied to the remaining ex aequos in the group.

4. Evaluation procedure

1. Calls will be subject to a one-stage submission and evaluation procedure.

2. The evaluation shall be carried out according to Article 133 of Regulation (EU, Euratom) No 966/2012 and Article 204 of Commission Delegated Regulation (EU) No 1268/2012. The evaluation will be based on the assessment of an evaluation committee set up by the European Defence Agency (EDA) assisted by independent experts.

The independent experts will be chosen on the basis of their skills, experience and knowledge appropriate to carry out the tasks assigned to them. The appropriate security clearance will be required before appointment.

Experts competent in defence research or related areas will be identified and selected on the basis of a call for expression of interest. A database of candidates will be established. All candidates included in the database will be required to be validated by the Member State that has issued their security clearance.

When appointing independent experts, appropriate measures will be taken to seek a balanced composition within the expert groups and evaluation panels in terms of various skills, experience, knowledge, geographical diversity and gender, and taking into account the situation in the field of the action.

An expert faced with a conflict of interest in relation to a matter on which the expert is required to provide an opinion cannot evaluate, advise or assist on the specific matter in question.

All exchanges with independent experts, including the conclusion of contracts for their appointment and any amendment thereto, may be done through electronic exchange systems as stipulated in Article 287(4) of Regulation (EU) No. 1268/2012.

As part of the evaluation, a panel review will recommend one or more ranked lists for the proposals under evaluation, following the scoring systems indicated above. A ranked list will be drawn up for every indicative budget shown in the call conditions.

3. Proposal coordinators receive an Evaluation Summary Report (ESR), showing the results of the evaluation for a given proposal.

4. If special procedures apply, they will be set out in the call conditions.

G. Review of ethical, legal and societal aspects ('ethics review')

A review of ethical, legal and societal aspects will be systematically carried out for proposals raising such issues.

This review will verify the respect of legislation, and the compliance with provisions of international law binding upon the Union, and the societal impact of the proposed action.

The review will be conducted by a group of experts on military ethical and legal issues. The appropriate security clearance will be required before appointment. All experts must be validated by the Member State that has issued their security clearance.

The process of the review will be as transparent as possible and ensure that it is carried out in a timely manner avoiding, where possible, the resubmission of documents.

A proposal which contravenes ethical principles or any applicable legislation, or which does not fulfil the conditions set out in the work programme or in the call for proposals may be excluded from the evaluation, selection and award procedures at any time.

H. Actions involving classified information

In the case of actions involving security-related activities, special provisions for classified information (as defined in the Commission Rules of Procedure *(Decision 2015/444/EC, ECSC, Euratom*) will be taken in the grant agreement, as necessary and appropriate.

It is possible that the output of an action (’results’) needs to be classified, or that classified inputs ('background') are required. In such cases proposers have to ensure and provide evidence of the adequate clearance of all relevant facilities. Consortia have to clarify issues such as e.g. access to classified information or export or transfer control with the national authorities of their Member States/Preparatory Action on Defence Research associated countries prior to submitting the proposal. Proposals need to provide a draft security classification guide, indicating the expected levels of classification. Appropriate arrangements will have to be included in the consortium agreement.

I. Exploitation and dissemination of results

Ownership of results

Results are owned by the beneficiary generating them.

Where beneficiaries in an action have jointly generated results, and where their respective contribution to the joint results cannot be ascertained, or where it is not possible to separate such joint results for the purpose of applying for, obtaining or maintaining the relevant intellectual property rights protection, they will have joint ownership of those results. The joint owners will establish an agreement regarding the allocation and terms of exercise of that joint ownership in accordance with their obligations under the grant agreement. The joint owners may agree not to continue with joint ownership but decide on an alternative regime, inter alia by transferring their ownership shares to a single owner with access rights for the other beneficiaries, once the results have been generated.

Unless otherwise agreed in the joint ownership agreement, each joint owner will be entitled to grant non-exclusive licences to third parties to exploit the jointly owned results, without any right to sub-license, subject to the following conditions:

(a) prior notice needs to be given to the other joint owners;

(b) fair, reasonable and non-discriminatory compensation will be provided to the other joint owners.

If employees or any party working for a beneficiary are entitled to claim rights to the results generated, the beneficiary concerned will ensure that it is possible for those rights to be exercised in a manner compatible with its obligations under the grant agreement.

Protection of results

Where results are capable of or may reasonably be expected to be capable of commercial or industrial exploitation, the beneficiary owning those results will examine the possibility of protecting them. The beneficiary will, if possible, reasonable and justified given the circumstances, adequately protect them for an appropriate period of time and with an appropriate territorial coverage, having due regard to its legitimate interests, and the legitimate interests, particularly the commercial interests, of the other beneficiaries in the action.

Exploitation and dissemination of results

Each beneficiary that has received funding under the Preparatory Action on Defence Research will use its best efforts to exploit the results it owns, or to have them exploited by another legal entity, in particular through the transfer and licensing of results (see below).

For the purposes of monitoring and dissemination by the Commission or the funding body, beneficiaries will provide any information on their exploitation related activities, and provide any documents necessary in accordance with the conditions laid down in the grant agreement.

All patent applications, standards, publications or any other dissemination, including those in electronic form, relating to results will, if possible, include a statement, which may include visual means, that the action received financial support from the Union. The terms of that statement are established in the grant agreement.

Transfer and licensing of results

Where a beneficiary transfers ownership of results, it will pass on its obligations under the grant agreement regarding those results to the transferee, including the obligation to pass them on in any subsequent transfer.

Without prejudice to confidentiality obligations arising from laws or regulations in the case of mergers and acquisitions, where other beneficiaries still enjoy access rights or may still request the granting of access rights to the results to be transferred, a beneficiary which intends to transfer the results needs to give prior notice to the other beneficiaries, together with sufficient information concerning the intended new owner of the results, to permit the other beneficiaries to analyse the effect of the intended transfer on the possible exercise of their access rights.

Following notification, a beneficiary may object to the transfer of ownership if it demonstrates that the intended transfer would adversely affect the exercise of its access rights. In such a case, the transfer may not take place until agreement has been reached between the beneficiaries concerned. The grant agreement lays down time-limits in this respect.

The other beneficiaries may by prior written agreement waive their right to prior notice and to object to transfers of ownership from one beneficiary to a specifically identified third party.

Provided that access rights to the results can be exercised, and that any additional exploitation obligations are complied with by the beneficiary who owns the results, the latter may grant licences or otherwise grant the right to exploit them to any legal entity, including on an exclusive basis. Exclusive licences for results may be granted subject to consent by all the other beneficiaries concerned that they will waive their access rights thereto. Granting of exclusive licenses does not affect the access rights of the Union, the Member States and Norway.

With regard to results which are generated by beneficiaries that have received funding under the Preparatory Action on Defence Research, the grant agreement may provide that the Commission may object to transfers of ownership or to grants of a licence to third parties established in a third country not associated with the Preparatory Action on Defence Research, if it considers that the grant or transfer is not in accordance with the interests of developing the competitiveness of the Union economy, or is inconsistent with ethical principles or security considerations.

In such cases, the transfer of ownership or grant of licence can not take place unless the Commission is satisfied that appropriate safeguards will be put in place.

Where appropriate, the grant agreement will provide that the Commission is to be notified in advance of any such transfer of ownership or grant of a licence. The grant agreement lays down time-limits in this respect.

Non-compliance with these provisions will be subject to measures stipulated in Regulation (EU, Euratom) No 966/2012 and Regulation (EU) No 1268/2012.

These provisions do not affect the export of products, equipment nor technologies integrating results, and do not affect the discretion of Member States and associated countries regarding policy on the export of defence related products.

Background

Beneficiaries need to identify the background for their action in any manner in a written agreement. The written agreement must set out in detail all existing restrictions on the use or export of this background. The work programme or the grant agreement may lay down specific provisions excluding any background which is subject to export control or restriction by a third country not associated to the Preparatory Action on Defence Research.

Access rights principles for beneficiaries

Any request to exercise access rights or any waiving of access rights needs to be made in writing.

Unless otherwise agreed by the owner of the results or background to which access is requested, access rights should not include the right to sub-license.

Beneficiaries in the same action need to inform each other and the EDA before their accession to the grant agreement of any legal restriction or limit to granting access to their background. Any agreement concluded thereafter by a beneficiary regarding background should ensure that any access rights may be exercised.

The termination of the participation in an action does not affect the obligation of such a beneficiary to grant access under the terms and conditions established in the grant agreement.

The consortium agreement may stipulate that where a beneficiary defaults on its obligations and such default is not remedied such a defaulting beneficiary does no longer enjoy access rights.

Access rights for implementation by beneficiaries

A beneficiary enjoys access rights to the results of another beneficiary in the same action if those results are needed by the former to carry out its work under the action.

Such access is granted on a royalty-free basis.

A beneficiary enjoys access rights to background of another beneficiary in the same action if this background is needed by the former to carry out its work under the action, and subject to any restrictions or limits pursuant to the above paragraph.

Such access is granted on a royalty-free basis, unless otherwise agreed by the beneficiaries before their accession to the grant agreement.

Access rights for exploitation by beneficiaries

A beneficiary enjoys access rights to the results of another beneficiary in the same action if those results are needed by the former to exploit its own results.

Subject to agreement, such access is granted under fair, reasonable and non-discriminatory conditions.

A beneficiary enjoys access rights to background of another beneficiary in the same action if this background is needed by the former to exploit its own results, and subject to any restrictions or limits pursuant the access rights principles for beneficiaries (see above).

Subject to agreement, such access is granted under fair, reasonable and non-discriminatory conditions.

An affiliated entity[29] established in a Member State or Norway, unless otherwise provided for in the consortium agreement, also have access rights to results and, subject to any restrictions or limits pursuant to the access rights principles for beneficiaries (see above), to background under fair, reasonable and non-discriminatory conditions if those results and background are needed to exploit the results generated by the beneficiary to which it is affiliated. Such access rights need to be requested and obtained directly from the beneficiary owning the results or background unless otherwise agreed in accordance with the access rights principles for beneficiaries (see above) Any such affiliated entity needs to meet the same participation requirements that apply to the beneficiaries of this preparatory action.

The period(s) after the end of the action that a request for access may be made, is included in the grant agreement.

Access rights for the Union, the Member States and Norway

The Union institutions, bodies, offices or agencies enjoy, for the duly justified purpose of developing, implementing and monitoring Union policies or programmes, access rights solely

[29] An affiliated entity means any legal entity complying with Article 122 (2) of Regulation (EU, Euratom) No 966/2012. Control may take any of the forms set out in General Annex C.

to the results of a beneficiary that has received Union funding. Such access rights are limited to non-commercial and non-competitive use.

Such access is to be granted on a royalty-free basis.

All Member States and Norway's national authorities enjoy access rights to the Special Report[30] (see below for a general template) of a project that has received funding under the Preparatory Action on Defence Research. Such access rights must be granted on a free of charge basis and transmitted by the Commission or the EDA to the appointed authorities by the Member States or associated countries after appropriate confidentiality obligations are in place.

Member States and Norway will use the Special Report solely for purposes related to the use by or for their armed forces, or security or intelligence forces, including within the framework of their cooperative programmes. Such utilisation includes, but be not limited to, the study, evaluation, assessment, research, design, development, manufacture, improvement, modification, maintenance, repair, refurbishment, and product acceptance and certification, operation, training, disposal and other post design services and product deployment, as well as the assessment and drafting of technical requirements for procurement.

The Commission and the EDA rules on security apply regarding classified information.

Any two or more Member States or Norway that, multilaterally or within the frame of an EU organisation, jointly have concluded one or several contracts with one or more beneficiaries to further develop together results obtained within the frame of a specific action that has received funding under the Preparatory Action on Defence Research, enjoy access rights to the results of the action that are owned by such beneficiary(s) and are necessary for the execution of the contract(s).

Such access rights are granted on a royalty-free basis and under specific conditions aimed at ensuring that those rights will be used only for the purpose of the contract(s) and that appropriate confidentiality obligations will be in place.

[30] 'Special Report' means a specific deliverable of an action summarizing its results, providing extensive information on the basic principles, the aims, the actual outcomes, the basic properties, the performed tests, the potential benefits, the potential defence applications and the expected exploitation path of the research. Any confidential information contained in the Special Report shall be treated accordingly. The content of the Special Report can be defined in the call for proposals and furthermore in the grant agreement. In any case, participants are not required to provide intellectual property in the Special Report.

General template of the Special Report

A. GENERAL REMARK (not to be part of the template)

This Special Report (SR) is intended to be used by the Beneficiaries to provide information to EU Member States on the research performed, which can be used by all EU Member States for the following objectives:

1) *To provide an understanding of the purpose, outcome and potential applicability of the research;*
2) *To assess the work performed by the Beneficiaries;*
3) *To draw up specifications for follow on research or procurement programs, thereby encouraging uptake of EU-sponsored research.*

In this perspective, the information described below is acknowledged as fulfilling the above objectives. Along those lines, the generic content of the SR should be defined in the calls for proposals. In this framework, individual calls for proposals may fine-tune the required content of the SR for a given topic.

While we expect that the SR will generally satisfy the Member States' needs, where they have specific additional information requests, they will be welcome to approach to the Beneficiaries to discuss these needs with no obligation to disclose further information: the terms and conditions of any subsequent disclosure will be subject to bilateral agreement between the Beneficiaries and the relevant Member State(s).

In any cases, the applicants are not required to provide Intellectual property.

This SR will clearly identify two kinds of information:

1) *Information, if any, which should be treated as confidential and only disclosed by a Member State to its internal services for the purpose of understanding or assessing the work performed by the Beneficiaries. Further disclosures by a Member State shall be subject to prior request to the Beneficiaries, who will remain free to determine whether such request is acceptable and if so, under which terms and conditions.*

2) Information intended to be used to draw up specifications for follow-on research and procurement programs. Such information can be transmitted to potential bidders.

As a general principle, MS should ensure that information will only be disclosed within the national administrations on a need to know basis.

B. GENERAL TEMPLATE

1. BACKGROUND, OBJECTIVES OF THE PROJECT AND STATE OF PLAY

The objective of this section is to explain the original intention of the project, the technical objectives, the composition of the consortium and the role of the Beneficiaries, the grant amount and the used methodology. This should provide elements for a sound organizational, technical and economic overview of the project.

In particular, the Special Report will provide a description of the following:

- Content of the project: synthesis of the technical content and main goals
- Description of the methodology used in the research
- Composition of the consortium: large companies and SMEs, laboratories, etc. and the nature of each Beneficiary's contribution
- Level of classification and procedures for disclosure
- State of play of the object of the project and the criticality of the study, and where relevant, any competing technologies or systems
- Grant amount
- Project duration

2. TECHNOLOGICAL RESULTS OBTAINED REFERING THE OBJECTIVES AND MILESTONES

This section summarises the achieved results compared to the prime objective and the used approach. It consists, where applicable, in a description of:

- The systems related to the technology results, including their functions
- The scientific or technical progress compared to the original state of play; technical milestones and TRL scale may be described;
- The technical challenges solved through the research.
- A synthesis of the performance obtained with the corresponding testing conditions.

In this section, the Beneficiaries will identify data/information which can be used by the Member States to draw up specifications for follow-on research/procurement programs and which can be disclosed externally to potential bidders to allow them to participate in follow on research/procurement activities.

3. BENEFITS

This section consists in an assessment of the significant benefits that were generated by the research, and may include a description of other potential operational applications and further benefits or advantages.

Various types of benefits can be assessed, in terms of:

- Operational capability enhancement
- Defence systems and equipment improvements
- Cost reductions and possible cost saving opportunities
- Standardisation and interoperability
- Added value for Europe
- Improvement in competences
- Other….

4. POTENTIAL FURTHER DEVELOPMENTS

This section contains suggestions for additional approaches which could further develop or improve the results of the project:

- Future R & D projects, which could further consolidate the achievements of the contract for operational superiority or for strengthening European industrial competitiveness
- Future short or medium term armament programs, which could be launched after the realisation of the project
- Possible opportunities for European cooperation thorough the identification of a follow on program or study

5. ILLUSTRATIONS

Where applicable, this section will contain relevant pictures and/or diagrams illustrating the project.

6. ISSUANCE OF THE REPORT

The interim and final SR shall be provided by the consortium as agreed upon in the grant agreement.

***